FRIDGE

Chemicals Sector Summit

Preparation:

Polypropylene Trade Flow Analysis

(Step 5)

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EXECUTIVE SUMMARY

Introduction

As part of the FRIDGE study in preparation for the Chemicals Sector Summit, research was commissioned to identify specific growth opportunities for South African resin and plastics producers in the US and EU polypropylene (PP) markets.

This document details the final outputs of the PP trade flow analysis. The analysis reviewed **trade flows for 8 PP commodity groups** identified at HS 6-digit level based on data from ITC TradeMap[1]:

- HS 3902 10 (Polypropylene, in primary forms)
- HS 3902 30 (Propylene copolymers, in primary forms)
- HS 5503 40 (Staple fibres of polypropylene, not carded or combed)
- HS 5607 41 (Binder or baler twine of polyethylene or polypropylene)
- HS 5607 49 (Twine, cordage, rope and cable of polyethylene or polypropylene - excluding binder or baler twine)
- HS 3920 20 (Other plates, sheets and film etc, non-cellular etc, of polymers of propylene)
- HS 6305 33 (Sacks and bags, for the packing of goods, of polyethylene or polypropylene) strip or the like (excluding flexible intermediate bulk containers)
- HS 3917 22 (Tubes, pipes and hoses, rigid; of polymers of propylene).

In addition, a **trade flow analysis for 5 nonwoven commodity groups** was conducted. While nonwovens are not exclusively polypropylene based, they are an important PP application. These products have therefore been included in the analysis, but kept separate from the analysis of trade flows for pure PP commodity groups in order to avoid distortion of the rankings. The following are the five HS 6-digit level product codes for nonwoven products that were analysed:

- HS 560311 Nonwovens, man-made filaments weighing <25g/m2
- HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2
- HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2
- HS 560314 Nonwovens, man-made filaments weighing >150g/m2
- HS 392190 Film and sheet etc, nes of plastics

The statistical analyses are included in Appendices 1-3 in Excel format.

[1] Detail on the methodology followed is provided in section 2 of the document.

Technical note on trade flow analysis:

- Trade flow analysis allows an examination of export markets according to value, size, and growth, and therefore gives an indication of potential product market opportunities. It is also useful for identifying a country's position in world exports and imports and therefore leading competitors and supply capacity.
- Please note that a trade flow analysis is usually the first step of deeper market opportunity analysis. It is typically followed by a detailed assessment of market drivers and market opportunities on the demand side and an assessment of competitiveness on the supply side. In particular, a comparative cost analysis along the entire value chain (i.e. from sourcing and production through to marketing, transportation and selling in the export market) should be conducted. This is critical to identifying overall cost competitiveness vis-à-vis competing suppliers and the drivers of competitiveness such as capacity and scale. Cost competitiveness is a driver of the likely success of export market penetration for commoditised products, while design, differentiation and quality may become more important for higher value added products.
- Furthermore, the HS approach of categorising products does not clearly differentiate PP at the end use stage of the value chain, and therefore opportunities and growth areas for beneficiation cannot be clearly identified through trade flow analysis. Further research into the market is therefore necessary to reveal opportunities for these end use products, such as market analysis. Although outside the scope of this analysis, market research was therefore conducted to gain more insight into potential market opportunities by supplementing the statistical findings.

Findings on PP products trade flows

Key findings on PP import demand in the US and EU

The total import value for the selected PP products in the target EU and US markets was approximately US$9bn in 2003. The US accounts for 11.5% of this import value, with a total import value of US$1bn in 2003.

The following graph shows the top 10 product-to-market combinations by size of import market:

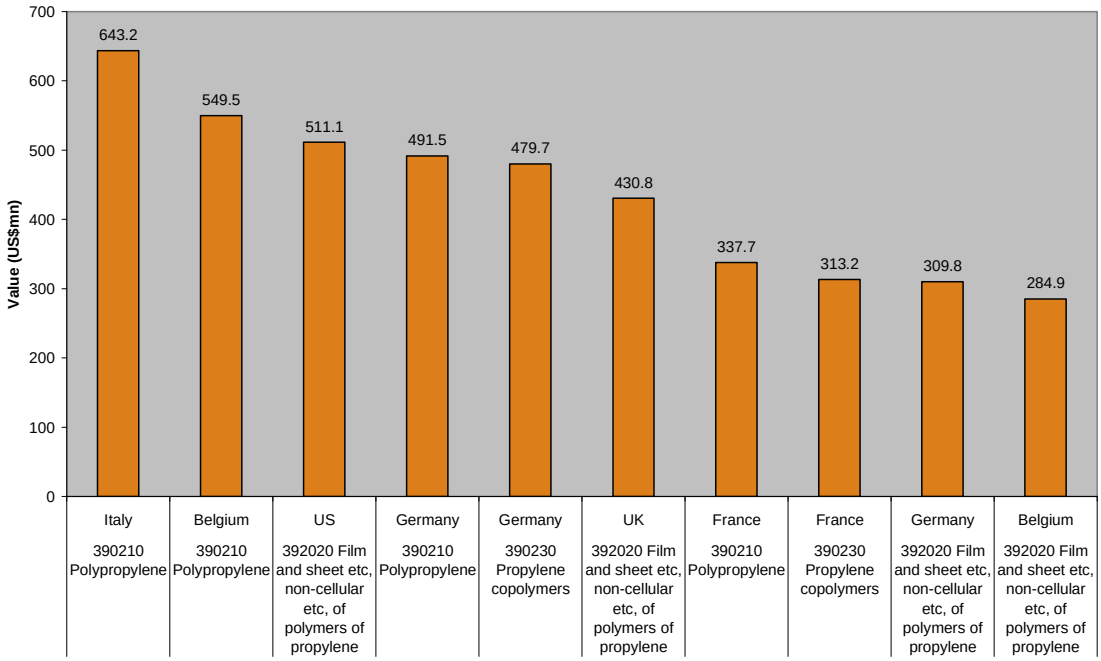

Figure I: Top 10 product-to-market combinations by size of import market in US$ millions - 2003

Demand is greatest for primary products, with 65% of the top 10 product-market combinations by value accounted for by either polypropylene or propylene copolymers. Film and sheet products account for the remaining 35% of the top 10 product-market combinations. European markets dominate these top 10 product-to-market combinations.

However, this trade is dominated by intra-regional trading (intra-EU and intra-NAFTA for the EU and US respectively). Adjusted for intra-regional trade, the total import market value shrinks to US$1.16bn or approximately 13% of the total import market value in 2003, and the US becomes a more important market with 4 of the top 10 product-market combinations.

The following graph shows the top 10 product-to-market combinations by size of import market adjusted for intra-regional trading:

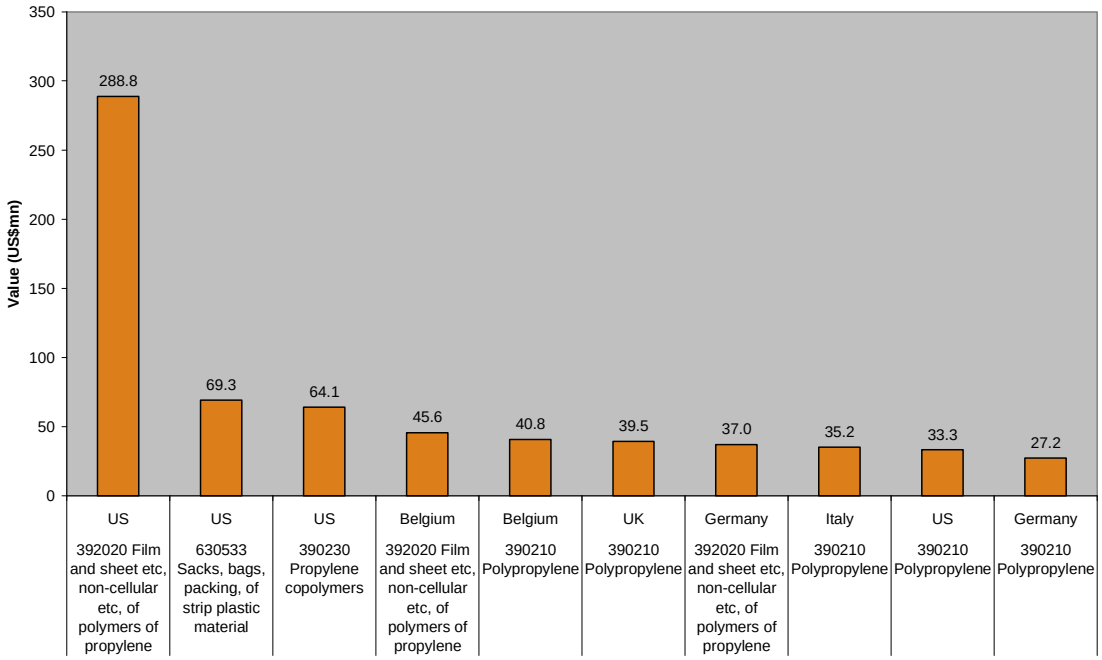

Figure II: Top 10 product-to-market combinations by size of ex EU / NAFTA import market in US$ millions – 2003

Demand for secondary products also becomes more important when intra-regional trade is excluded from the analysis: 65% by value of the top 10 product-market combinations is accounted for by trade in secondary products (in particular films and sheet products), while 35% by value is accounted for by primary products.

The top 15 product-to-market combinations for secondary products ex EU / NAFTA are set out in the table below. Film and sheet products show strongest import demand. There is also strong demand for sacks, bags and packing of strip plastic.

Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	US	288,760	511,148	6
630533 Sacks, bags, packing, of strip plastic material	US	69,313	107,556	6
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Belgium	45,586	284,900	10
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Germany	37,028	309,807	10

Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	France	25,220	280,460	9
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Netherlands	23,558	162,650	11
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Italy	22,313	193,999	6
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	UK	22,186	430,790	16
630533 Sacks, bags, packing, of strip plastic material	Germany	20,551	29,077	19
560749 Twine nes, cordage, ropes and cables, of polyethylene or polypropylene	US	19,360	41,180	13
630533 Sacks, bags, packing, of strip plastic material	Italy	14,648	18,264	7
560741 Binder or baler twine, of polyethylene or polypropylene	US	14,465	18,975	7
630533 Sacks, bags, packing, of strip plastic material	Belgium	11,418	15,183	10
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Ireland	10,321	46,641	11
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Spain	9,823	170,166	10

Key findings on PP supply from South Africa

In 2003, South Africa exported a total of US$105.7m across the 8 PP commodity groups tracked in this analysis. The vast majority of exports went to African countries, in particular Nigeria and Zimbabwe which accounted for 13% and 10% of total exports respectively. Hong Kong is the only significant non-African export market for South African polypropylene products, and the largest trading partner with 20% of total exports.

Based on the definition of the industry value chain used, there currently appears to be only limited beneficiation of PP products for export. In 2003 approximately 93% of total PP exports in value terms were in primary form.

With respect to current trade relationships in the target regions of the US and EU, Germany is the main trading partner for PP products. The following table shows the top 10 existing PP supply relationships in the target markets based on SA export value in 2003:

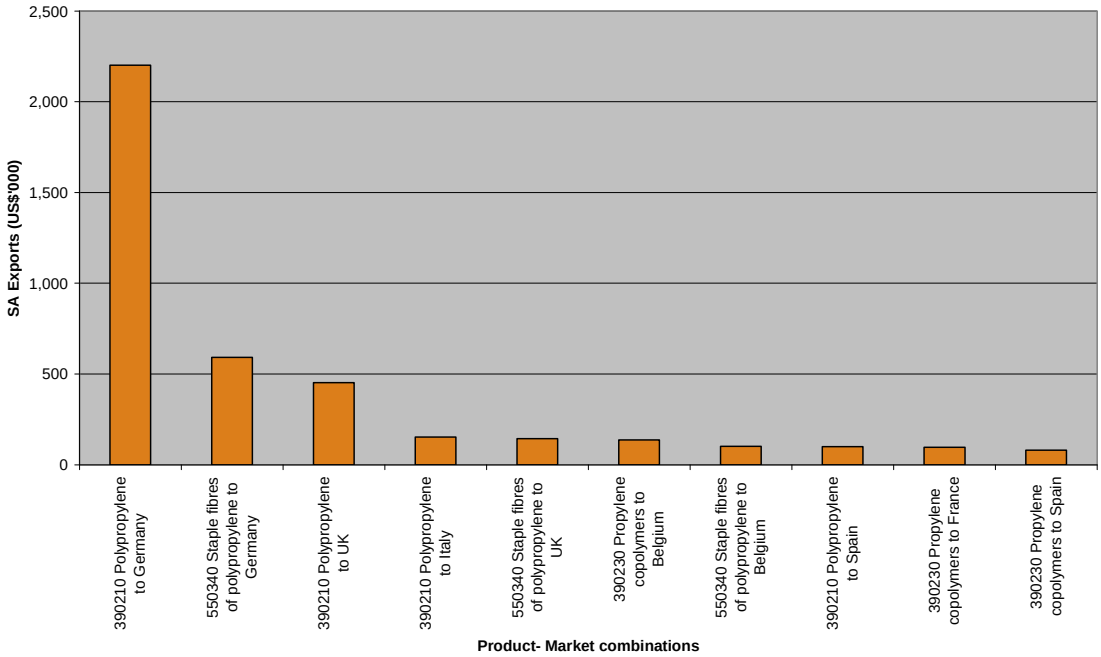

Figure III: Top 10 existing PP supply relationships by SA export value in 2003

Please note that no current South African supply of PP products to the US market is reflected in ITC trade statistics.

Overall, South Africa's penetration of the target export market is very low – i.e. South Africa's % share of market value for the product-market-opportunities analysed is typically <0.01%. However, for HS 550340 (Staple fibres of polypropylene, not carded or combed) South Africa has a share of market value of between 0.75% - 2.1% in Germany, UK, Belgium and Austria.

Recommendations on high potential PP product-to-market opportunities based on trade flow analysis

In order to identify high potential product-to-market opportunities, a multiple ranking analysis based on the following demand-side factors was conducted (please refer to section 2.4 for a detailed description of this methodology):

- Import market size - imported value 2003 in US$ thousand
- Import market size adjusted for intra-regional trade - imported value 2003 in US$ thousand, excluding intra-EU/intra-NAFTA trade
- Import market growth - import trend in value between 1999 and 2003, %, p.a.

Following input from the constituencies, the possibility of using **relative labour intensities** of the various PP product categories as an additional ranking measure was investigated. The labour intensity of PP production is affected by various factors including:

- Process used in production, e.g. extrusion as opposed to injection moulding
- Product type
- Size of plant
- Capital intensity of plant

As the brief was to conduct trade flow analysis and not a detailed analysis of the current and future structure or the South African PP industry, it has not been possible to collect the necessary information on the above drivers of labour intensity that would be required to estimate relative labour intensity. However, based on brief discussions with socio-economic impact specialists[2] and industry players[3], it is evident that the production of primary PP products is, in general, less labour intensive than the production of secondary PP products, although both primary and secondary polypropylene products are relatively capital intensive compared to many other sectors. Employment growth is therefore likely to be generated by creating new downstream activity and selecting sufficiently large-scale opportunities that can absorb labour. Therefore, labour intensity has not been added as an additional ranking criterion; and it was rather recommended that it is considered during the design phase of new plants that might be developed to realise these market opportunities, in order to address the joint objectives of competitiveness, growth, employment and equity.

The outcome of this ranking analysis highlighted the following high potential product-to-market opportunities for further investigation:

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
390210 Polypropylene	Spain	221,756	18,153	27	100	0.05%	0%
390210 Polypropylene	Denmark	177,396	10,306	16		0.00%	
390210 Polypropylene	Belgium	549,516	40,763	17	69	0.01%	0%
390210 Polypropylene	UK	258,261	39,504	16	453	0.18%	1%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	US	511,148	288,760	6	0	0.00%	0%

[2] Global Insight
[3] In particular, Sasol Polymers and Sasol polypropylene division

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Belgium	284,900	45,586	10	0	0.00%	0%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Germany	309,807	37,028	10	0	0.00%	0%
390210 Polypropylene	Italy	643,218	35,233	4	152	0.02%	0%
390210 Polypropylene	Germany	491,495	27,245	6	2,201	0.45%	3%
390230 Propylene copolymers	France	313,154	25,501	9	97	0.03%	0%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	France	280,460	25,220	9	63	0.02%	2%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	UK	430,790	22,186	16	0	0.00%	0%

Please note that the product-to-market opportunities in the darker cells represent the highest potential opportunities based on the three selected demand-side ranking criteria. These combinations scored highly on all three criteria.

The product-to-market combinations in the paler cells represent high potential opportunities – they scored highly on two of the three ranking criteria (i.e. within the top 15 in terms of total import market size, within the top 15 in terms of total import market size adjusted for intra-EU/intra-NAFTA trade, and/or top 30 in import market growth terms).

Primary PP products were included in this analysis, as although the emphasis is on beneficiation, US and EU markets for primary PP are relatively large and may present opportunities for South Africa.

Opportunities for primary product exports

Overall exports for primary PP products to European markets present the strongest potential market opportunities.

Based on trade flow analysis, the most attractive primary product-market combinations are for HS 390210 Polypropylene in Spain, Denmark, Belgium, the UK and France. South Africa currently supplies US$78,221,000 of this product, mostly to African countries and Hong Kong. Exports to Europe are limited with only 3% being exported to Germany and 1% to the UK, and less than 0.5% to Italy, Spain, Belgium, France, Portugal and Austria.

Major competing countries for supplying to these markets are Belgium, Netherlands, Germany and France. Non-EU competitors include Norway and Saudi Arabia.

Italy and Germany are attractive markets for HS 390230 Propylene copolymers. South Africa exported US$19,749,000 of this product in 2003, but exports to EU countries were limited with 1% going to Belgium and less than 0.5% to France and Spain.

The major competing country for supplying propylene copolymers to Italy and Germany is Belgium which supplies just under a third of imports by each country. Non-EU competitors include Japan, the US and Norway.

Opportunities for secondary product exports

Based on trade flow analysis, HS 392020 film and sheet is the most attractive secondary product with potential market opportunities in the US, Belgium, Germany, France and the UK. South African market penetration was low with 2% of its US$4m total exports of this product going to France, accounting for less than 0.5% of imports into France.

Major competing countries for supplying to these high potential markets are Canada, South Korea, Germany and Japan for the US, and Germany, France and Italy for the European markets. Non-European competitors include the US and Turkey.

Findings on nonwovens trade flows

Key findings on nonwovens import demand in the US and EU

The total import value for the selected nonwoven products in the target EU and US markets was approximately US$5.2bn in 2003. The EU accounts for the majority of this demand, buying 82% of this import value, with a total import value of US$4.3bn in 2003.

The following graph shows the top 10 product-to-market combinations by size of import market:

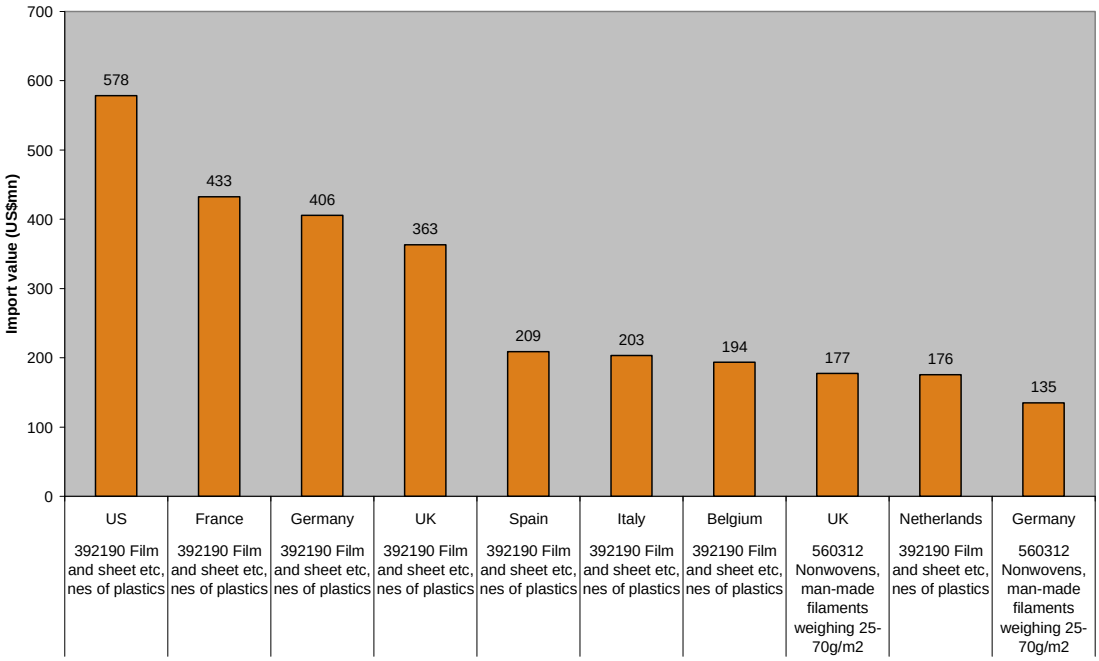

Figure IV: Top 10 product-to-market combinations by size of import market in US$ millions - 2003

The greatest demand is for HS 392190 Film and sheet in the US and in EU countries, and HS 560312 Nonwovens weighing between 25 and 70 g/m^2 in the UK and Germany.

When adjusting for intra-regional trading, US imports are not greatly affected, with non-NAFTA imports accounting for 70% to 80% of imports. The EU market is however greatly reduced, with extra-EU trade amounting to between only 11% and 20% of total imports.

The following graph shows the top 10 product-to-market combinations by size of import market adjusted for intra-regional trading:

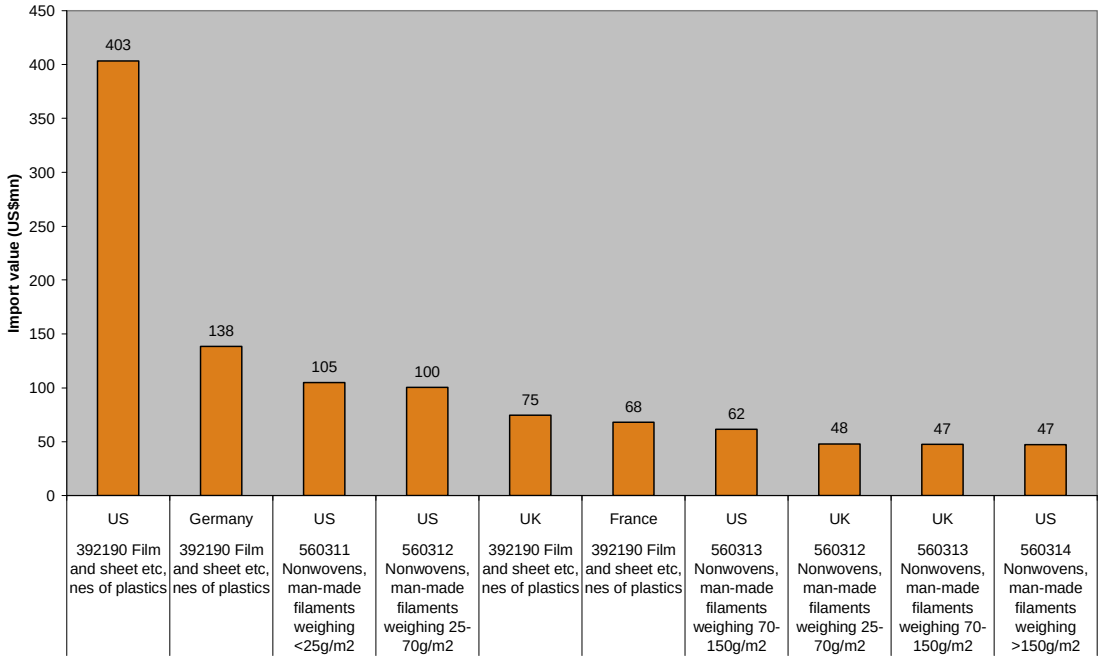

Figure V: Top 10 product-to-market combinations by size of ex EU / NAFTA import market in US$ millions – 2003

When adjusted for intra-regional trade, the US and UK markets become more important for a wider range of product categories while Germany and France remain important markets for HS 392190 Film and sheet, nes of plastic.

Key findings on nonwovens supply from South Africa

In 2003, South Africa exported a total of US$29.8m across the nonwovens commodity groups tracked in this analysis. The majority of exports went to EU countries, with 24% of exports going to Belgium. Only 5% of total nonwovens exports from South Africa went to the US in 2003.

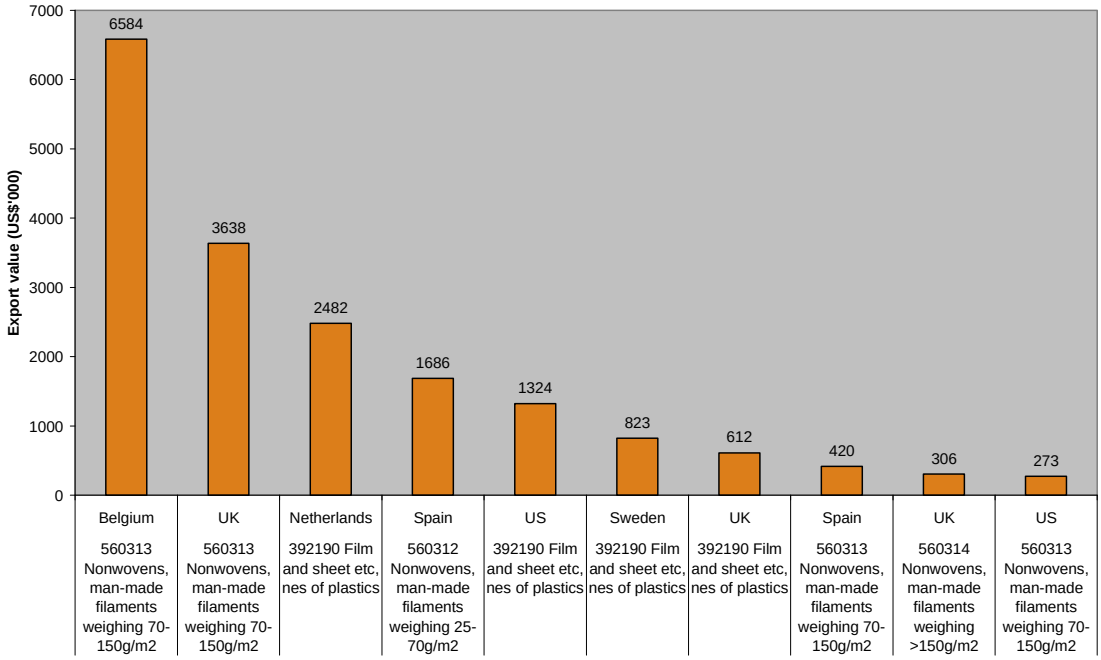

Figure VI: Top 10 existing PP supply relationships by SA export value in 2003

Overall, South Africa's penetration of the target export markets is very low – i.e. South Africa's % share of market value for the product-market-opportunities analysed is typically <3%. However, for HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2, South Africa has a share of market value of 20% in Belgium and 8% in the UK.

Recommendations on high potential nonwovens product-to-market opportunities based on trade flow analysis

In order to identify high potential product-to-market opportunities a multiple ranking analysis based on the following demand-side factors (please refer to section 2.4 for a detailed description of this methodology) was conducted:

- Import market size - imported value 2003 in US$ thousand
- Import market size adjusted for intra-regional trade - imported value 2003 in US$ thousand, excluding intra-EU/intra-NAFTA trade
- Import market growth - import trend in value between 1999 and 2003, %, p.a.

The outcome of this ranking analysis highlighted the following high potential product-to-market opportunities for further investigation:

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
560311 Nonwovens, man-made filaments weighing <25g/m2	US	119,902	104,755	17	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	US	120,126	100,291	17	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	UK	177,389	47,755	12	0	0%	0
560313 Nonwovens, man-made filaments weighing 70-150g/m2	US	74,456	61,504	25	273	0%	2
392190 Film and sheet etc, nes of plastics	US	578,250	403,441	5	1324	0%	11
392190 Film and sheet etc, nes of plastics	Germany	405,597	138,430	0	40	0%	0
392190 Film and sheet etc, nes of plastics	France	432,542	68,210	4	264	0%	2
392190 Film and sheet etc, nes of plastics	UK	363,163	74,639	3	612	0%	5
392190 Film and sheet etc, nes of plastics	Italy	203,180	33,979	0	0	0%	0
392190 Film and sheet etc, nes of plastics	Belgium	193,910	23,364	5	68	0%	1
392190 Film and sheet etc, nes of plastics	Austria	117,151	28,953	7	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	Germany	134,661	26,457	10	0	0%	0

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
392190 Film and sheet etc, nes of plastics	Spain	208,831	16,341	11	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	Spain	69,419	2,883	37	1686	2%	51
560311 Nonwovens, man-made filaments weighing <25g/m2	Germany	95,333	7,968	12	91	0%	51
560312 Nonwovens, man-made filaments weighing 25-70g/m2	Italy	57,705	14,664	9	0	0%	0

Please note that the product-to-market opportunities in the darker cells represent the highest potential opportunities based on the three selected demand-side ranking criteria. These combinations scored highly on all three criteria.

The product-to-market combinations in the paler cells represent high potential opportunities – they scored highly on two of the three ranking criteria (i.e. within the top 15 in terms of total import market size, within the top 15 in terms of total import market size adjusted for intra-EU/intra-NAFTA trade, and/or top 30 in import market growth terms).

Opportunity for HS 560311 – 14 Nonwovens

The US and UK represent the greatest opportunity for these products, with the market for nonwovens, man-made filaments HS 560311 weighing <25g/m2, HS 560312 weighing 25-70g/m2, HS 560313 weighing 70-150g/m2 in the US and the market for HS 560313 nonwovens, man-made filaments weighing 70-150g/m2 in the UK the most attractive. Leading competing countries for the US nonwovens market include Israel and Italy for HS 560311, Italy and Canada for HS 560312, and Germany and Mexico for HS 560313, while leading suppliers of HS 560313 to the UK were Germany and the Netherlands.

The markets for HS 560312 were also attractive in the EU, with Germany, Spain and Italy showing strong growth in demand, but a substantially reduced demand when adjusted for intra-regional trade, with main supplier including Italy, Luxembourg, Germany, France, and Belgium.

South Africa tends to supply a fair amount of its nonwoven exports to the EU: of the US$179,000 of HS 560311, 91% was supplied to Germany. Also, of the US$3.32m of HS 560312 supplied by South Africa, 51% went to Spain and 19% to Belgium, and just over 87% of South Africa's exports of HS 560313 were supplied to EU countries.

Opportunity for HS 392190 Film and sheet

The US is the most attractive market for this product, and as it is not substantially affected when adjusted for intra-regional trade shows strong potential. Additionally, EU countries including Germany, France and the UK offer opportunities, but demand is significantly reduced when discounting for intra-regional trade.

Leading supplying countries to these markets are Switzerland, Italy, Germany and France. South Africa supplied US$12,301, with 20% going to the Netherlands, 11% to the US, with smaller amounts going to other EU countries including Sweden, the UK, France, and Ireland.

Other findings on market trends and end-use market opportunities

Market research additional to trade flow analysis was conducted to investigate the opportunities in the downstream segment of the market and areas that could not be addressed by trade flow analysis. Due to its increasing performance characteristics PP can be used in a vast array of applications. Further, its lower cost is driving increasing substitution of other plastics. In particular, PP is replacing high-density polyethylene (PE), engineering plastics, and polystyrene in many applications. A review of market research literature has shown that there are potential areas for growth in PP demand in packaging, building and construction, and automotive applications. Although this review is not exhaustive, it gives an additional indication of where attractive market opportunities may be.

Packaging

In the US and many of the European markets the packaging industry is the largest end-user of PP resins and plastic materials. In particular, PP film is used in a wide range of packaging applications, including food and cigarettes packaging. However, there are also opportunities for PP foams in this market.

Potential opportunities include:

- Flexible packaging
  - Oriented PP films for snack and confectionary packaging; and non-oriented PP films which are used for textile products, confectionery, and fish and meat product packaging.
  - PP is substituting PE and foil use and there is a trend away from rigid packaging materials. PP is showing strong growth rates in the target markets.
  - Best potential opportunities are in the food packaging markets – especially snack foods and baked goods.
- Caps and closures
  - PP is increasingly used for threaded plastic pressurised caps due to its competitive price and performance characteristics (i.e. it moulds well to the threaded bottle neck)
- Plastic containers
  - PP is one of the fastest growing resins for plastic containers substituting high-density polyethylene. However, PP use is still low volume in comparison to high-density polyethylene and polyethylene terephthalate (PET).
  - Growth opportunities are driven by demand for bottled water and for single-serving containers for beverage and food items.
- Protective packaging
  - There are growth opportunities for polyolefin foams in this market due to their scratch protection and cushioning capabilities.
- Sterile medical packaging
  - Plastics dominate sterile medical packaging; however paper/paperboard, glass, metal and other materials will continue to be important. Packaging products are often made from a combination of materials such as plastics,

nonwovens, foils and paper to provide a cost-effective solution to packaging problems.
- Growing demand is driven by an increase in surgical procedures and diagnostic testing.

Personal hygiene and medical

Market research has shown that 36% of nonwovens are made from PP, and that PP and PET have increasingly substituted in the nonwoven industry[4]. Disposable personal hygiene and medical fabrics are key applications for non-wovens accounting for around 33% of demand in Europe and 24% in the US. Potential opportunities for PP products in this sector include:

- Disposable nonwovens
  - There is strong growth in nonwoven personal protection goods, especially adult diapers and shields.
- Spunbonded nonwoven fabrics
  - Applications include hygiene cover stock and medical fabrics, disposable protective apparel, and fabric softener dryer sheets (as well as a range of industrial and automotive applications).
  - Polypropylene is the most widely used polymer for the production of spunbonded nonwovens because it provides the highest amount of fibre per unit of weight and the highest level of opacity, as well as the lowest cost due to its low density.
- Carded nonwovens
  - Historically, polyester was the material most commonly used to produce carded nonwovens.
  - However, there is an increasing use of carded webs for hygiene coverstock and wipes. For these products, polypropylene has become the raw material most often used.
- Surgical drapes

Automotive

Market research conducted indicates that this sector has strong growth potential for PP products including foam and fibres. Growth in PP demand has been identified for the following applications:

- Step/running boards have been identified as a growth area for long glass PP
- Headliner energy absorbers are identified as a growth area for EPP bead foams due to in-mould skin/foam lamination technology
- Sun visors are another growth area for EPP application due to multidensity-part integration
- PP is being used increasingly in the production of automotive exteriors such as bumper facia,[5] fender liners, trim and front wings
- European End of Life Vehicle (ELV) legislation is driving mono-materials constructions and this will encourage the use of polyolefin nonwovens (PO-NWs) in constructions with PO-foams and PP substrates[6]
- Nonwovens are gaining momentum in the automotive marketplace either as a direct substitute for wovens and knits currently used in face fabrics or as layers in the construction of most interior modules. For example, spunbonded nonwoven fabrics are used for motor vehicle headliners, trunk liners and carpet backing. New nonwoven applications are emerging in headliners, luxury fabrics and floor/acoustic modules.

[4] http://www.agr.gc.ca/misb/spcrops/sc-cs_e.php?page=textiles
[5] http://www.riotinto.com/media/downloads/speeches/IM%20Forum%20presentation%20Nov04.pdf
[6] http://www.robertellerassoc.com/articles/techtex04.pdf

However, the barriers to entry into this market are very high. Supply contracts are managed by the vehicle OEM's preferred suppliers - Tier 1 and Tier 2 suppliers in particular – who provide the OEMs with finished automotive components and automotive parts. They in turn contract out the manufacture to a network of suppliers. The market is highly competitive and contracts are awarded to suppliers who can meet delivery at a competitive price and quality. In order to be competitive significant economies of scale are typically required.

Countries who compete in this market are Brazil, Slovakia, Slovenia and Korea. And while South Africa might have the capacity to take advantage of demand in terms of technology and market contacts, a key inhibiting factor to local industry is import parity pricing where local downstream producers cannot compete with cheap imports. Also, while the domestic vehicle manufacturing output is increasing as major automotive producers such as Toyota and Mercedes Benz in South Africa raise their production goals, the production runs tend to be too short to warrant a major Tier 1 or Tier 2 supplier to set up in South Africa and source plastics locally.

Overall conclusions and recommendations

Currently low export capabilities

Overall, the South African polypropylene industry currently has limited export capabilities for PP and nonwoven products. Total exports for the PP and nonwoven products included in this analysis totalled US$135.4m in 2003. With the exception of nonwoven products for Europe, South Africa has a low export market penetration of the target markets:

- According to the ITC trade statistics analysed, there were no exports to the US from South Africa for the PP products included in this study. However, 5% of current nonwovens exports are destined for the US.
- South Africa's exports to Europe in 2003 represented 4% of South Africa's total PP product exports. However, Europe receives over 60% of current nonwovens exports from South Africa.
- South Africa's % share of market value for the total PP product-market-opportunities analysed is typically <0.01%. For nonwoven products South Africa's penetration of the target export markets is also low – i.e. South Africa's % share of market value for the product-market-opportunities analysed is typically <3%.

Based on the definition of the industry value chain used, there currently appears to be only limited beneficiation of PP products for export. In 2003 approximately 93% of total PP exports in value terms were in primary form. Overall, exports for primary PP products to European markets present the strongest potential market opportunities.

While the upstream producers of primary PP product in South Africa, Sasol and Dow Plastics, are sophisticated players with existing export capabilities and market relationships, the plastics conversion sector in South Africa is still in its infancy. While some of these downstream PP players are currently exporting secondary PP products (often to their overseas principles), the majority of the plastics converters are focused on the domestic market. Given the continued strength of the Rand, these businesses are challenged to defend their domestic markets from lower cost imports. This pressure on their domestic business leaves little financial capacity and strategic resource for investments in export markets where a long-term investment is required. Overall, the downstream PP plastics producers therefore face considerable challenges in developing export business in the target markets of Europe and the US.

Potential opportunities to grow the existing export base

With the exception of primary PP products, South Africa currently has very limited export capability in high potential product opportunities. In particular, HS 392020 (Film and sheet etc, non-cellular etc, of polymers of propylene) features strongly in the high potential product-to-market opportunities. South Africa currently exports this PP product to its African neighbours only.

However, the trade flow analysis indicates that there may be opportunities to grow exports in product segments where South Africa already has PP export capability. Based on current supply capabilities (as indicated by current export volumes to the target markets) expansion of the following product segments should be considered – both through growing existing trade relationships and tapping into high potential new export markets for these product segments:

- For HS 550340 - Staple fibres of polypropylene, not carded or combed
  - Grow existing trade relationships: South Africa has a share of market value of between 0.75% - 2.1% in Germany, UK, Belgium and Austria.
  - Explore potential new export markets:
    - The EU accounted for 90% of world imports of this product in 2003 with a total import value of US$234.7m. The main import markets are Germany (33% of total), Italy (27% of total), and France (10% of total). However, trade is dominated by intra-regional supply (94% of total supply), and Denmark and Belgium are the leading regional suppliers. In terms of non-EU suppliers, South Africa competes with the US and Iran.
    - The US imported US$7.1m worth of this product in 2003; over 89% is supplied by non-NAFTA suppliers, in particular the UK, Denmark, Austria and South Korea.
- For HS 560313 - Nonwovens, man-made filaments weighing 70-150g/m2
  - This product category features strongly in the top 30 product-to-market opportunities adjusted for intra-regional trade (with rank 7, 9, 18 and 24).
  - Grow existing trade relationships: South Africa has a share of market value of 20% in Belgium and 8% in the UK. The UK is one of the largest importers of this product in the EU with a share of 13.5 of total imports.
  - Explore potential new export markets:
    - The EU accounted for ~43% of world imports for this product in 2003 with a total import value of US$351.1m. The main import markets other than the UK are Germany (19% of total) and France (13% of total). However, ~82.5% of total trade is made up by intra-regional supply, and Germany, the Netherlands, Luxembourg and Italy are the leading regional suppliers. In terms of non-EU suppliers, South Africa competes with the US and Israel.
    - The US imported US$74.45m worth of this product in 2003 (or 9% of world imports); over 82% is supplied by non-NAFTA suppliers, in particular Germany, Luxembourg, UK and Sweden, while Japan and Argentina were significant non-EU/NAFTA suppliers.

In developing a growth strategy for the emerging PP conversion industry, export opportunities with African trading partners should also be considered. Given the relatively large share of PP exports to neighbouring countries, growth in PP exports to these countries might be stimulated as their economies grow.

South Africa also has existing trading relationships with Asia for PP products. These markets present strong future opportunities for primary PP exports. In particular, the growth of the Chinese industry is driving demand for primary PP. With average annual growth rates of 7.6% to 2010, China is expected to become the largest consumer of PP after the US. However, given the prevalence of low-cost domestic producers and the emergence of China

as the leading centre for semi-finished and finished goods manufacture, it is unlikely that there are opportunities for developing trade in beneficiated PP products with the Asian markets.

Potential export market opportunities to develop in the longer-term

In addition to opportunities for primary PP products, the trade flow analysis indicates that potential market opportunities exist for the following product-to-market combinations for PP and nonwoven products. However, South Africa currently has little or no export capability in these product segments (as per the trade flow statistics).

- For 392020 (Film and sheet etc, non-cellular etc, of polymers of propylene) to the US, Belgium, Germany, France, and the UK
    - Existing exports of US$4m mainly to African countries (i.e. Zimbabwe, Mozambique, Kenya, Malawi and Nigeria) in 2003; US$63,000 or 2% of total exports to France plus small volumes to Belgium and Germany.
- For 560312 (Nonwovens, man-made filaments weighing 25-70g/m2) to the US, UK, Germany, Spain, and Italy
    - Existing exports were US$3.23m in 2003. Over 62% of exports were to Europe, mainly Spain (51% of total exports), Portugal (6%) and Belgium (5%). Mauritius (with 20% of total exports) and Zimbabwe (5%) were the main trading partners in Africa.
- For 560311 (Nonwovens, man-made filaments weighing <25g/m2) to the US and Germany
    - Existing exports of only US$179,000 in 2003 to Germany (53% of total exports), Zimbabwe (27%) and Australia (20%).
- For 392190 (Film and sheet etc, nes of plastics) to the US, Germany, France, UK, Italy, Belgium, Austria, and Spain
    - Existing exports of US$12.3m in 2003 to a wide range of markets including the Netherlands (20%), Nigeria (16%), the US (11%), Zimbabwe (8%) and Sweden (7%).

Drivers of competitiveness and sector development requirements

The scope of this analysis was focused on the statistical analysis of trade flows. A detailed assessment of market drivers and market opportunities on the demand side and South Africa's competitiveness on the supply side was outside the scope of this study. However, based on the trade flow patterns and a high level review of market trends in the global PP industry, the study identified a number of critical success factors and drivers of competitiveness that must be met in order to realise any of the potential export opportunities and develop the PP conversion industry in South Africa:

- Competitive total landed cost is strongly influenced by transportation costs
    - Given the distance from South Africa to the target exports markets and the bulky, transportation costs are a major driver of total landed cost competitiveness.
    - Only PP products that are easy to pack into crates or containers and/or that can be stuffed or compressed (e.g. nonwoven textiles) will be likely to succeed. In contrast, it is not economical to ship plastic products which are bulky and often low value (e.g. large moulded goods such as appliance covers).
    - It is recommended that government and the private sector need to work together to ensure a seamless and cost-effective transportation and distribution of South African PP products to the target markets. This will be critical to ensuring competitiveness of the emerging PP conversion industry as it seeks to gain a footing in the export markets.
    - Given the lack of current exports to the US, the PP industry should investigate linking into other chemicals sector programmes (e.g. around bulk transportation) or trade promotion programmes to facilitate market entry.

  - Given the successful exports of certain PP products to key EU markets (e.g. Germany, Belgium, Spain), the industry should investigate opportunities to use these market relationships to enter other markets and / or introduce other PP products.
- Competitive operating costs rather than raw material costs
  - The major raw material inputs in polypropylene production are internationally traded commodities. Their prices are therefore largely regulated by international trading markets.
  - While the recent rise in raw materials costs is drastically squeezing margins for resin suppliers and converters, these price increases affect the entire industry and can to a certain extent be passed on to customers.
  - In order to stay cost competitive plastics businesses need to ensure they have competitive operating costs – including labour costs and productivity, utilities, and trade costs – and run efficient operations. This is critical to be competitive with competing polypropylene suppliers from, e.g., India and China.
- Competitive production technology
  - Innovation plays a key role in maintaining a competitive status in these markets. High tech conversion technology therefore plays an important role in sustained growth in the industry.
  - Government support may be required to assist the emerging industry to develop an appropriate technology platform. Potential support measures include:
    - Support research efforts into new product development, process optimisation and technology transfer.
    - Facilitate access to capital for technology upgrades.
    - Facilitate foreign investment by a leading PP converter who can bring technology, production know-how and market relationships.
- Building effective channels to market and customer relationships
  - The target export markets have a large domestic and regional production base with established contacts to potential buyers, reasonable prices and good service. Without a personal presence, an established agent or distribution network, or participation at relevant trade fairs, it will be very difficult for emerging South African exporters to succeed against such tough competition.
  - Government support is required to assist emerging exporters to develop costly and time-consuming trade relationships and market their products overseas. Potential measures include:
    - Facilitate cooperation in the sector for joint marketing initiatives and trade missions.
    - Financial and marketing assistance for sector-wide trade missions.
    - Export marketing grants to cover marketing and international travel expenses required to develop business-to-business relationships.

In addition, to the above factors there are a number of competitive threats that can seriously affect the emerging PP conversion industry:

- Energy and monomer costs are widely expected to continue to increase. The PP industry needs to build scenarios for this upward pressure of prices when developing plans for downstream beneficiation. PP suppliers should take into account the likely impact of potential further increases in energy and monomer costs on their competitiveness and their export readiness.
- PP suppliers should take into account the threats presented by Asian PP producers

Important note:

- Further analysis and careful evaluation of potential opportunities is strongly recommended in order to build on the findings of this statistical analysis of PP trade flows.
- Suggestions on the focus of additional research and recommended research methodologies are set out below in the way forward.

Way forward

- This high-level trade flow analysis provides the initial basis for identifying potential areas of industry development and trade promotion action. In particular, this analysis has highlighted product-to-market combinations for further investigation.
- The scope of this analysis is predominantly focused on the statistical analysis of trade flows. A detailed assessment of market drivers and market opportunities on the demand side and South Africa's competitiveness on the supply side for priority products is recommended prior to detailed strategy development and implementation. These priority products could include products both inside and outside the chemicals sector, where development of downstream industries would require collaboration with other sectors in terms of their strategy development processes.
  - Issues for a detailed demand side analysis include:
    - Analysing the demand characteristics and industry structure in key target markets
    - Determining key potential buyers and their supply needs
    - Identifying any obstacles to imports in target markets
  - Issues for a detailed assessment of supply conditions include:
    - Analysing the supply capabilities and industry structure
    - Identifying any obstacles to exports of priority products
    - Assessing supply capacity increases and investments required
    - Determining specific support requirements at the enterprise and industry level (e.g. logistics, new product development, etc.)
  - Competitive scenarios should also be developed
    - Despite the lack of current SA exports to the US, additional market trends that may result in opportunities that are not evident from the historical trade flow data should be explored. For example, over recent years, imports from Asia appear to have grown strongly across other resin categories such as PET, PS and PVC, where Asian resin producers often have a 15-20% price advantage over domestic suppliers. What triggers in the market place would need to be present to create a more favourable future scenario for PP imports into the US?
  - In addition, the export value chain (i.e. from sourcing and production through to marketing, transportation and selling in the export market) should be mapped and a comparative cost analysis along the entire value chain conducted. This is critical to identifying overall cost competitiveness vis-à-vis competing suppliers and drivers of competitiveness, as well as assessing likely success of export market penetration.

A. INTRODUCTION AND METHODOLOGY

1 Introduction to the document

This document relates to Step 5 of the project – polypropylene trade flow analysis.

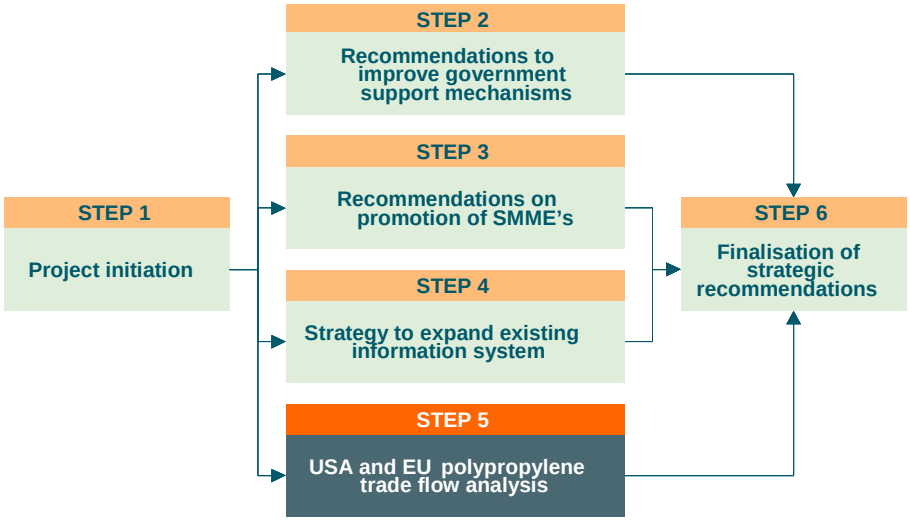

Figure 1: Overall project process context

As part of the FRIDGE study in preparation for the Chemicals Sector Summit, research was commissioned to identify specific growth opportunities for South African resin and plastics producers in the US and EU polypropylene (PP) markets. Alongside polyethylene and polyvinyl chloride, PP is now one of the leading resins worldwide and further growth is expected.

The key objectives of this workstream were to:

- Identify the main categories of PP products that are traded in the value chain, and determine the associated HS codes (best fit)
- Determine PP products most heavily traded in the US and EU (demand analysis)
- Analyse South Africa's current exports to the target markets for the main product categories (supply analysis)
- Recommend the highest potential product to market opportunities across the EU and US PP markets

This document details the final outputs of the PP trade flow analysis. The analysis reviews trade flows for 8 PP commodity groups identified at HS 6-digit level based on data from ITC TradeMap[7] as per the agreed scope. In addition, a trade flow analysis for 5 nonwoven commodity groups was conducted. While nonwovens contain materials other than PP only, they are an important PP application.

The product selection process and the trade flow analysis methodology are described in detail below.

[7] Detail on the methodology followed is provided in section 2 of the document.

2 Methodology

A four-step process was used to conduct the PP trade flow analysis, as per the following figure:

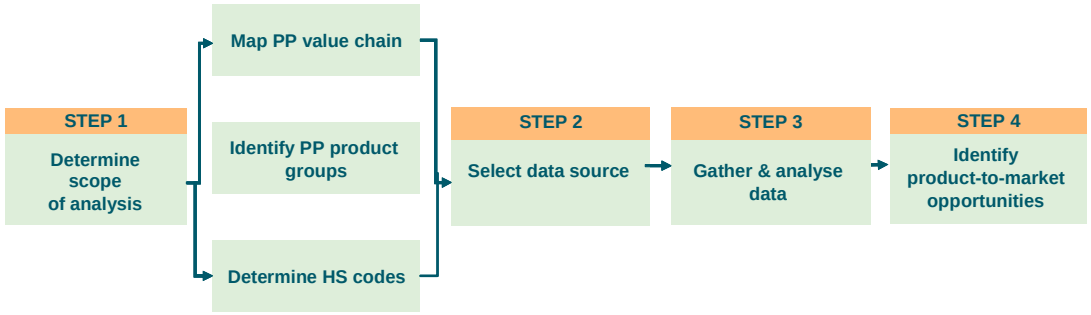

Figure 2: Trade flow analysis methodology

2.1 Step 1: Determine scope of the analysis

At the outset of the trade flow analysis the scope of the analysis was determined as follows:

- Map the PP value chain
- Identify key PP product groups
- Determine relevant trade classification codes for products

2.1.1 Map the PP value chain

The production of PP resins and associated products involves the following supply chain[8]:

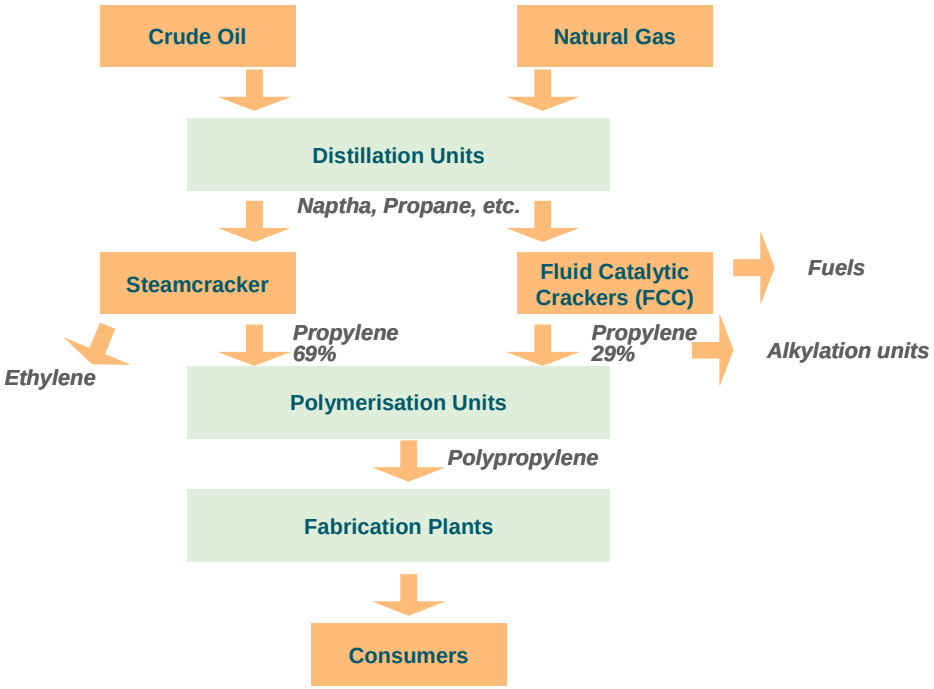

Figure 3: PP Supply chain

8 Source: B. Kuhlke and Dr. T. Walsh, "World Plastics Market Review" (2001)

2.1.2 Identify PP product groups

Based on a review of PP market data and plastics manufacturing reference guides[9], a map of the PP value chain that sets out PP production from feedstock to end-use product categories was developed. As indicated in the figure below PP is manufactured from propylene feedstock. The figure provides an overview of the PP value chain:

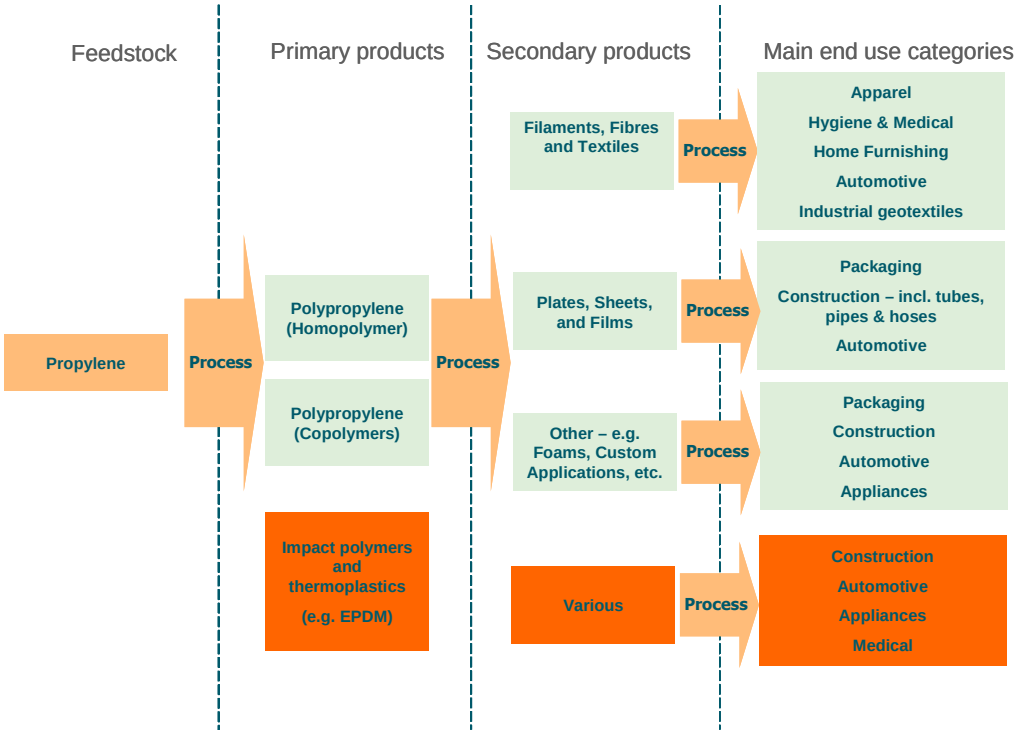

Figure 4: PP Value Chain Map

- The value chain was divided into three categories:
  - Primary products – the tradable products that are made from the above feed stock, including the following two product categories:
    - PP (homo polymers)
    - PP (co polymers)
    - Please note: according to the agreed scope impact polymers and thermoplastics such as EPDM were not included in the trade flow analysis.
  - Secondary products
    - The tradable interim forms of PP that are used in the production of end-use products, includes the following three product categories:
      - Filaments, fibres, and textiles (including nonwovens)
      - Plates, sheets and films
      - Other – including foams
  - Main end-use categories – the end-use product categories that draw on either primary or secondary PP products in their production

9 Key source: Clive Maier & Teresa Calafut, "Polypropylene: The Definitive User's Guide and Databook", Plastics Design Library, William Andrew Publishing (1998)

2.1.3 Determine the relevant HS tariff codes for the selected product categories

The relevant tariff coding for the PP products based on the Harmonized Commodity Description and Coding System (HS) were then identified. The international HS is a multipurpose international product nomenclature developed and administered by the World Customs Organisation (WCO) in Brussels. It comprises ~5,000 commodity groups; each identified by a six digit code, arranged in a legal and logical structure, and is supported by well-defined rules to achieve uniform classification. The system is used by more than 190 countries and economies as a basis for their Customs tariffs and for the collection of international trade statistics. Over 98 % of the merchandise in international trade is classified in terms of the HS.

Traded commodities are sorted into sections and into HS chapters at HS 2-digit level that represent a particular family of products. The tariff chapters that fall within the chemicals sector are as follows:

- Section VI: Products of the chemical or allied industries (Chapters HS 28 – 39)
- Section VI: Plastics and rubber and articles thereof (Chapters HS 39 – 40)

Under each chapter these product families are further disaggregated into subcategories at the HS 4-digit level (e.g. 3902 - Polymers of propylene or other olefins, in primary forms). These subcategories are further disaggregated down to the HS 6-digit level (e.g. 390210 - Polypropylene, in primary forms), and then further to HS 8 and 10 digit level (390210 00 and 390210 0000 Polypropylene in primary forms).

Within the above chapters, many products are clearly identified as PP-based at HS 6 level – these are some of the most heavily traded PP goods. Importantly, PP goods identified at this level provide a consistent data set for the EU, US and South Africa, as the HS 6 classification is universal. However, at the HS 8 and 10-digit level classifications are done on a local basis and are not internationally consistent. However, the following should be noted:

- Some relevant products in the PP value chain are not clearly identified at HS 6-digit level or even at HS 10-digit level. For example, nonwovens are a key PP product; however, non-woven products are identified under HS 3921 90 together with other plastics covered textiles.
- Chapter 40 includes impact copolymers and thermoplastic vulcanizates that are formed by addition of other resins such as ethylene-propylene-diene monomer (EPDM) to PP homopolymers or copolymers.

Also, please note that the chemicals sector tariff sections do not cover key end-use categories in detail. Many PP applications are highly customised (e.g. automotive) or part of finished goods (e.g. appliances) and therefore not traceable as PP products in trade statistics. To ensure the product list is as complete as possible, tariff sections associated with key end-use categories were also investigated.

- Section XI: Textile and textile articles (chapters 50 – 63)
- Section XII: Footgear, headgear etc. (chapters 64 – 67)
- Section XVII: Vehicles and associated transport equipment (chapters 86 – 89)
- Section XX: Miscellaneous manufactured articles (chapters 94 -96)

While a more differentiated analysis is possible at HS 8-digit and HS 10-digit level to some degree, this approach had implications for data comparability and scope of work:

- HS 8 and 10 digit level goes beyond scope as per the proposal; the increased number of products at 8/10 digit level equals an increased number of products to be analysed.
- Different definitions at this level (see e.g. below) make it impossible to do like-to-like comparisons of products in different markets. However, as can be seen from the example, it could allow for further analysis of market specific products.

Tariff Code	US ITC HS8 Product description	EU CN 8 product description
540249	Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: Other yarn, single, untwisted or with a twist not exceeding 50 turns per metre: Other:	
54024910	Certified by the importer to be used in the manufacture of wigs for dolls	Of polypropylene

Figure 5: Example of difference in US and EU classification at 8 digit level

It was decided to focus the trade flow analysis on products clearly identified as PP-based across all chapters at HS 6 level and nonwovens products at HS 6 level. This therefore covered the most heavily traded PP goods (chemicals sector plus related downstream sectors), and enabled good data comparability across US, EU and SA.

The following are the eight HS 6-digit level product codes for polypropylene products that were analysed:

- HS 3902 10 (Polypropylene, in primary forms)
- HS 3902 30 (Propylene copolymers, in primary forms)
- HS 5503 40 (Staple fibres of polypropylene, not carded or combed)
- HS 5607 41 (Binder or baler twine of polyethylene or polypropylene)
- HS 5607 49 (Twine, cordage, rope and cable of polyethylene or polypropylene - excluding binder or baler twine)
- HS 3920 20 (Other plates, sheets and film etc, non-cellular etc, of polymers of propylene)
- HS 6305 33 (Sacks and bags, for the packing of goods, of polyethylene or polypropylene) strip or the like (excluding flexible intermediate bulk containers)
- HS 3917 22 (Tubes, pipes and hoses, rigid; of polymers of propylene).

The following are the five HS 6-digit level product codes for nonwoven products that were analysed:

- HS 560311 Nonwovens, man-made filaments weighing <25g/m2
- HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2
- HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2
- HS 560314 Nonwovens, man-made filaments weighing >150g/m2
- HS 392190 Film and sheet etc, nes of plastics

2.2 Step 2: Select data source

A number of different sources of trade data were reviewed, in order to identify the most appropriate data source for this trade flow mapping exercise. The following table provides and overview of the reviewed data sources and their relative suitability:

Statistics Source	Volume	Value	Most recent trade data	Comments
ITC Trademap	Yes	Yes	2003	Imports and exports Harmonised System (HS) categorisation at the 6-digit level Free of charge
GTIS Database – Global Trade Atlas	Yes	Yes	2003	Imports and exports HS categorisation to 6-digit level Requires subscription fee to access
WTO Trade Data	No	Yes	2002	High level statistics by country, sector or region No PP-specific statistics
U.S. International Trade Commission	Yes	Yes	2004	US imports only HS, SIC and NAICS categorisation

Statistics Source	Volume	Value	Most recent trade data	Comments
(ITC) Trade Database				Data available to 10-digit HS level
EU – Eurostat / European Union Publications Office	Yes	Yes	2002	EU imports only HS and Common Nomenclature (CN) down to 8-digit level Requires subscription fee to access
SARS Postal Code Export Data	Yes (no definition of unit)	Yes	2003	Exports from South Africa only HS categorisation to 8-digit level

As can be seen from the above table, the ITC data set offers the most comprehensive and detailed statistics for the target market regions from both a demand and supply perspective. As such, ITC was selected as the primary data source for the statistical analysis and it was decided to complement it with the other available data sources where necessary.

2.3 Step 3: Gather and analyse the statistical data

Statistical data for each of these individual product categories was gathered on the basis of five statistical measures, i.e.:

- Value for 2003 in US$
- Volume for 2003 in the unit of measurement per commodity where available
- Value per unit where available
- Growth in value where available
  - Average % per annum growth 1999 – 2003
  - % Per annum growth 2002 – 2003
- Growth in volume where available
  - Average % per annum growth 1999 – 2003

Analysis was then conducted on these statistics from both import demand (EU and US) and South African export statistics.

In order to provide an overview of the key market trends, a high-level review of recent market reports was also conducted. Please note that this analysis was not required under the terms of the contract. It was nevertheless conducted in order to provide some insight into the key issues in the PP industry that may prove informative for the constituencies' discussion on the sector's prospects and development needs. The outputs of this review are included in section 5 of this document.

2.4 Step 4: Identify high potential product-to-market opportunities

In order to identify high potential product-to-market opportunities, a multiple ranking analysis of the following demand side factors was conducted:

- Import market size - imported value 2003 in US$ thousand
- Import market size adjusted for intra-regional trade - imported value in 2003 in US$ thousand, excluding intra-EU/intra-NAFTA trade
- Import market growth - import trend in value between 1999 and 2003, %, p.a.

First, the total product-to-market opportunities were ranked according to each of the criteria. The top 30 product-to-market combinations determined for each of the three above ranking criteria were further evaluated as follows:

- Highest opportunity product-to-market combinations are those product-to-market combinations that are ranked within the top 15 on both import market measure plus top 30 in import market growth terms

- High opportunity product-to-market combinations are those product-to-market combinations that score highly on two of the three ranking criteria (i.e. within the top 15 in terms of total import market size, within the top 15 in terms of total import market size adjusted for intra-EU/intra-NAFTA trade, and/or top 30 in import market growth terms)

2.5 Step 5: Additional market research

Additionally market research was conducted by interviewing stakeholders and consolidating market research reports to gain a deeper understanding of the import markets for polypropylene products. This was conducted with an emphasis on end use products in order to complement the trade flow analysis which was limited to an analysis of primary and secondary products.

B. FINDINGS

3 Overview of PP products and associated HS tariff codes

3.1 PP primary products

Although the emphasis of this study is on beneficiation, primary PP products represent large markets which are useful to understand and these were therefore included in the analysis. This analysis focused on two primary PP products – homopolymers and copolymers. These are the key PP products produced by polymerising propylene, and are the key tradable products that are further processed to produce fibres, films, etc.

Value Chain Category	HS Code	HS Product description	Potential End Uses
Polypropylene (Homopolymer)	3902 10	Polypropylene, in primary forms	Extruded for filaments & fibres Extruded for films (oriented & unoriented) Injection moulded for automobile parts, appliances, housewares, containers, and toys.
Polypropylene (Co Polymers)	3902 30	Propylene copolymers, in primary forms	Extruded for films (oriented & unoriented) Injection moulded for rigid & semi-rigid packaging, video cassette cases, toys, and reusable food containers. Blow moulded for hot-filled bottles, and refrigerated for medical and food packaging.

3.2 PP fibres and textiles

PP is extremely versatile as a fibre-forming material. Fibres account for a large proportion of PP use – e.g., more than one third of the PP used in the US goes into fibre and fibre-related products[10].

Owing to their properties, PP fibres have gained more and more extensive applications in decoration, industrial and clothing sectors and become the second major variety of synthetic fibres. PP fibres refer to fibre products made of PP through melt spinning.

Polypropylene fibres are one of many fibres made from synthetic polymers. The other most common synthetic are polyester, polyamide (often called nylon), acrylic and modacrylic, the segmented polyurethanes which are elastic fibres known as elastanes (or spandex in the USA), and speciality fibres such as the high performance aramids. The following figure provides a classification of man-made fibres[11]:

[10] Olefin fibre - Raghavendra R. Hegde, Atul Dahiya, M. G. Kamath (2004)
[11] CIRFS – International Rayon and Synthetic Fibres Committee

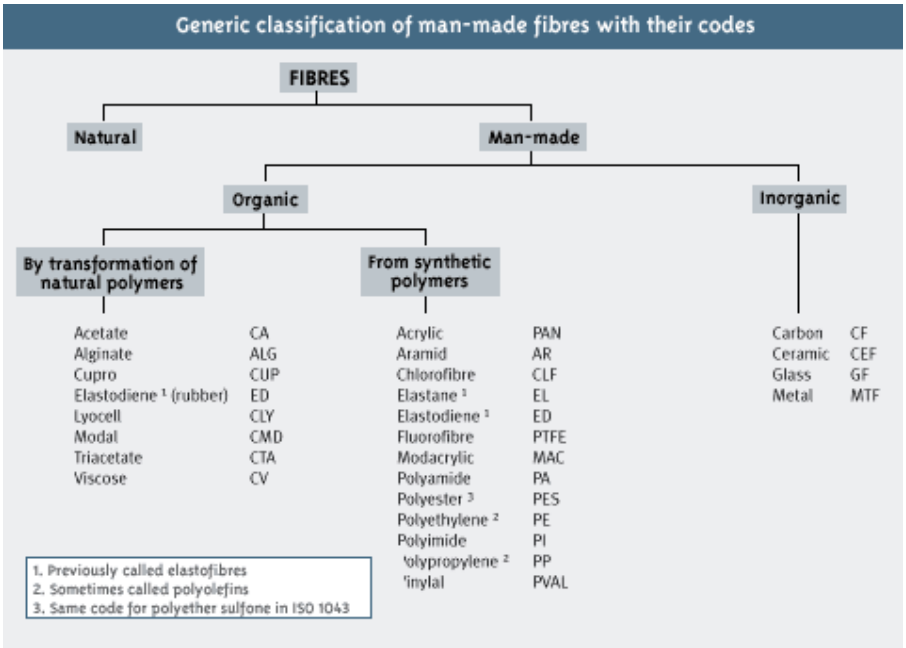

Figure 6: Classification of man made fibres

The main synthetic fibre types include the following:

- Olefin Staple Fibre
- Olefin Filament Fibre
- Olefin Carpet BCF Filament Fibre
- Olefin Film Fibre
- Polyethylene Fibre

The main applications for PP fibre are as follows:

- **Hygiene:** PP fibres are the preferred fibres for disposable hygiene products such as baby diapers, feminine care products, medical textiles, because of polypropylene fibres' ability to offer softness, dry surface, liquid transportation, strength and elongation properties, and because polypropylene fibres are considered the most environmentally friendly fibre in the market.
- **Apparel:** PP fibres are widely used in activewear and sportswear; socks, thermal underwear; lining fabrics, because of excellent isolation, and water and vapour transport properties.
- **Automotive:** PP fibres deliver the durability and colourfastness required in automotive interior fabrics used in or on the kick panel, package shelf, seat construction, truck liners, load decks, etc.
- **Home furnishings:** PP fibres provide durability, luxurious look and softness for all types of indoor and outdoor carpets. The fibres are also used in carpet backing, upholstery and wall coverings, and furniture and bedding construction fabrics.
- **Industrial:** PP fibres meet the strict requirements for strength and durability in geotextile markets. The fibres provide the foundation for high efficient filtration products. Polypropylene fibres reinforce textile, fabrics, and paper products for durable nonwoven fabrics, filter fabrics, packaging materials, geotextiles and other industrial applications.

The main HS tariff codes for PP fibres and textiles tracked in this analysis are:

- **HS 5503 40 (Staple fibres of polypropylene, not carded or combed)**
- **HS 5607 41 (Binder or baler twine of polyethylene or polypropylene)**
- **HS 5607 49 (Twine, cordage, rope and cable of polyethylene or polypropylene - excluding binder or baler twine)**

Please note: nonwoven textiles are discussed separately below.

3.3 PP plates, sheets and films

Alongside polyethylene, PP is the main material used in packaging films. PP film is often used in packages that require sterilisation at high temperatures. It may also be used to package cigarettes, candy, snack foods, bakery products, cheese and sanitary products. It is also found in shrink wrap, tape, tobacco wrap, diaper coverstock, and sterile wraps.

There are two main types of PP film:

- BOPP (Biaxially Oriented PP)
  - BOPP has the advantages of small weight, great mechanical strength and good measurement stability. It is extensively used in the packing sector, especially in food packing. BOPP can be classified by application into glossy film, smoky film, electrical film and pearly film.
- CPP (Casting PP)
  - CPP features strong blocking, low heat sealing temperature, great printing and comprehensive compatibility and cooking resistance.
  - Compared with BOPP, CPP has the advantages of simple processing equipment and low unit area cost. It also has scratch resistance and mechanical properties. It therefore holds an important position in the packing sector.

PP plates and sheets are widely used in the manufacture of appliances, medical goods, consumer goods, and building and construction.

The following table provides an overview of the main HS tariff codes for PP plates, sheets and films tracked in this analysis:

Value Chain Category	HS Code	HS Product description	Potential End Uses
Plates, Sheets and Film	3920 20	Other plates, sheets and film etc, non-cellular etc, of polymers of propylene	Mainly food packaging – esp. BOPP and CPP films; also pressure sensitive tape, shrink wrap, flower wraps, sterile wraps, stationary, etc. Medical, Appliances, Consumer, Building and Construction (Conversion processes: extrusion, co-extrusion, extrusion coating, extrusion laminating and metallising.)
	6305 33	Sacks and bags, for the packing of goods, of polyethylene or polypropylene strip or the like (excluding flexible intermediate bulk containers)	

3.4 PP foams

Please note that this analysis did not cover PP foams, as they are not identifiable at HS 6-digit level.

Market research suggests that there is a growing demand for PP foams, or so-called expanded PP products:

- Growing demand for extruded PP foams in a market that has traditionally been served by polyurethanes, polystyrene and polyethylene
- PP foams are finding new application areas in:
  - Food packaging: thermoformed, foamed trays (meat, sausages, cheese)
  - Construction: insulation material
  - Automotive: car interiors
  - Protective packaging: transport protection

3.5 PP pipes and tubes

PP pipes have the features of high-temperature resistance, convenient connection (by heat, electricity and fitting) and recoverability. They are mainly used in water transmission systems in farmlands, water supply systems and heating systems in buildings and chemical pipeline systems. Recent materials innovation has produced PP pipes and tubes that have greater strength, greater toughness, higher impact resistance, high-temperature resistance and longer service life.

The main HS tariff code for PP pipes and tubes tracked in this analysis is **HS 3917 22 (Tubes, pipes and hoses, rigid; of polymers of propylene)**.

3.6 Nonwovens

Nonwoven textiles are made directly from individual fibres that are matted together by forming an interlocking web of fibres either mechanically (i.e. by tangling the fibres together) or chemically by gluing, bonding, or melting them together. The nonwoven substrates can be composed of a variety of fibre types, including polypropylene and polyester polymer extrusions, cellulose or wood pulp, rayon or viscose, or bicomponent materials. However, the dominant fibres used in nonwovens are polypropylene, polyester and rayon.

There are two main processes for manufacturing nonwovens from plastic resin – the meltblown fibre process, and the spun bonded fibre process.

The following table provides an overview of the main HS tariff codes for nonwovens tracked in this analysis. Please note that these tariff codes include other plastics and non-plastic materials, and that it is not possible to separate out the PP contribution to trade in nonwovens.

Value Chain Category	HS Code	HS Product description	Potential End Uses
Non-woven textiles	5603 11	Nonwovens, of man-made filaments weighing <25g/m2	Hygiene & medical – diapers, feminine care products, etc. Medical – operation gowns and other medical textiles, etc. Apparel - activewear and sportswear, socks, thermal underwear, lining fabrics, etc. Automotive/aerospace – interior fabrics, sound insulation, heat shielding, roof lining, etc. Home furnishings – indoor and outdoor carpets, carpet backing, upholstery and wall coverings, furniture and bedding construction textiles Industrial – filtration materials, geotextiles, packaging materials, etc. (Conversion processes: spunbonded and melt blown fibre processes)
	5603 12	Nonwovens, of man-made filaments weighing 25-70g/m2	
	5603 13	Nonwovens, ofman-made filaments weighing 70-150g/m2	
	5603 14	Nonwovens, man-made filaments weighing >150g/m2	
	392190	Film and sheet etc, nes of plastics	

The main end uses for nonwovens are as follows[12]:

- **Personal Care & hygiene:** disposable hygiene products such as baby diapers, feminine care products, adult incontinence products, dry and wet wipes, cosmetic removal pads, etc.
- **Home:** wipes/mops, vacuum cleaner bags, washing pouches, fabric softener, kitchen and fan filters, tea and coffee bags, napkins and tablecloths, food wrap, etc.

[12] Source: EDANA – the European Disposables and Nonwovens Association

- **Medical:** surgical disposable gowns, masks, caps, and shoe covers; bed linen, dressings and wipes, examination and contamination control gowns, incubator mattress, fixation tapes, etc.
- **Clothing & leisure:** Interlinings, clothing insulation and protection, handbag and shoe components, disposable workwear, fire protection and chemical defence suits, food delivery bags, sleeping bags, tents, etc.
- **Furnishings:** furniture and bedding construction, curtains, wall coverings, carpet backings, lampshades, etc.
- **Automotive/aerospace:** boot liners, heat shields, shelf trim, decorative fabrics, seat covers, cabin air filters, silencer pads, insulation materials, etc.
- **Construction, geotextiles & industrial:** roofing and tile underlay, thermal and noise insulation, pipe warp, vertical drainage, geotextiles (including asphalt overlay, sedimentation and erosion control, drainage channel liners, etc.), coated fabrics, filtration products (including air, liquid and gases), satellite dishes, conveyor belts, artificial leather, battery separators, agriculture (including crop covers, seed blankets, root bags, capillary matting, etc.), etc.

4 High-level PP market trends

4.1 Introduction

In order to provide an overview of the key market trends, a high-level review of recent market reports has been conducted. Please note that this analysis was not required under the terms of the contract. It was nevertheless conducted in order to provide some insight into the key issues in the PP industry that may prove informative for the discussion on the sector's prospects and development needs.

4.2 Global PP market trends

4.2.1 Market growth

The world polypropylene (PP) market is growing on average 3% a year, with world consumption forecast to rise to 33 million tonnes by 2006[13].

The largest consuming region is Asia, accounting for 38% of world consumption, while North America is experiencing the strongest growth averaging 4% per annum. The USA produces 8 million tonnes a year, and remains the largest manufacturer of polypropylene. The leading exporters of polypropylene are the USA, South Korea, and Belgium-Luxembourg, with Italy, China and Germany being the main importers. (N.B.: Regional capacity and consumption growth trends and growth by PP application area are discussed further below).

The main drivers of growth in the global PP market include:

- *New applications* – the increasing range of performance characteristics means that PP can be used in a vast array of applications
  - Owing to its good heat resistance, corrosion inhibition, electric insulation, low density, low raw material price and easy raw material availability, PP has become the variety with the most rapid growth among general-purpose resins in the world in recent years. Its consumption is only second to that of PE and PVC[14].
- *Existing applications growth* – PP is increasingly substituting other plastics materials due to lower costs and relatively easy raw materials availability
  - PP has replaced high-density polyethylene, engineering plastics, and polystyrene in many applications
  - In the plastics industry there is discussion that further growth in the PP market could come through a greater focus on encouraging substitution of other materials such as woods and metal as well (rather than cannibalising sales of other resins)[15].
- *Massive demand growth from China*[16]
  - China is expected to eventually be the largest consumer of PP after the US. China already exports goods with a high PP content such as washing machines, and is likely to start exporting a significant volume of vehicles in the near future. It is emerging as the leading centre for semi-finished and finished goods manufacture and will be the engine for growth for the global PP industry[17].

However, fluctuating market prices and feedstock shortages pose major threats to PP market growth. These threats are discussed in further detail below.

[13] Gobi International, World Polypropylene Market (2003)
[14] China Chemical Reporter, "Present state and development prospect of PP" (Oct. 2003)
[15] "…PP makers should try to focus on basic material replacement vs. metal or wood, rather than on replacing other plastics. *'The difficult change is going from other materials into plastics.… Once they're in plastics, sooner or later they end up in polypropylene.'* " - Chuck Platz - president of PP leader Basell North America; quoted in Plastics News; "Feedstock, Far East hurdles for resin makers." (Feb. 2004)
[16] Engineering News, "Polymer market hits fly-up" (Oct. 2004)
[17] Chemical Week Associates, Industry shake out ahead: ownerships change and Japan restructures" (Aug. 2004)

4.2.2 Market prices

Market prices for PP resins are volatile. During 2004 prices for most major commodity resins increased by 20-40%[18]. For PP the price increases have been more moderate with North America showing an increase of about 25%, Europe of 10-12% and Asia of 5-10% depending on the grade[19].

This is mainly in response to increasing energy and monomer costs driven by the massive increases in costs for crude oil and natural gas. Demand in markets such as the US has been very robust and processors there have been operating at 90-95% capacity utilisation. This has enabled them to stabilise margins[20]. US processors have therefore been able to balance margins, although they remain weak due to the increased operating costs.

The volatile raw materials costs are potentially encouraging a shift to monthly pricing in Europe. Traditionally, prices in most parts of the European chemicals sector have been fixed for periods of 4 – 12 months or even longer. There is now growing pressure across all olefins to change this pricing system to better cope with swings in feedstock costs[21].

4.2.3 Feedstock supply

The entire PP industry is concerned over anticipated feedstock shortages[22]. The shortage in feedstock supply is partly driven by the high PP growth rates and the fact that much of the new steam cracking capacity is ethane-based. However, this will drive the price of propylene in relation to ethylene and potentially make on-purpose propylene production a viable alternative source of supply and encourage the development of dedicated propylene manufacturing units. Nonetheless, propylene supply is expected to tighten progressively because supply will lag behind demand growth.

By 2008 the propylene shortage may reach 12.5 million m.t. (excluding propylene produced by noncracker sources). Propane dehydrogenation (PDH), metathesis, and methanol-to-propylene (MTP) plants will make up about 4.4 million m.t. of the shortfall. According to analysts refinery fluid catalytic crackers (FCC) could supply an extra 5.2 million m.t./year. Other sources say FCC units are unlikely to supply so much and that the shortfall will be larger than 3 million m.t./year.

The shortage of propylene in Europe is expected to reach 400,000 m.t./year by 2008. Northern Europe will be short by about 600,000 m.t./year, part of which can be supplied from southern Europe.

A previously announced propylene pipeline grid should help alleviate shortages, sources say. The 200-million [euro] (US$240 million) grid is being set up by European Pipeline Development Co. (EPDC; Venlo, the Netherlands), a joint venture among BASE BP, Celanese, DSM, Sabic EuroPetrochemicals, Sasol, Shell Chemicals, and Degussa subsidiary Westgas (Marl, Germany). It will link petrochemical complexes in Belgium, the Netherlands, and Germany, resulting in a reliable transportation of propylene feedstock. About half of Europe's 15 million m.t./year of propylene consumption is in the vicinity of the planned pipeline, EPDC says. Completion is scheduled for the second half of 2007.

However, the market expects that more dedicated propylene production units will need to be built in Europe because PP growth rates there are exceeding those of PE.

[18] Plastics News, “Absorbing the resin effect: The price of change. Ouch!” (Oct. 2004)
[19] Chemical Week, World Outlook on Polypropylene prices (Aug. 2004)
[20] Plastics technology online – “Resin buyers pounded by massive increases” (Sep. 2004)
[21] Chemical Market Reporter, “Volatile raw material costs encourage shift to monthly pricing” (Nov. 2004)
[22] Chemical Week Associates, Industry shake out ahead: ownerships change and Japan restructures” (Aug. 2004)

4.2.4 World PP capacity and consumption

The following table provides an overview of global PP capacity by region for 2004[23]:

Region	Capacity 2004 (million m.t. p.a.)	Capacity growth 2004
Global	41.3	3%
North America	9	flat
Western Europe	9.4	flat
Middle East	1.97	26%
Northeast Asia	11.4	3%
South America	2.1	6%,
Other	n/a	n/a

These capacity additions during 2004 are relatively modest by historical standards. Large amounts of capacity were added between 1998 and 2001, resulting in very low operating rates, low prices, and financial losses. Industry commentators expect capacity additions to be modest through 2007[24].

The following table provides an overview of **regional PP capacities world-wide**[25]:

Region	1990 (k.t.)	2005 (k.t.)	2010 (k.t.)	AAGR% 1990-2010
West Europe	4,317	9,740	9,740	5.6
East Europe	630	2,033	2,233	8.1
Africa	143	685	885	11.0
Middle East	71	3,033	4,093	28.4
North America	4,102	9,186	9,186	5.5
Central/S.America	528	2,537	2,787	11.0
China	463	2,246	3,321	11.1
Japan	1,931	3,083	3,083	3.2
Asia Pacific (excl. CH/JA)	1,778	10,610	10,610	12.6
World	**13,963**	**43,153**	**45,938**	**7.8**

Regional capacity shares show an investment shift from more industrialised regions to developing and less industrialised countries. Western Europe, North America, and Japan accounted for 86% of PP capacity in 1980. However, their combined share will drop to ~ 51% by 2005. The following table shows the **geographical distribution of PP capacity**:

[23] Chemical Week Associates, Industry shake out ahead: ownerships change and Japan restructures" (Aug. 2004)
[24] Chemical Week Associates, "Global top 10 polypropylene producers by company in metric tons for 2004, and forecast for 2007" (Aug. 2004)
[25] Maack Business Services, Study 3050, quoted in Chemical Week Associates; "Global consumption of polypropylene by application in kilotons for 1990 and forecast for 2005 and 2010 Major PP deficit forecast by 2010." (Aug. 2003)

Region	1980	1990	2002	2005
West Europe	32	31	24	23
North America	36	29	24	21
Japan	18	14	8	7
% PP capacity	**86**	**74**	**56**	**51**
East Europe	5	4	4	5
Africa	1	1	1	2
Middle East	0	0.5	4	7
China	2	3	5	5
Asia Pacific (excl. JA)	5	13.5	24	24
% PP capacity	**14**	**26**	**44**	**49**

While global PP consumption growth remains strong, it is forecast to slow down from an average growth in PP consumption of 7.7% p.a. between 2000 and 2005, to an average growth of 5.5% between 2005 and 2010. The following table provides an overview of **regional PP consumption world-wide**[26]:

Region	1990 (k.t.)	2005 (k.t.)	2010 (k.t.)	AAGR% 1990-2005	AAGR% 2005- 2010
West Europe	3,566	10,085	13,180	7.2	5.5
East Europe	580	1,035	1,418	3.9	6.5
Africa	226	1,110	1,567	11.2	7.1
Middle East	260	1,005	1,470	9.4	7.9
North America	3,305	9,617	12,569	7.4	5.5
Central/South America	790	1,874	2,507	5.9	6.0
China	650	7,759	11,186	18.0	7.6
Japan	1,933	3,082	3,662	3.2	3.5
Asia Pacific (excl. JA)	1,190	7,036	8,141	12.6	3.0
World	**12,500**	**42,603**	**55,700**	**8.5**	**5.5**

The industry expects forecast capacity to fall short of demand by about 10 million m.t./year in 2010, despite the large buildup. Further capacity expansion is required to cover expected demand. The following table shows Maack Business Services' forecast **regional delta between capacity and consumption**:

[26] Maack Business Services, Study 3050,quoted in Chemical Week Associates - ibid

	Delta capacity vs. consumption (k.t.)	
Region	**2005**	**2010**
West Europe	-345	-3,440
East Europe	998	815
Africa	-425	-682
Middle East	2,028	2,623
North America	-431	-3,383
Central/South America	663	280
China	-5,513	-7,865
Japan	1	-579
Asia Pacific (excl. JA)	3,574	2,469
World	**550**	**-9,762**

4.2.5 Market by major production process and end-use market

The major fabrications processes for PP plastics are as follows[27]:

- Injection moulding
  - Used for production of small household electric appliances, daily-use articles, toys, washing machines, automobiles and circulating boxes. Internal cylinders, dehydrating cylinders and covers of washing machines are all made of injection-moulding block-copolymerised PP.
- Blow moulding
- Extrusion
  - Fibre
  - Film
  - Sheet & thermoforming
  - Profile
  - Pipe
  - Wire & cable
- Compounding
- Calendering
- Compression moulding
- Other

In the US and Western Europe, PP is mainly used to produce injection-moulded products such as circulating boxes and industrial components. Owing to its good mechanical properties, a great amount of PP is also used in automobile parts. The second largest consumption is in fibre products, followed by film products. In comparison, the consumption structure in Asia is different. Here, the consumption is the greatest in fibre products followed by injection-moulded products in second place[28].

[27] B. Kuhlke and Dr. T. Walsh, "World Plastics Market Review" (2001)
[28] China Chemical Reporter, "Present status and development prospect of PP" (Oct. 2003)

The following table provides an overview of **PP consumption by application**[29]:

Region	1990 KT	2005 KT	2010 KT	AAGR % 1990 - 2005	AAGR 2005 - 2010
Film/Sheet	2,131	8,283	10,787	9.5	5.4
Injection moulding	4,734	15,632	20,951	8.3	6.0
Extrusion coating	64	325	468	11.4	7.5
Pipe/Profile	479	1,564	2,170	8.2	6.8
Wire/Cable	129	249	304	4.5	4.1
Blow moulding	257	868	1,187	8.4	6.5
Fibres/Tapes	3,315	9,922	12,242	7.6	4.3
Other	1,392	5,759	7,591	9.9	5.7
Total	**12,500**	**42,603**	**55,700**	**8.5**	**5.5**

The following table shows **PP consumption by end-use market**[30]:

End-use market	1990 KT	2005 KT	2010 KT	AAGR % 1990 - 2005	AAGR 2005 - 2010
Packaging	3,945	12,721	15,779	8.1	4.4
Construction	621	2,020	2,422	8.2	3.7
Transport	1,599	5,165	6,859	8.1	5.8
Electronic	1,090	4,901	6,875	10.5	7.0
Furniture	1,974	5,842	7,636	7.5	5.5
Household/Wares	1,196	4,319	5,767	8.9	6.0
Other	2,074	7,635	10,362	9.0	6.3
Total	**12,500**	**42,603**	**55,700**	**8.5**	**5.5**

4.2.6 Industry structure - consolidation

Over the past five years there has been significant restructuring of the global polypropylene industry. The number of PP producers in Japan, North America, and Western Europe has decreased since the late 1990s from 43 to 28, while new entrants with PP plants have emerged in developing and less industrialised regions[31].

The leading petrochemicals enterprises have conducted mergers and restructured their businesses to highlight core business, reduce costs and enhance competitiveness. For example, Shell and BASF restructured their PP operations to form a joint venture company, Basell, which is now the largest PP producer in the world. Sabic of Saudi Arabia purchased DSM in mid 2002 to increase its PP capacity to ~2m tonnes per annum and raise Sabic's position in the global PP business. Such consolidation has made the PP production in the world more concentrated, with the capacity of the world top 10 PP producers accounting for ~49% of the world total in 2001[32].

The following table provides an overview of current and future top 10 producers of polypropylene (by capacity)[33]:

[29] Maack Business Service, Study 3050, quoted in Chemical Week Associates - ibid
[30] Maack Business Service, Study 3050, quoted in Chemical Week Associates - ibid
[31] Maack Business Services, Study 3050,quoted in Chemical Week Associates - ibid
[32] Chemical Week Associates, "Global top 10 polypropylene producers by company in metric tons for 2004, and forecast for 2007" (Aug. 2004)
[33] Chemical Week Associates, "Global top 10 polypropylene producers by company in metric tons for 2004, and forecast for 2007" (Aug. 2004)

Top 10 (2004)	Volume in metric tons	Top 10 (2007)	Volume in metric tons
Basell	4.46	Basell	5.1
BP	2.7	BP	2.94 **(1)**
Atofina	2.1	Sinopec	2.5
ExxonMobil Chemical	2.0	Total Petrochemicals	2.1
Sabic	1.67	Reliance	2.0
Borealis	1.5	ExxonMobil	2.02
Reliance Industries	1.4	Sabic	1.6
Dow Chemical	1.2	Borealis	1.36 **(2)**
Japan Polychem	1.1	Mitsui Chem-Idemitsu	1.2
Sunoco	1.075	Dow Chemical	1.1

(1) Includes Secco joint venture with Sinopec
(2) Merging in April 2005

According to Maack Business Services further consolidation can be expected. In particular, the producers with individual capacities below 200,000 m.t./year and therefore lacking economies of scale will find it increasingly hard to compete with world-scale producers.

4.2.7 New production technologies – metallocene catalysts

Over the past few years a new form of catalysts called metallocenes has been changing the plastics industry. This new production method enables polyolefins with more definable properties to be developed. A further promised benefit is that metallocenes enable the modification of the plastic's properties in a single reaction process, thereby cutting the cost of producing high-performance plastics. For example, the ability to manage the alignment of PP's molecular chains provides stiffer plastics that can withstand much higher temperatures and provide better chemical resistance, while cutting out several steps in the production of the plastic.

Metallocenes have started to rapidly penetrate commodity markets (reaching 1+m tons in 2000) and promise the potential of cheap designer plastics[34]. However, while there is growing acceptance of the technology, its market share currently remains very small - metallocenes represented less than 1% of the total global PP market in 2002[35].

The growth of metallocenes has also encouraged the development of even more advanced Ziegler-Natta catalysts and alternative organo-metallic catalysts to rival the properties of metallocene plastics with fewer production challenges.

After years on intellectual property battles, plastics companies have now begun to license the technology en masse and are cooperating around metallocene-based plastics R&D. For example, a recent agreement between ExxonMobil and Basell on metallocene catalysts covers cross-licensing of each other's metallocene polypropylene patents and know-how and joint development of the technology. This agreement represents a step forward in extending the use of metallocene catalysts to produce polypropylene[36].

4.2.8 Trends in end-use markets – packaging

In the US and many of the European markets the packaging industry is the largest end-user of PP resins and plastic materials. In particular, PP film is used in a wide range of packaging applications, including food and cigarettes, while PP plates and sheets are widely used in the manufacture of appliances, medical goods, consumer goods, and building and construction.

[34] The Economist, "Designer Plastics" (Dec. 2001)
[35] Chemical Week, "The polypropylene scene 2002: recovery is on the way." (Sep. 2002)
[36] Chemical Week, "The polypropylene scene 2002: recovery is on the way." (Sep. 2002)

Trends in converted flexible packaging

Oriented PP, used for snack food and confectionery packaging dominated the demand for flexible food packaging, followed by non-oriented PP which is used for textile products, confectionery, and fish and meat product packaging. Additional market research indicates that this is an "expanding area with increased demand each year particularly in the developing regions of the world and with a move from rigid to flexible packaging."[37]

Converted flexible packaging demand in the US reached 2.7 billion kg in 2003 after growing 1.9 percent annually since 1998. This is forecast to grow 2.4% annually through to 2008 as technological advances such as metallocenes, coextrusions, metallised film, laminations and CAP/MAP drive growth.

Plastic films accounted for nearly 80% of all converted flexible packaging demand in 2003 in the US. PP film grew the fastest at 2.8% per year between 1998 and 2003, and had a 20% share of this demand in 2003, second to that of polyethylene. Growth in PE and foil is being constrained by growth in PP usage, and PP is expected to continue to grow the fastest of all materials.

Advances will be driven by polypropylene's low cost, heat sealability, high moisture barrier qualities and optical properties (low haze and high gloss). Additionally PP film demand increases will be due to the need for lower cost yet higher performing materials to replace rigid and other containers, healthy consumer spending patterns, and increased demand for convenient-to-use products such as zippered pouches.

Food packaging markets will present good opportunities, especially in areas such as snack foods. In the baked goods market polypropylene films is expected to show the best growth prospects due to cost and performance advantages over other films, as well as paper and foils.[38] Polypropylene film penetration will however be constrained by the entrenched position of polyethylene in many markets.

In 2003, the main suppliers of converted flexible packaging to the US market were Printpack, Bemis and Alcan.

Plastic caps and closures

Demand for plastic caps and closures grew at 7.5% per year from 1998 to 2003 to US$3.9 billion in the US. Plastic caps and closures are used widely in the closure market because of their price and performance advantages compared with other closures, and there is a broad range of types, including pressurised and standard threaded closures, unthreaded lids and overcaps, synthetic wine corks, and types of dispensing and child-resistant closures. Threaded plastic pressurised caps are mainly made of polypropylene, which moulds well to the threaded bottle neck.

In the US, Alcoa is one of the main participants in this market through its Packaging and Consumer segment and Closure Systems International (CSI) subsidiary, and focuses on pressurised screw caps for carbonated soft drinks, which account for over half of its annual revenues. Amongst its customers are Nestle, Pinnacle Foods and Kraft Foods[39].

Rigid plastic containers

High density polyethylene (HDPE) was the leading plastic container resin in 2003 in the US, but it continues to be displaced by polyethylene terephthalate (PET) due to advances in the

37 http://www.mmh.com/index.asp?layout=articleXml&xmlId=256385210

38 Freedonia Focus on Flexible Packaging

39 Freedonia Focus on Caps & Closures

bottled water market and increased usage in other container applications. HDPE accounted for 48% of plastic containers by volume in 2003 while PET accounted for 39%. However, polypropylene was one of the fastest growing resins at a growth rate of 8.8%, along with PET at 8.1%.

Plastic container demand in the US grew 4.3% per year from 1998 to 2003. Single-serving containers for beverage and food items were a growth area. Advances were made at the expense of glass, metal and other packaging materials. This transition to plastic is however largely complete, resulting in intramaterial rather than intermaterial competition.[40]

In 2003, the three largest suppliers of plastic containers to the US market were Amcor, Owens-Illinois and Plastipak Packaging.

Protective packaging

One of the applications for foams is in protective packaging. The US market is expected to grow at 5.3% per year to US$1.1 billion in 2008, based on the light weight and cushioning properties of foam. Moulded foam will remain dominant, and polyolefin foams will grow due to their scratch protection and cushioning capabilities.

In 2003, the three leading manufacturers of protective packaging in the US were Sealed Air, Pactiv and SCA Packaging North America (Svenska Cellulosa) which accounted for nearly 46 percent of industry sales[41].

4.2.9 Trends in end-use markets – building and construction

There is a range of emerging niche opportunities for PP in the building and construction market. For example, recently wood fibre reinforced PPs have had a growth spurt in applications such as building/construction[42]. Worldwide use of plastics in construction is expected to grow at 3.7% per year between 2005 and 2010. Additionally, the following trends in construction in the US affect PP demand:

Composite and plastic lumber

Composite and plastic lumber demand in the US grew 12.3% annually between 1998 and 2003 to US$1.8 billion. The fastest growing segment was composite lumber used for decking which grew at 16.5% between 1998 and 2003. This is expected to continue to grow at the expense of wood, especially in decking and fencing. Industry participants include Mid-America Building Products and Atlantic Shutter Systems operated by Tapco, Trex and Royal Group Technologies.[43]

Pipe

US demand for plastic pipe grew 2.9% per year between 1997 and 2002 to US$3.8 billion. Polyvinyl chloride pipe and high density polyethylene (HDPE) pipe accounted for 93% of total plastic pipe demand in 2002, with HDPE the fastest growing material. Growth is expected to continue due to plastic's inherent corrosion resistance and lower installation costs.

The top three US plastic pipe producers in 2002 were J-M Manufacturing (Formosa Plastics), Performance Pipe (Chevron Phillips Chemical Company) and Advanced Drainage Systems.[44]

40 Freedonia Focus on Plastic Containers
41 Freedonia Focus on Protective Packaging
42 http://www.robertellerassoc.com/articles/composites04.pdf
43 Freedonia Focus on Plastic Lumber
44 Freedonia Focus on Plastic Pipe

Siding

Polypropylene accounted for less than 2% of siding in a decreasing segment (that includes metal, aluminium, polypropylene, steel and composite materials) at 3.1% a year from 1998. Polypropylene does however have an advantage in that it can be used to increase the insulation properties of siding.[45]

Windows and doors

Plastic products continued to penetrate the window and door market, with annual gains of 13.4% between 1997 and 2002 the fastest growth rate by far in the industry.[46] Currently, opportunities for PP in this segment are minor.

4.2.10 Trends in end-use markets – automotive

Market research conducted as indicated this sector as a growth application for PP products including foam and fibres. Internationally the market for PP in automotive parts is strong. Growth in PP demand has been identified for the following applications:

- Step/running boards have been identified as a growth area for long glass PP
- Headliner energy absorbers are identified as a growth area for EPP bead foams due to in-mould skin/foam lamination technology
- Sun visors are another growth area for EPP application due to multidensity-part integration
- PP is being used increasingly in the production of automotive exteriors such as bumper facia,[47] fender liners, trim and front wings

However, barriers to entry are high. Despite an international tender process for contracts, there is intense competition on price and quality. In addition, the contracts are managed through Tier 1 and 2 suppliers serving the vehicle manufacturers with semi-finished goods. They in turn contract the work to a network of suppliers who typically need significant economies of scale to produce competitively.

4.3 US market snapshot

The US is the largest market for plastics materials and resins worldwide with a value of around US$ 53bn (2003). Thermoplastic materials, composed of polyethylene and polypropylene products, accounted for US$44.4 billion, or 83.8% of total market value sales in 2003. Thermoplastic materials outperformed thermosets, growing 9.5% above 2002 figures, while thermosets registered 4.2% growth over the same period (2002-2003). In the thermoplastic sector, PP remained the strongest performer among thermoplastics in 2003; however, demand for PP grew mainly at the expense of other, more costly, resins. Thermoplastic resins should continue to dominate the market, growing 17.5% over the 2004 to 2008 forecast period to a value of US$54.5 billion by 2008[48].

[45] Freedonia Focus on Siding
[46] Freedonia Focus on Windows & Doors
47 http://www.riotinto.com/media/downloads/speeches/IM%20Forum%20presentation%20Nov04.pdf
[48] Euromonitor, “Plastic materials and resins in the USA” (2003)

The following table shows a breakdown of plastics and resins value by market sector and provides forecasts for 2004 and 2008[49]:

Market sectors	1999 Value in US$m	2003 Value in US$m	Forecast 2004 Value in US$m	Forecast 2008 Value in US$m
Thermoplastics*	40,548.4	44,385.1	46,343.9	54,457.1
Thermosets**	8,238.5	8,580.4	8,684.7	10,630.7
Total	**48,786.9**	**52,965.5**	**55,028.6**	**65,087.8**

* Thermoplastics - Plastics which can be reformed repeatedly by application of heat and pressure. Composed of polyethylene and polypropylene products.
** Thermosets – Plastics which once molded cannot be reformed using heat or pressure. Primarily composed of polyurethane products; also includes a wide range of other materials – e.g. acrylics, alkyds, amino resins, bismaleimides, epoxy, furane, phenolics, polyamides, unsaturated polyesters, and vinyl esters.

In the US the packaging industry remained the largest end-user of plastic materials and resins in 2003, accounting for 23.5% of volume sales. The following table shows US plastics consumption by end-use market in 2003[50]:

End-use market	% volume
Packaging	23.5
Building & Construction	20.0
Consumer & Institutional	15.0
Exports	13.0
Transportation	6.0
Other	22.5

In general, plastics producers in the US have traditionally purchased resin from domestic suppliers. But due to increasing price pressure the market anticipates a strong increase in imports. Imports from Asia have already grown strongly across other resin categories such as PET, PS and PVC, where Asian resin producers often have a 15-20% price advantage over domestic suppliers. However, PP and other polyolefins have, to date, been largely unaffected by the import market – in 2002 imports made up less than 1% of total PP consumption in the US[51].

However, this may change, particularly if the significant amount of Middle Eastern polyolefin capacity comes on-stream over the next five years. This is driven by Saudi Arabia and other countries seeking to maximise supplies of low-priced natural gas. It is unclear in which way this competitive threat may play out. Improvements in logistics, handling and freight costs may enable Middle Eastern suppliers to competitively deliver bulk shipments of PP or enable a proliferation of finished goods to come into the US market. Inability to compete in feedstock costs may in particular damage US exports.

The US plastics industry has become increasingly global over the past 5 years, with many companies shifting the production of commodity resins to emerging markets where costs are lower.

In 2002 the leading domestic producers of polypropylene in the US were as follows[52]:

- **Basell**
- **BP**
- **ExxonMobil**

[49] Euromonitor, "Plastic materials and resins in the USA" (2003)
[50] Maack Business Service, Study 3050, quoted in Chemical Week Associates - ibid
[51] Plastics News, "More processors buying overseas resin" (Aug. 2003)
[52] Chemical Week, "Polypropylene market review" (Aug. 2004)

- Atofina
- Sunoco
- Dow Chemical
- Huntsman
- Pinnacle Polymers
- Phillips-Sumika Polypropylene
- Phillips/Tosco
- Equistar Chemicals

Some key trends in the US plastics market are as follows:

- Despite the general perception of overcapacity in the industry, several new facilities are expected to come online in the next several years, putting further pressure on the already declining margins.
- Industry sources expect a niche to form in the market for smaller players that can differentiate themselves by offering specialty products, but the best strategy in many sectors, especially for major resins, may be to enter into alliances with the larger players.
- Growth from material substitution is expected to slow over the forecast period, as many of the industrial applications for plastic have been exhausted.
- Consolidation will continue in the long term and has already been significant in some sectors, notably PE resins and styrenics. According to many producers, further consolidation is needed in the PE sector where many producers remain in dire financial troubles. Instead of continually introducing numerous new grades and alloys, resin suppliers will likely create more targeted specific applications for certain products or industries, leading to more profitable growth.

4.4 Germany market snapshot

With a volume of 13.9 million tons (2003) Germany is the world's third largest plastics producer after the US and Japan, and accounted for approximately 8.5% of global production. German plastic materials and resins production accounted for about a third of the EU plastic materials and resins output in 2003.

The biggest sector within the market for plastic materials and resins remains the “other technical plastics” sector, which includes PET, accounting for 38.1% of the market. Polypropylenes account for ~11.5% of total market volume. However, polypropylene resins have shown strong growth in an otherwise declining market. Between 1999 and 2003, the German market for plastic materials and resins decreased by 5.3%. The plastics market suffered from the slowdown in Germany's manufacturing industry and economy from 2000 onwards. In contrast, polypropylenes increased 28.7% in volume terms due to growing demand across Europe and Germany due to its vast array of applications. Polypropylenes are expected to show growth of 11.8% to 2008.

The following table shows a breakdown of plastics and resins volume by market sector and provides forecasts for 2004 and 2008[53]:

Market sectors	1999 Volume in million tonnes	2003 Volume in million tonnes	Forecast 2004 Volume in million tonnes	Forecast 2008 Volume in million tonnes
Resins	2.2	2.0	2.0	2.1
Polyethylenes	3.5	3.1	3.1	3.2
PVC	1.4	1.2	1.2	1.3
Polypropylenes	1.2	1.6	1.7	1.9
Polystyrene	0.7	0.7	0.7	0.9
Other technical plastics (including PET, Duroplastics, and Thermoplastics)	5.7	5.3	5.3	5.4
Total	**14.7**	**13.9**	**14**	**14.8**

In Germany the packaging industry remained the largest consumer of plastic materials and resins in 2003, accounting for 27% of market volume. The following table shows plastics consumption by end-use market in 2003[54]:

End-use market	% volume
Packaging	27.0
Construction	23.0
Automotive industry	8.0
Electronics	7.0
Furniture	7.0
Household appliances	5.0
Agricultural	1.5
Other	21.5

The main players in the plastics and resins market in Germany are as follows:

- BASF AG
- Bayer AG
- Wacker-Chemie GmbH
- Degussa AG
- Solvay Deutschland GmbH

[53] Euromonitor, "Plastic materials and resins in Germany" (2004)
[54] Euromonitor, "Plastic materials and resins in Germany" (2004)

Some key trends in the German plastics market are as follows:

- The threat posed by cheaper imports will continue to impact on German producers, whilst at the same time Asia and Eastern Europe offer the most lucrative growth prospects.
- Mergers and cooperation agreements between global players are expected to intensify. Outsourcing production and product specialisation are expected to increase as manufacturers attempt to cut costs
- Europe was Germany's largest recipient and supplier of plastic products and resins in 2003, accounting for approximately 70% of exports and 80% of imports in volume terms. Imports from other European countries, particularly from Central Europe have risen as these economies redirected their foreign trade to the West, competing successfully on prices. However, there is also a strong demand for more specialised products (propylene) in the emerging markets of Eastern Europe and Asia, due to the growth of automotive and consumer goods industries there. Despite still being low, imports from Asian countries are rising steadily as production costs in these countries are generally lower.

4.5 France market snapshot

The French plastics processing industry, including resins and technical plastics, is the fourth largest in the world and the second largest in Europe after Germany. The French market for plastics materials and resins has grown by 0.8% since 2002 to reach a volume of 6.7 million tons in 2003. Over a five-year review period volume sales increased by 7.2%.

In 2003 polypropylene was the largest sector in volume terms at 24%, reaching 1.6 million tons. Technical plastics, such as polystyrene, polypropylene and PET, are gradually replacing traditional metal in most industries as they cover a large range of products with narrow market niches.

Polypropylene is set to retain the largest share of the market, with an expected value share of 25.9% in 2008. Demand in the polypropylene sector will be driven mainly by the automotive industry, as the use of plastics in cars increases.

The following table shows a breakdown of plastics and resins volume by market sector and provides forecasts for 2004 and 2008[55]:

[55] Euromonitor, "Plastic materials and resins in France" (2004)

Market sectors	1999 Volume in million tonnes	2003 Volume in million tonnes	Forecast 2004 Volume in million tonnes	Forecast 2008 Volume in million tonnes
HDPE	0.67	0.69	0.69	0.70
LDPE	0.84	0.90	0.90	0.94
LLDPE	0.41	0.45	0.46	0.47
PET	0.062	0.085	0.088	0.13
Polypropylene	1.42	1.61	1.64	1.86
Others	0.97	0.99	0.99	1.04
Polystyrene	0.62	0.68	0.69	0.76
PVC	1.26	1.29	1.28	1.28
Total	**6.27**	**6.72**	**6.76**	**7.19**

The main players in the plastics and resins market in France are as follows:

- Royal Dutch Shell
- Exxon Mobil Inc
- BP Group
- ATOFINA

Some key trends in the French plastics market are as follows:

- French producers, like their European counterparts, have been among the most active in forming alliances and mergers to rationalise their production facilities.
- The recycling system will be a concern for the whole European industry and therefore France will be pushing for a global waste policy while the European Commission will be considering further environmental legislation.

4.6 UK market snapshot

The UK market for plastic materials and resins has grown by 1.1% in 2002 to reach a volume of 4.8 million tons in 2003. Between 1999 and 2003 the market grew by 3.9%. Demand for plastic products suffered during the recession of the early 1990s as end-user demand in leading sectors such as the construction industry was depressed. However, by the mid 1990s, relatively strong nominal annual market growth had been restored to the sector, which went on until 2002. The market is forecast to grow by more than 4.7% to reach a volume of 5 million tones in 2008. This gives an annual average sales growth of around 1% over the forecast period.

The following table shows a breakdown of plastics and resins volume by market sector and provides forecasts for 2004 and 2008[56]:

Market sectors	1999 Volume in million tonnes	2003 Volume in million tonnes	Forecast 2004 Volume in million tonnes	Forecast 2008 Volume in million tonnes
L/LLDPE	0.9	0.9	0.9	0.9
HDPE	0.5	0.5	0.5	0.5

[56] Euromonitor, “Plastic materials and resins in the UK” (2004)

Market sectors	1999 Volume in million tonnes	2003 Volume in million tonnes	Forecast 2004 Volume in million tonnes	Forecast 2008 Volume in million tonnes
PP	0.7	0.8	0.8	0.8
PVC	0.7	0.8	0.8	0.8
PS	0.2	0.2	0.2	0.3
PET/PST	0.2	0.3	0.3	0.3
Others	1.2	1.3	1.3	1.4
Total	**4.6**	**4.8**	**4.8**	**5.0**

The main players in the plastics and resins market in the UK are as follows:
- BP plc
- ICI
- Royal Dutch/Shell Group
- Linpac Group Ltd
- Huntsman Chemical Company Ltd

A key trend in the UK plastics market is the relocation of production facilities to Eastern Europe and Asia where prices are lower.

4.7 The South African polypropylene market

The petroleum and petrochemical industry is dominated by four oil refineries, plus the Sasol and PetroSA operations. Petrochemical production is centred primarily around the Sasol II and Sasol III plants at Secunda and the Natref refinery at Sasolburg. Using the Fischer Tropsch process, Sasol produces about two million tons per annum of a range of various olefins for the petrochemical industry.

Other main players in South African plastics and rubber industry include:
- SANS Fibres - producing mainly polyester polymers
- Bowler Metcalf
- Sondor Industries – also official supplier of Dow Performance Foams in SOUTH AFRICA
- Sasol Fibres

By far the largest market in sub-Saharan Africa, *PlastPack Africa* estimates the current value of South Africa's entire plastics market at around R25 billion, accounting for 0.7% of the world market. The association estimates that per capita consumption of plastic is about 22kg. South Africa's market is also characterised by a high utilisation of conversion technologies and consumes large quantities of products like film, sheet, packaging, kitchenware, furniture, pipes, footwear, and industrial parts. Plastics recycling and environmentally friendly plastics are considered increasingly important for the industry[57].

According to the dti, the petrochemical and plastics cluster, which focuses on the chain from production of polymers to plastic products, also has significant export potential particularly in the plastics conversion sub-sector. However, the potential shortage in the availability of petroleum products and of primary feedstock such as olefins and basic aromatics are becoming critical issues for sustainable growth in the industry. The possibility of a number of feedstock projects such as a Naptha Cracker as well as a new world scale refinery with an aromatics unit is being proposed. This is expected to lead to further downstream investment potential in major imported chemicals such as ethylene, glycol, styrene, and terephthalic acid.

[57] Modern Plastics International, “Africa – a look beyond preconceptions” (Aug. 2004)

5 High-level nonwovens market trends

5.1 The global nonwovens market

Europe dominates the world production of nonwovens[58]:

Producer country	Tonnes (2002)	% total	Tonnes (2003)	% total
Europe	1,213,100	32	1,288,400	31
North America	1,074,000	28.0	1,108,000	27
Japan	295,900	8	296,800	7
China	497,000	13	615,000	15
Other ANFA Member Countries	266,200	7	275,800	7
Others	480,000	12.5	510,000	12
TOTAL	**3,826,200**	**100**	**4,102,600**	**100.0**

During the 1990s the nonwovens industry grew at an average of 7.5% p.a. and is forecast to grow at a similar rate through to 2006.

Polypropylene dominates staple fibre consumption in nonwovens accounting for more than a third of total consumption[59]:

Staple fibre consumption in nonwovens	% total
Polypropylene	36
Polyester	23
Rayon	10
Woodpulp	16
Bicomponent/other synthetics	12
Cotton/other naturals	3

The industry also forecasts a continued strong use of PP in nonwovens production. The worldwide nonwovens industry consumed 870,000 tonnes of polypropylene staple fibre, and 1.18 million tonnes of polypropylene resin in 2001[60]. According to INDA forecasts resin consumption will increase by more than 60% by 2006, and staple fibre consumption by 36%.

Polypropylene resin dominates in spunmelt fabrics – approximately 75% of spunlaid nonwovens (including spunbond and meltblown) are manufactured from polypropylene resin, using primarily homopolymer grades with medium to high meltflows.

Much of the growth in consumption of PP by the nonwovens industry is expected to occur in developing regions, especially Asia, where considerable new spunmelt and thermalbond capacity is being added. However, growth in the nonwovens industry is very sensitive to the rising PP costs. Nonwoven producers were hit hard in 2000 by rapidly rising polypropylene prices that they were unable to pass on completely to their customers.

[58] Source: EDANA – Statistics 2003 (Nov 2004)
[59] Source: INDA estimates quoted in "Global annual nonwovens volume growth expected to be 8.5% until 2006" - nonwovens.com

[60] Source: Study by INDA, the Association of the Nonwoven Fabrics Industry, reported in *Nonwovens Markets* - "Polypropylene resin dominates in spunmelt fabrics" - nonwovens.com.

In nonwovens industry overall there is a strong trend towards developing innovative application for key end use sectors:

- There is a trend towards lighter weights of coverstock materials
- Strong growth potential for nonwovens in the filtration market
  - Nonwovens are already extensively used for a vast range of gas and liquid filtration applications, ranging from pharmaceuticals to food and drinks, and from domestic vacuums to heavy industrial filtration applications.
  - There are strong growth opportunities for technically advanced nonwoven filtration media such as nonwoven nanofibre filter media due e.g. stringent regulations to control toxic emissions.
- Innovative "smart packaging" applications for packaging industry
  - Nonwovens are already used in a broad range of applications in the packaging industry, in particular for luxury goods, pharmaceutical and horticultural packaging, bulk transportation, wrapping of white goods, furniture and electronic appliances, as well as in liquid absorption pads for fresh and frozen foods.
  - Recent innovations include the development of 3-D form nonwovens for packaging applications. There are also nonwoven packaging components designed to increase the shelf-life of perishable products (e.g. nonwoven materials designed to be absorbent, and to resist U.V. degradation and bacteria). To meet increasingly stringent international regulations regarding waste control and recyclability, new nonwovens with biodegradable and recyclable properties are in growing demand.
- Innovation for critical medical applications
  - E.g. "smart" wound care products that create a moist wound healing environment, with controlled vapour transmission, absorbency and low skin adhesion.
  - E.g. improved finishes including liquid repellent and bacterial barrier properties for applications such as surgical masks, gowns and drapes.
- New nonwovens applications for the transportation industries
  - The pressure on the automotive and transport industry to reduce weight and energy consumption of vehicles and to use more environmentally sustainable materials is driving growth in transport applications.

Market research has shown that 36% of nonwovens are made from PP, and that PP and PET have increasingly substituted in the nonwoven industry[61], as shown by the high long term growth of product categories in the table above. Nonwoven fabric imports to the US are projected to increase 3.4% annually to US$5.4 billion in 2008, supported by economic recovery and rising average value as nonwovens are increasing in quality:

- Shipments of **spunbonded nonwovens** to the US are predicted to increase faster than any other nonwoven product segment at 4.3% per year from 1998 to 2003 to US$2.4 billion in 2003, based on performance advantages, the development of new applications, and increasing demand for composite nonwovens featuring spunbonded webs. Applications for spunbonded nonwoven fabrics include hygiene cover stock and medical fabrics, disposable protective apparel, geotextiles, fabric softener dryer sheets, apparel interlining, crop covers, window treatments, motor vehicle headliners, trunk liners and carpet backing. Polypropylene is the most widely used polymer for the production of spunbonded nonwovens because it provides the highest amount of fibre per unit of weight and the highest level of opacity, as well as the lowest cost due to its low density.

- Shipments of **carded nonwovens** to the US rose 1.6% per year during the period from 1998 to 2003 to US$590 million in 2003. Historically, polyester was the material most commonly used to produce carded nonwovens. However, with the increasing use of

61 http://www.agr.gc.ca/misb/spcrops/sc-cs_e.php?page=textiles

carded webs for hygiene coverstock and wipes, polypropylene has become the raw material most often used in this web formation process.

This high growth trend is borne out by the additional market research on various end-use applications outlined below. Nonwovens are used for a broad array of end use applications, the most important being hygiene products which accounted for 33% of demand in Europe and 24% in the US. Other applications that present opportunities are textiles for home furnishing and automotive:

- Medical and hygiene applications:
  Demand in the US for medical disposables grew 6.5% per year between 1997 and 2002 to reach US$60.3 billion. Nonwovens grew to a total of $3 billion[62], contributing to this growth were nonwoven incontinence products which grew at over 7%. An increasing number of incontinence disorders are expected due to aging demographic patterns that will boost growth opportunities for nonwoven personal protection goods, especially adult diapers and shields.

  Disposable nonwovens are expected to grow faster than non disposables, although demand for nonwovens in the nondisposable market will be driven by the development of new applications, particularly in high-tech battery separators and other smaller applications.

  Surgical drapes, which include nonwovens are another growth area that grew at 5.1% per year from 1997 to 2002.[63]
  Plastics dominate **sterile medical packaging**; however paper/paperboard, glass, metal and other materials will continue to be important. Packaging products are often made from a combination of materials such as plastics, nonwovens, foils and paper to provide a cost-effective solution to packaging problems.

  Sterile medical packaging demand in the US is projected to expand 5.4% yearly through 2008 to $2.1 billion, amounting to 11.8 billion units, boosted by increasing incidence of medical conditions, surgical procedures and diagnostic testing. Limiting overall growth will be multiple supplier competition and the tightening of health care cost containment measures.[64]

- Textiles for home furnishing:
  There is increasing substitution of natural fibres by synthetic products, and in particular nonwovens are expected to grow strongly[65]. Examples of this include:
  - The expected growth of nonwoven PP used as a support for carpet file in tufted carpets
  - Increasing use of PP in furniture construction in non-visible areas such as lining, cushion and mattress ticking platform cloths
  - Spunbonded PP has already taken a large share of the mattress component market

- Automotive:
  - “European End of Life Vehicle (ELV) legislation is driving mono-materials constructions and this will encourage the use of polyolefin nonwovens (PO-NWs) in constructions with PO-foams and PP substrates[66] “
  - “Nonwovens are gaining momentum in the automotive marketplace either as a direct substitute for wovens and knits currently used in face fabrics or as layers in the construction of most interior modules.”

62 Freedonia focus on Medical Disposables
63 Fredonia focus on Infection Prevention Products
64 Freedonia Focus on Sterile Medical Packaging
65 http://www.bharattextile.com/library/art100.php
66 http://www.robertellerassoc.com/articles/techtex04.pdf

- "Specifically, new nonwoven applications are emerging in headliners, luxury fabrics and floor/acoustic modules."

In 2003, the leading suppliers of nonwoven fabrics to the US market were Kimberly-Clark, DuPont and BBA.[67]

5.2 The EU nonwovens market

Western European nonwovens producers manufactured 1.07 million tonnes of roll goods in 2001 worth US$ 3.99bn, an 8.5% increase over 2000[68].

Nonwovens consumption in Europe accounted for around 26% (or 538,000 tonnes) of global polypropylene usage for nonwovens production[69].

In recent years there has been a move away from traditional drylaid production processes such as carded thermal bond and chemical bond towards high-capacity spunlacing lines and multi-beam spunmelt lines. There has also been an increase in new airlaid lines. The following table provides an overview of nonwoven production in Europe by manufacturing process[70]:

Manufacturing process	Tonnes (2002)	% total
Drylaid	506,500	41.8
Spunlaid	487,400	40.2
Wetlaid	99,900	8.2
Airlaid	119,300	9.8
TOTAL	**1,213,100**	**100**

With over 47% of total, the hygiene and wipes (including personal care wipes) markets are by far the most important end use for nonwoven fabrics produced in Europe[71]:

End use	Tonnes (2002)	% total
Hygiene	396 500	33.0
Civil engineering/Underground	64 600	5.4
Building/Construction/	139 800	11.6
Wipes	174 300	14.5
Liquid, air & gas filtration	60 100	5.0
Upholstery,Table Linen, Household	89 600	7.5
Floor covering	32 300	2.7
Interlinings	23 200	1.9
Medical/surgical devices	33 100	2.8
Shoes/leather goods	24 700	2.1
Automotive	26 100	2.2
Garments	13 100	1.1
Coating substrates	25 200	2.1
Other	98 200	8.2
TOTAL	**1 200 800**	**100**

[67] Freedonia focus on Nonwoven Fabrics
[68] Source: Estimates by the European Disposables and Nonwovens Association (EDANA)
[69] According to the European Association for Textile Polyolefins this amounts to 7.6% of total polypropylene usage of 7.1 million tonnes.
[70] Source: EDANA – Statistics 2003 (Nov 2004)
[71] Source: EDANA – Statistics 2003 (Nov 2004)

5.3 The US nonwovens market

The total consumption of nonwoven fabrics in North America totaled 1.004 million tonnes in 2001, up 4% from 964,000 tonnes in 2000[72]. Taking into account the sector's trade surplus with the rest of the world, actual production of nonwovens in North America is estimated to be about 1.2 million tonnes[73].

Measured by value, about $4.1 billion of nonwoven roll goods were consumed in North America in 2001. Despite the region's nonwovens industry being relatively mature, INDA forecasts average annual growth in nonwoven consumption of about 6% a year through 2006.

With 244,000 tonnes consumed, the hygiene market dominates the use of nonwovens in the US. Over 50% of this went into baby diapers, and around 22% into adult incontinence products. The following table shows a breakdown on nonwovens volume by end use application[74]:

End use	Tonnes (2001)	% total
Hygiene	244,000	24.3
Wipes	122,000	12.2
Filtration (air and liquid)	108,000	10.8
Electronic components	16,000	1.6
Geotextiles & civil engineering	67,000	6.7
Other durable nonwovens	263,000	26.2
Other	184,000	18.3
TOTAL	**1,004,000**	**100**

With an estimated 780,000 tonnes of polypropylene in 2001, the US consumption of polypropylene for nonwovens production accounted for approximately 38% of global consumption. According to INDA this is equivalent to 10.8% of total polypropylene consumption in the US. The PP consumption for nonwovens by manufacturing process breaks down as follows:

Manufacturing process	Tonnes (2001)	% total	Tonnes (2006)	% total
Staple	230,000	29.7	270,000	25.6
Spunbond	410,000	52.9	590,000	55.9
Meltblown	135,000	17.4	195,000	18.5
TOTAL	**775,000**	**100**	**1,055,000**	**100.0**

[72] Source: Estimates by INDA – reported in *Nonwovens Markets* - "Polypropylene resin dominates in spunmelt fabrics" - nonwovens.com.
[73] These figures exclude production of highloft products, and glass-fiber products, however. Highloft fabric production is estimated to account for an additional 350,000 tonnes. Actual installed nonwovens production capacity in the region is estimated at over 1.3 million tonnes, again excluding highloft products.
[74] Source: Estimates by INDA – reported in *Nonwovens Markets* - "Nonwovens consumption in North America increased 4% in 2001" - nonwovens.com.

6 Overview of world trade for PP products

World supply and demand for primary PP products

World demand for primary polypropylene products amounted to US$9.5bn of HS 390210 polypropylene and US$3.7bn of HS 390230 polypropylene copolymers, as shown below. Growth in demand in both value and volume terms has been strong for both products over a sustained period.

Product	Import Value 2003 (US$000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers	Top Buyers
HS 390210 Polypropylene	9,447,826	12	12,974,525	10	Belgium	Belgium
					France	Canada
					Germany	China
HS 390230 Propylene copolymers	3,746,084	11	4,392,127	11	Austria	Belgium
					Belgium	Canada
					France	China

The majority of trade of polypropylene in primary forms is of HS 390210, with growth in trade for both polypropylene and propylene copolymers growing steadily over the long term.

Belgium dominates world trade of primary PP products being both the largest import market and an important supplying market for both HS 390210 and HS 390230. Canada and China follow Belgium as key import markets for both products. France also plays a prominent demand and supply role for these products – the country is ranked the 4th largest import market for these primary PP products, and supplies much of the world's primary PP as the 2nd largest supplier of HS 390210 and the 3rd largest supplier of HS 390230.

World supply and demand for secondary PP products

Product	Import Value 2003 (US$000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers	Top Buyers
HS 550340 Staple fibres of polypropylene, not carded or combed	379,466	2	290,301	-3	Belgium	Canada
					France	France
					Germany	Germany
HS 560741 Binder or baler twine, of polyethylene or polypropylene	141,105	8	100,502	6	Austria	Belgium
					Belgium	Canada
					Canada	Denmark
HS 560749 Twine not elsewhere specified, cordage, ropes and cables, of polyethylene or polypropylene	271,450	7	-	-	Canada	Australia
					China	China
					Costa Rica	France
HS 392020 Film and sheet etc, non-cellular etc, of polymers of propylene	4,924,130	10	-	-	Belgium	Belgium
					Canada	Canada
					France	China
HS 630533 Sacks, bags, packing, of	522,654	3	-	-	Belgium	Australia
					China	Belgium

Product	Import Value 2003 (US$000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers	Top Buyers
strip plastic material					Indonesia	France
HS 391722 Tubes, pipes and hoses, rigid; of polypropylene	266,182	14	-	-	Austria	Austria
					Czech Republic	Belgium
					Denmark	China

HS 392020 film and sheet was the most heavily traded secondary product, with demand amounting to US$4.1bn. HS 630533 sacks and bags were the second most traded product. Growth in value traded ranged from 2% for HS 550340 staple fibres to 14% for HS 391722 for tubes, pipes and hoses.

Again, Belgium and France play a strong role in the trade of secondary PP products, being amongst the top suppliers and buyers of PP products. Other important countries in the EU are Germany (in particular for the supply and demand of HS 550340) Austria, Czech Republic, and Denmark. Further, Canada and China are important supply and demand markets and Australia is a top buyer of HS 560749 twine and HS 630533 sacks and bags.

World supply and demand for nonwovens

Product	Import Value 2003 (US$000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers	Top Buyers
560311 Nonwovens, man-made filaments weighing <25g/m2	1,026,094	6	-	-	China	Belgium
					Czech Republic	Canada
					Denmark	China
560312 Nonwovens, man-made filaments weighing 25-70g/m2	1,504,114	12	-	-	Belgium	Belgium
					China	Canada
					France	China
560313 Nonwovens, man-made filaments weighing 70-150g/m2	808,076	4	-	-	Austria	Belgium
					Belgium	Canada
					France	China
560314 Nonwovens, man-made filaments weighing >150g/m2	894,877	3	-	-	Austria	Austria
					Belgium	Belgium
					France	Canada
392190 Film and sheet etc, nes of plastics	6,191,115	7	0	27	Austria	Belgium
					Belgium	Canada
					France	China

HS 392190 was the most heavily traded product with world imports of US$6.19bn. Amongst the nonwovens, those weighing between 25 and 70 g/m2 (HS 560312) were the most heavily traded.

Growth was moderate throughout these commodity groups with only HS 560312 growing above 10% on average over the period under analysis.

Again, the EU countries France, Belgium and Austria were important trading countries, with France playing a strong supplying role. China and Canada were significant traders of these products outside the EU, with Canada playing a strong buying role.

7 Detailed trade flow analysis – demand in EU and US

7.1 Primary PP products

7.1.1 Imports of primary PP products into the US

The US imported US$ 312.9 million worth (255,000 tons) of primary PP products in 2003. Imports of both mono and co-polymers have been increasing in value terms but decreasing in volume between 1999 and 2003, as per the following table:

Product	US Import Value 2003	Growth % p.a. 1999-2003 Value	US Import Volume 2002	Growth % p.a. 1999-2003 Volume	Top Suppliers
HS 390210 Polypropylene	US$ 170 million	4%	151,381 tons	-3%	Canada
					Japan
					Mexico
HS 390230 Propylene copolymers	US$ 142 million	7%	104,594 tons	-2%	Canada
					Japan
					Netherlands

Note: South Africa was not reported as a supplying country of primary PP products by the US in 2003.

7.1.1.1 HS 390210 Polypropylene

The USA was the 13th largest importer of HS 390210 Polypropylene with total imports in 2003 of US$ 170 million; representing 1.8% of world imports (151,381 tons or 1.2% of world imports) at an average price per ton of US$ 1,128.

Despite a long-term negative growth in the import volume of this product category into the US there has been a moderate growth of the value of imports, as per the following chart:

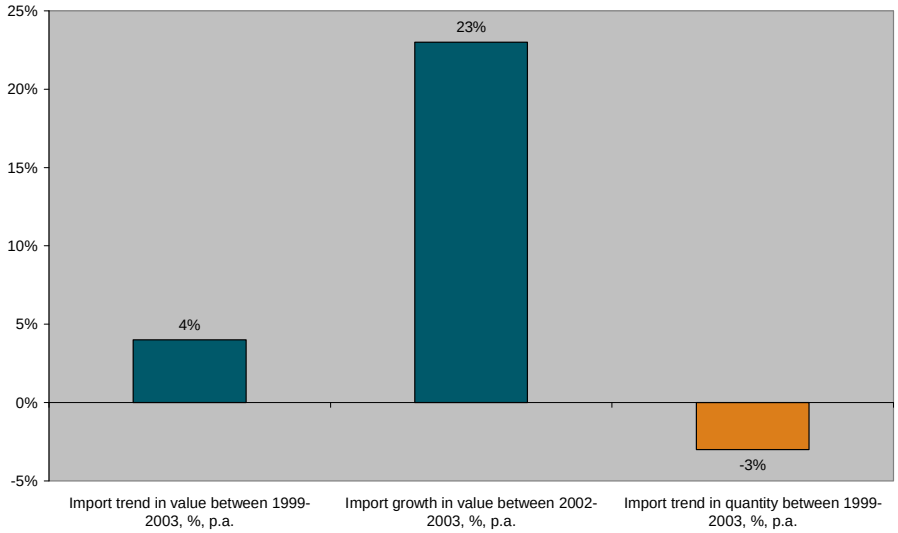

Figure 7: Growth trends for US imports of HS 390210 Polypropylene

The vast majority of US imports in this product category are supplied by Canada with 77% of value and 86% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

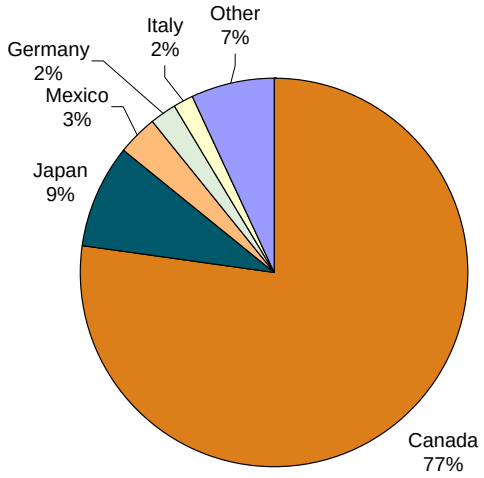

Figure 8: Top supply market share of imports of HS 390210 into the US by value, 2003

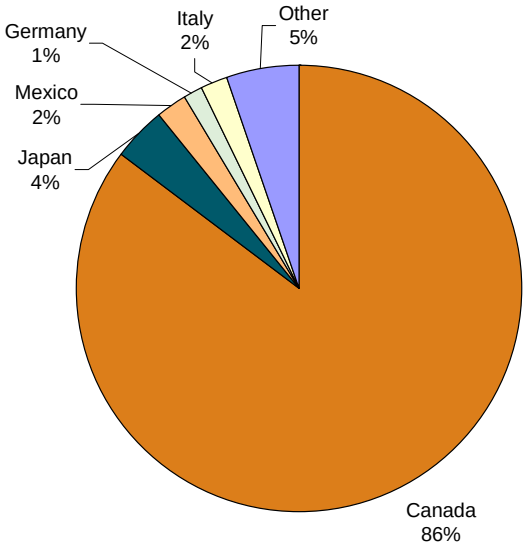

Figure 9: Top supply market share of imports of HS 390210 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

With the countries that fall under NAFTA[75] removed it can be seen that the size of demand for HS 390210 is significantly reduced with total imports in 2003 of US$ 33 million, representing 19.5% of US imports by value (18,862 tons or 12.5% of US imports by volume) at an average price per ton of US$ 1,765.

[75] The USA, Canada and Mexico are the countries that fall under NAFTA

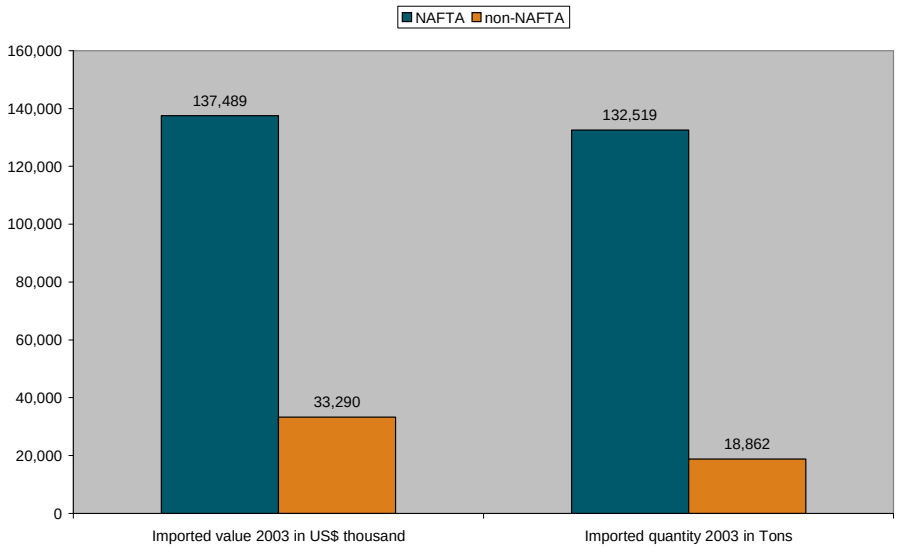

Figure 10: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 390210 into the US, 2003

The low market share and higher price per ton seems to indicate that non-NAFTA suppliers have difficulty competing against NAFTA markets when exporting this product to the US. This is most likely a result of higher transport costs due to longer shipping distances and lack of preferential trade arrangements.

7.1.1.2 HS 390230 Propylene copolymers

The USA was the 10th largest importer of HS 390230 Propylene copolymers in 2003, with total imports of US$ 142 million or 3.8% of world imports by value (104,594 tons or 2.4% of world imports by volume) at an average price per ton of US$ 1,359.

Despite a long-term negative growth in the import volume of this product category into the US there has been a steady growth of the value of imports, as per the following chart:

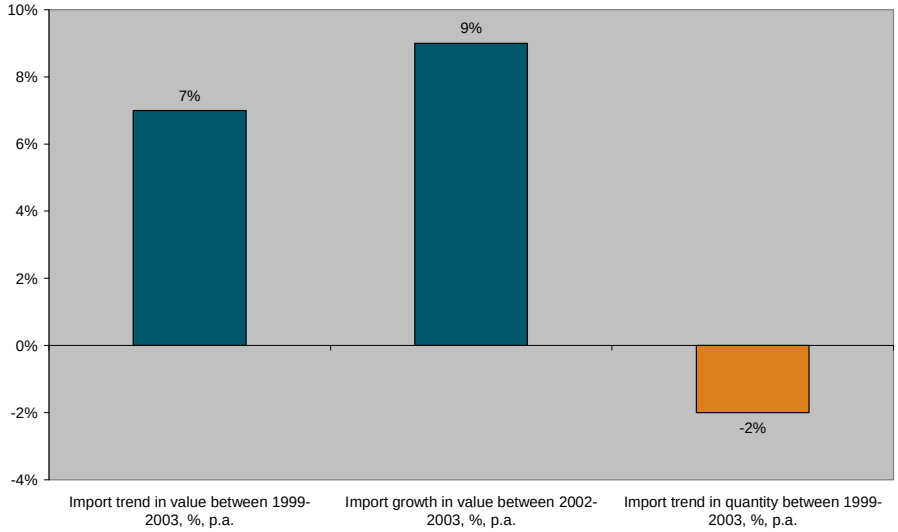

Figure 11: Growth trends for US imports of HS 390230 Propylene copolymers

The majority of US imports in this product category are supplied by Canada with 55% of value and 63% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

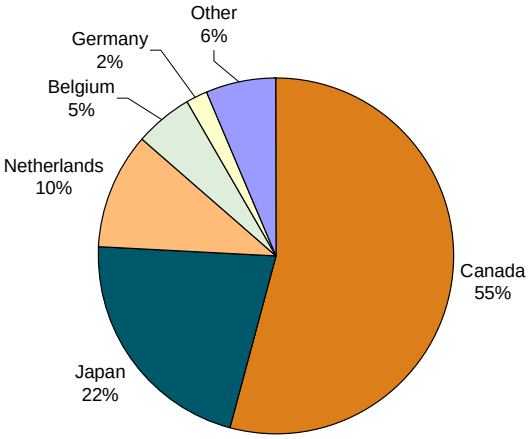

Figure 12: Top supply market share of imports of HS 390230 into the US by value, 2003

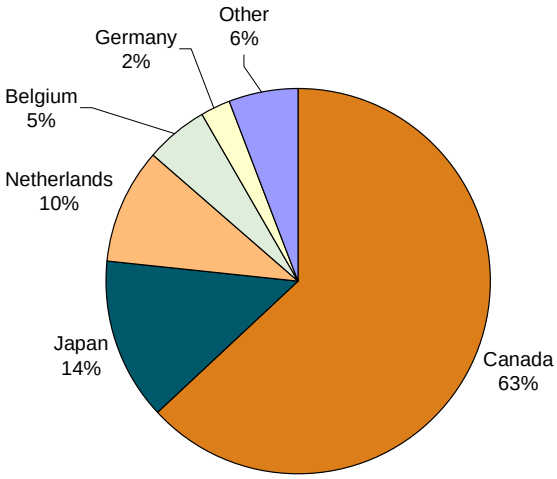

Figure 13: Top supply market share of imports of HS 390230 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

With the countries that fall under NAFTA[76] removed it can be seen that the size of demand for HS 390230 is reduced with total imports in 2003 of US$ 64 million, representing 45.1% of US imports by value (38,324 tons or 36.6% of US imports by volume) at an average price per ton of US$ 1,674.

[76] The USA, Canada and Mexico are the countries that fall under NAFTA

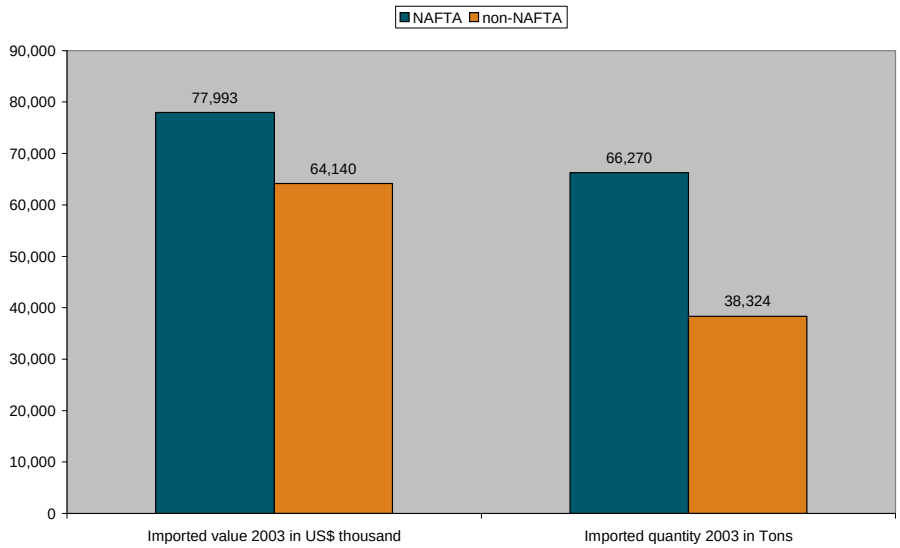

Figure 14: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 390230 into the US, 2003

The low market share and higher price per ton seems to indicate that non-NAFTA suppliers have difficulty competing against NAFTA markets when exporting this product to the US. This is most likely a result of higher transport costs due to longer shipping distances and lack of preferential trade arrangements.

7.1.2 Imports of primary PP products into the EU

The EU imported US$ 5.2 billion of primary PP products in 2003. Imports have been growing strongly between 1999 and 2003, as per the following table:

Product	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
HS 390210 Polypropylene	US$ 3,214 million	11%	None reported	N/A	Belgium
					France
					Germany
HS 390230 Propylene copolymers	US$ 2,035 million	10%	None reported	N/A	Netherlands
					Belgium
					Germany

South Africa was ranked as 40th in terms of the value of PP supplied to the EU and 21st for co-polymers.

7.1.2.1 HS 390210 Polypropylene

The EU reported total imports in 2003 of US$ 3.2 billion representing 33.9% of world imports.

There has been a strong long-term growth trend in the imports of this product category into the EU with some signs of improvement in the short-term growth of the value of imports as per the following chart:

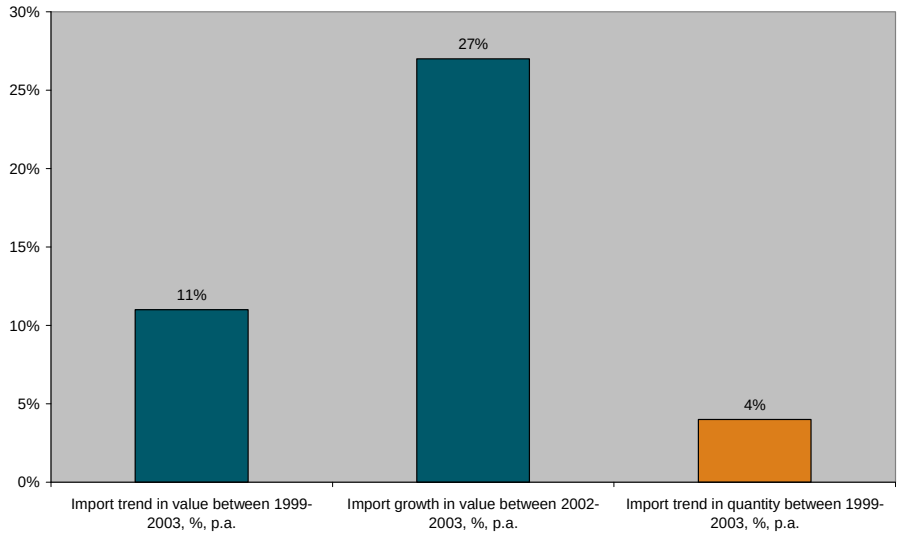

Figure 15: Growth trends for EU imports of HS 390210 Polypropylene

EU countries supply the vast majority of EU imports in this product category. Belgium, France, Germany, Netherlands and the United Kingdom were the top 5 suppliers and supplied 73% of value of imports in 2003 as per the following chart:

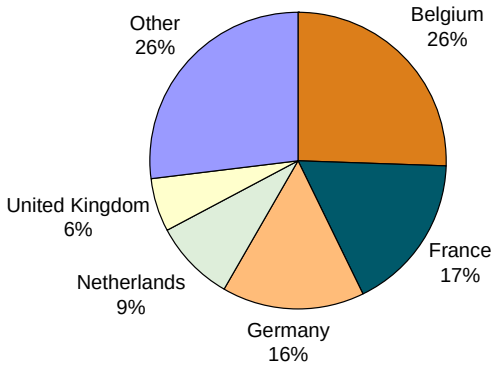

Figure 16: Top supply market share of imports of HS 390210 within the EU by value, 2003

Top 3 import markets for HS 390210 Polypropylene in the EU

The top three import markets for this product category in the EU are Italy, Germany and Belgium, as per the table below:

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
Italy	US$ 643 million	4%	828,065 tons	-2%	Belgium
					France
					Germany
Belgium	US$ 549 million	17%	713,214 tons	13%	France
					Netherlands
					Germany
Germany	US$ 491 million	6%	543,554 tons	0%	Belgium
					France
					Austria

Once again the majority of trade comprises intra-EU trade.

Italy

Italy was the 2nd largest importer of HS 390210 in 2003, with total imports of US$ 643 million or 6.8% of world imports by value (828,065 tons or 6.4% of world imports by volume) at an average price per ton of US$ 776.

There has been a moderate long-term growth of import value but a slow decline in import volume of this product category into Italy, as per the following chart:

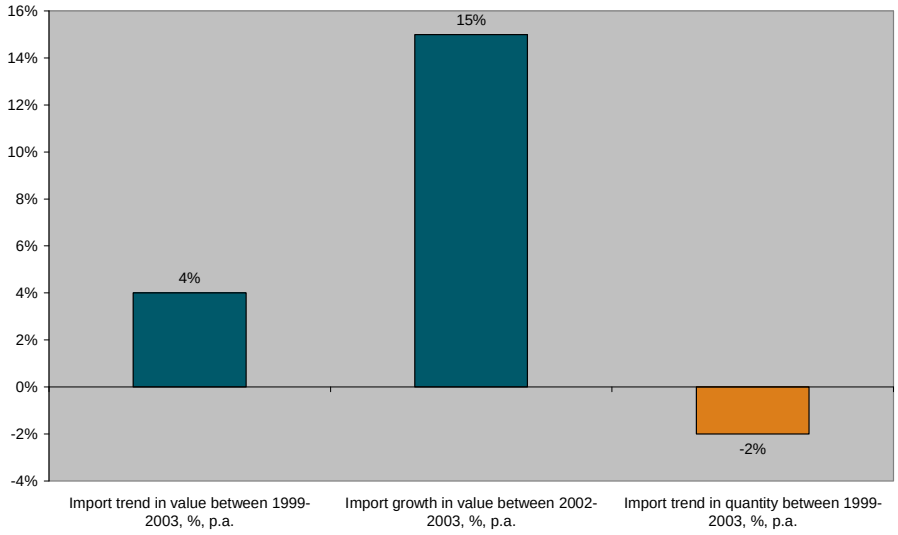

Figure 17: Growth trends for Italy's imports of HS 390210 Polypropylene

Belgium

Belgium was the 4th largest importer of HS 390210 in 2003, with total imports of US$ 549 million or 5.8% of world imports by value (890,910 tons or 4.9% of world imports by volume) at an average price per ton of US$ 770.

There has been significant growth in both the value and volume of imports into Belgium, as per the following graph:

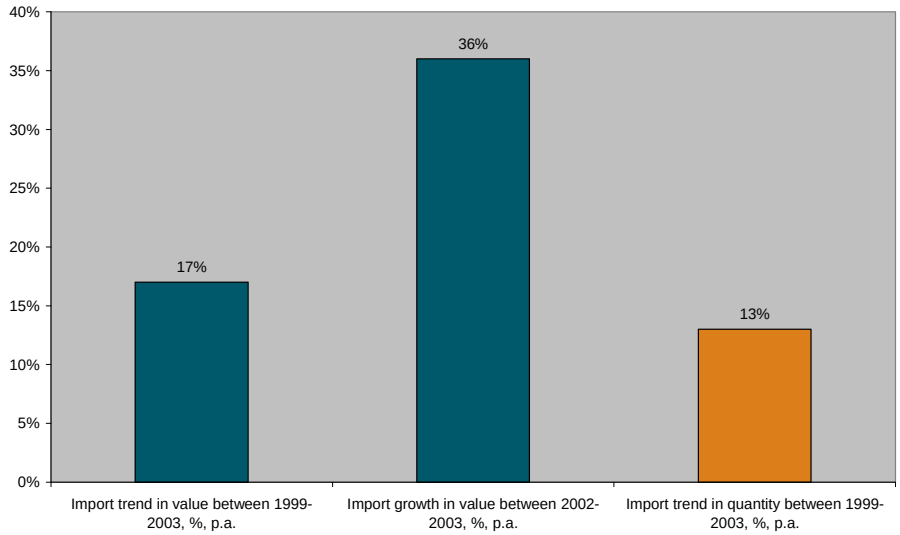

Figure 18: Growth trends for Belgium's imports of HS 390210 Polypropylene

Germany

Germany was the 5th largest importer of HS 390210 in 2003, with total imports of US$ 491 million or 5.2% of world imports by value (543,510 tons or 4.2% of world imports by volume) at an average price per ton of US$ 904.

There has been a steady long-term growth of the import value whilst import volumes have remained stagnant, as per the following chart:

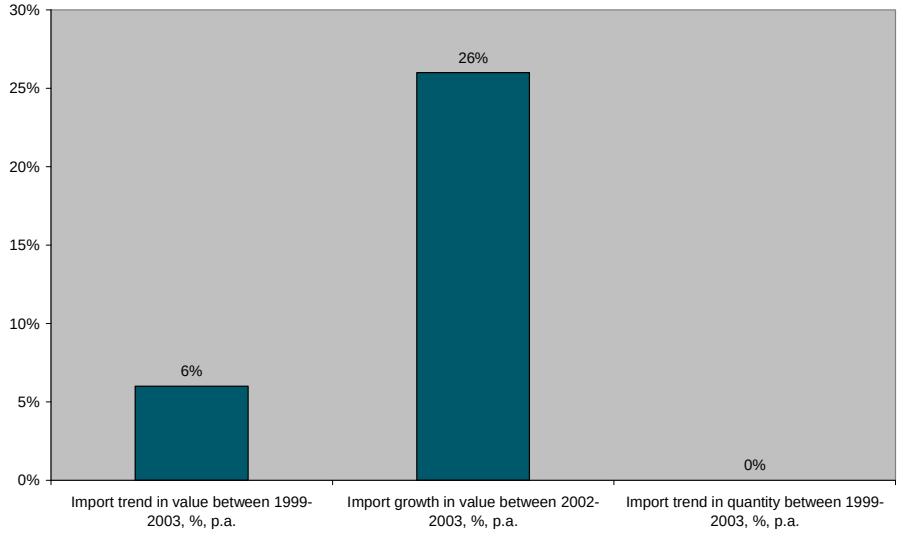

Figure 19: Growth trends for Germany's imports of HS 390210 Polypropylene

Intra EU vs. Extra EU trade of HS 390210 Polypropylene

With the countries that fall under the EU removed it can be seen that the size of demand for HS 390210 is greatly reduced with total imports in 2003 of only US$ 260 million, representing a mere 8.1% of the EU's imports.

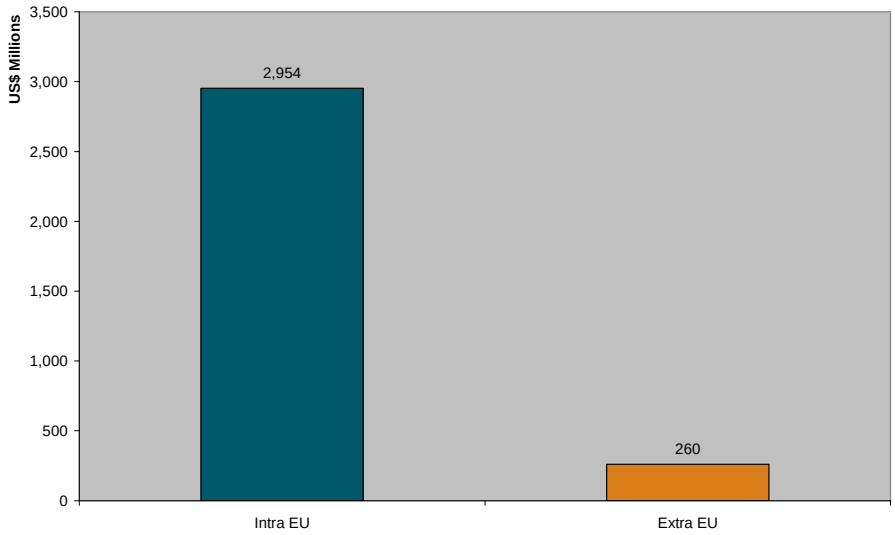

Figure 20: Comparison of value (US$ million) of supply of HS 390210 by EU and non-EU countries, 2003

In terms of non-EU suppliers, South Africa ranks 23rd in terms of value, with a 0.2% market share of non-EU supply of HS 390210.

7.1.2.2 HS 390230 Propylene copolymers

The EU reported total imports in 2003 of US$ 2 billion representing 54.3% of world imports.

There has been an increase in the import value and volume of this product category into the EU, as per the following chart:

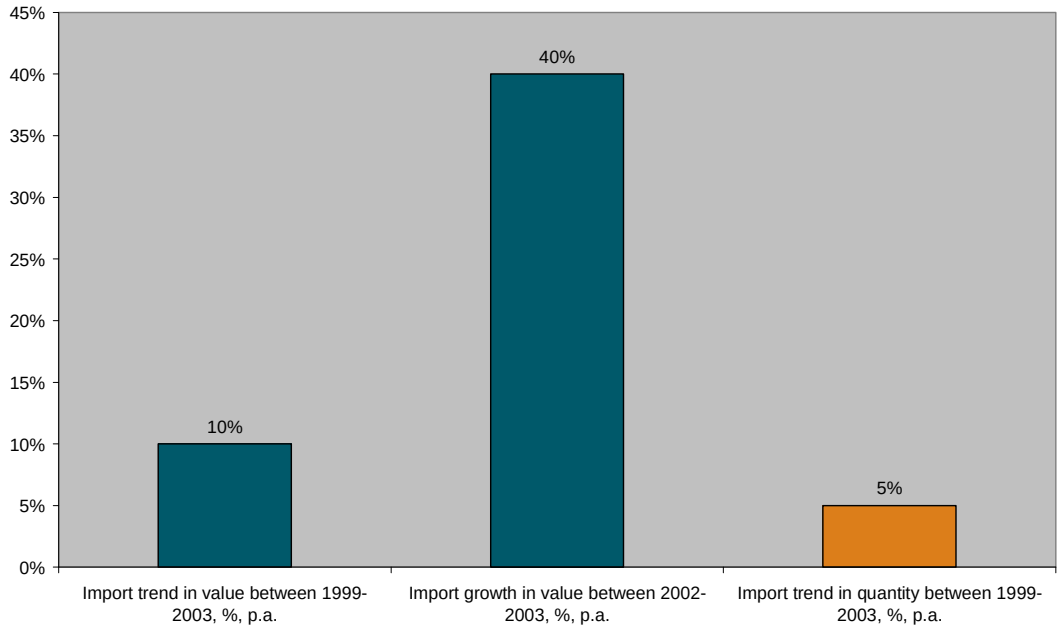

Figure 21: Growth trends for EU imports of HS 390230 Propylene copolymers

EU countries supply the vast majority of EU imports in this product category. Netherlands, Belgium, Germany, France and Italy were the top 5 suppliers and supplied 78.2% of value of imports in 2003 as per the following chart:

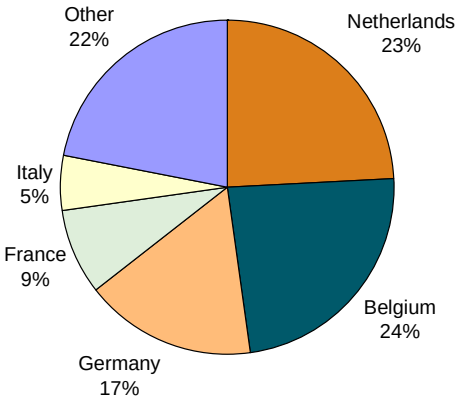

Figure 22: Top supply market share of imports of HS 390230 within the EU by value, 2003

Top 3 import markets for HS 390230 Propylene copolymers in the EU

The top three import markets for this product category in the EU are Germany, France and Italy as per the table below:

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
Germany	US$ 479 million	9%	491,898 tons	6%	Belgium
					Netherlands
					Italy
France	US$ 313 million	9%	307,234 tons	2%	Netherlands
					Germany
					Belgium
The UK	US$ 263 million	9%	294,564 tons	4%	Netherlands
					Belgium
					Germany

Once again the majority of trade comprises intra-EU trade.

Germany

Germany was the largest importer of HS 390230 in 2003, with total imports of US$ 479 million or 12.8% of world imports (491,898 tons or 11.2% of world imports) at an average price per ton of US$ 975.

There has been a steady long-term growth of both the import value and volume of this product category into Germany, as per the following chart:

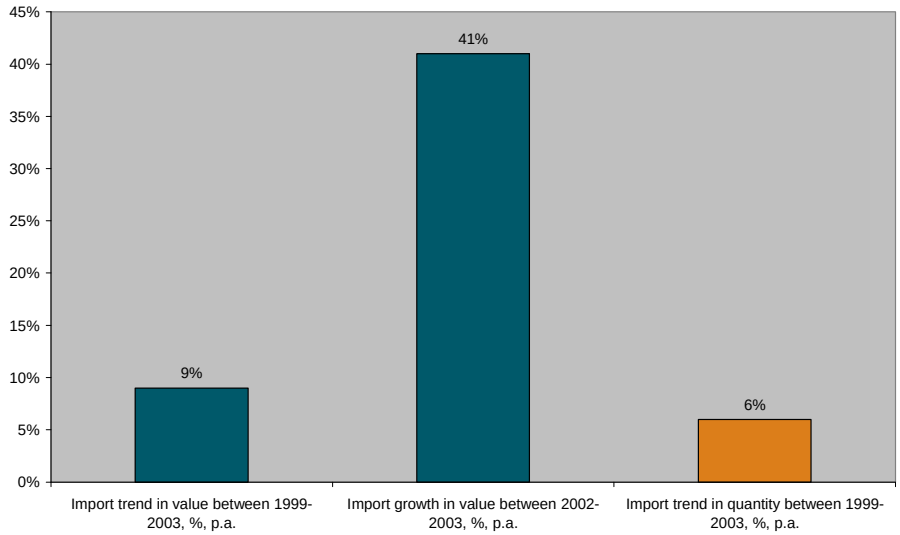

Figure 23: Growth trends for Germany's imports of HS 390230 Propylene copolymers

France

France was the 2nd largest importer of HS 390230 in 2003, with total imports of US$ 313 million or 8.4% of world imports (307,234 tons or 7% of world imports) at an average price per ton of US$ 1,019.

There has been a steady long-term growth of both the import value and volume of this product category into France, as per the following chart:

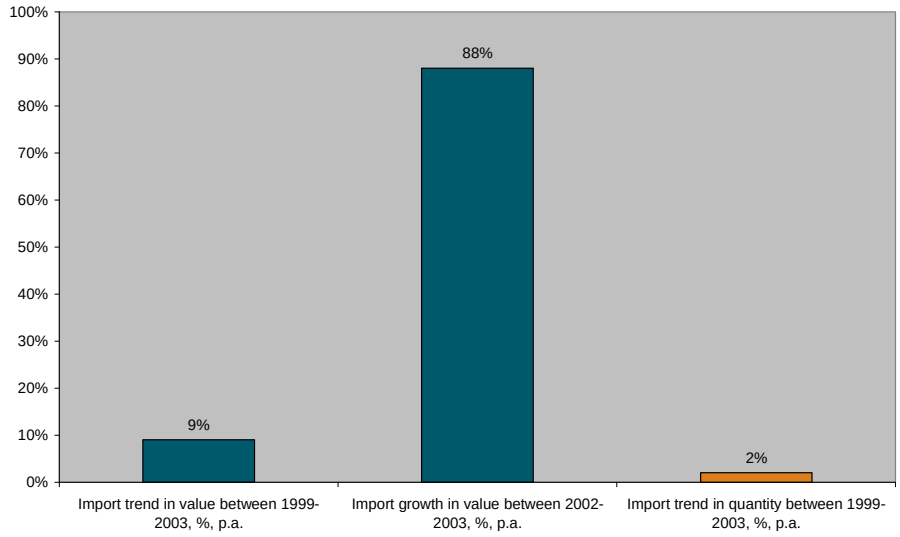

Figure 24: Growth trends for France's imports of HS 390230 Propylene copolymers

The UK

The UK was the 3rd largest importer of HS 390230 in 2003, with total imports of US$ 263 million or 7 % of world imports (294,564 tons or 6.7 % of world imports) at an average price per ton of US$ 894.

There has been a steady long-term growth of both the import value and volume of this product category into the UK, as per the following chart:

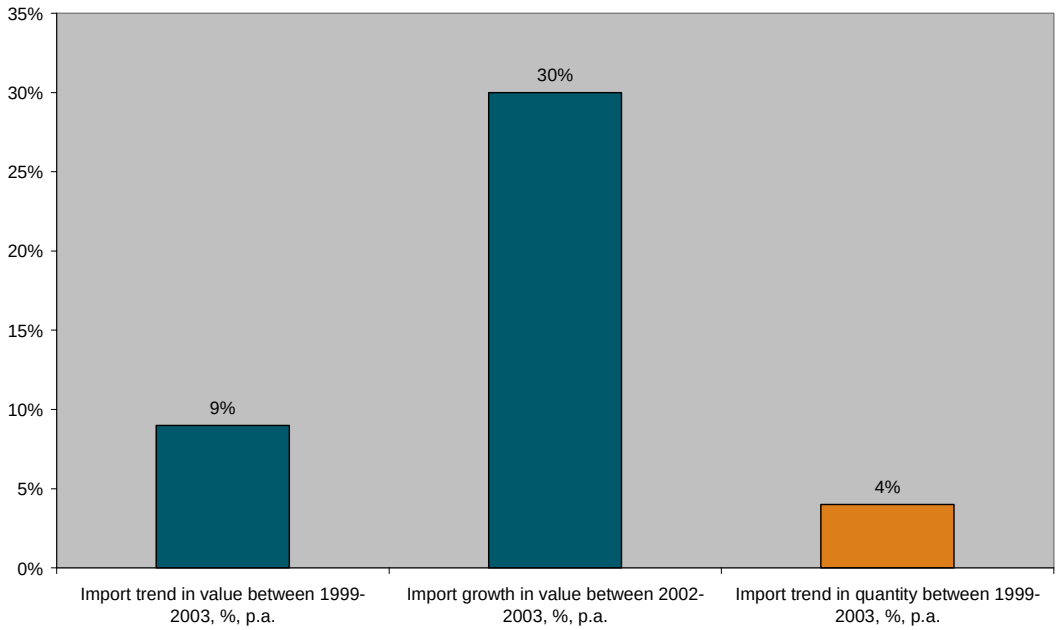

Figure 25: Growth trends for the UK's imports of HS 390230 Polypropylene

Intra EU vs. Extra EU trade of HS 390230 Propylene copolymers

With the countries that fall under the EU removed it can be seen that the size of demand for HS 390230 is greatly reduced with total imports in 2003 of only US$ 80 million, representing a mere 4 % of the EU's imports.

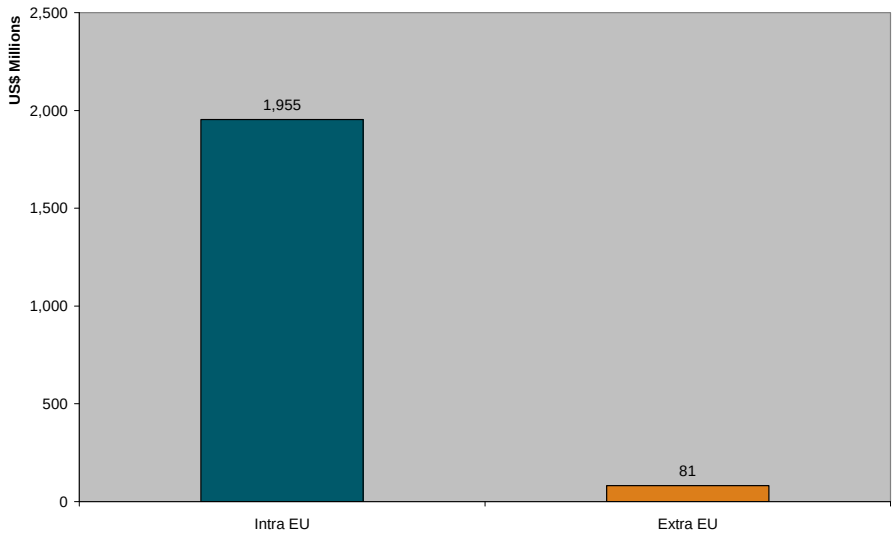

Figure 26: Comparison of value (US$ million) of supply of HS 390230 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 8th in terms of value with a 2.7 % market share of non-EU supply of HS 390230.

7.2 Secondary PP products

7.2.1 Imports of secondary PP products into the US

Filament, fibre and textile products

The US imported US$ 67.2 million worth (31,187 tons) of the three product groups identified as PP filament, fibre and textile products in 2003. There has been a steady increase in both volume and value of imports of this product category into the US between 1999 and 2003, as per the following table:

Product	US Import Value 2003	Growth % p.a. 1999-2003 Value	US Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
550340 Staple fibres of polypropylene, not carded or combed	US$ 7.1 million	6%	3,966 tons	5%	United Kingdom
					Japan
					Denmark
560741 Binder or baler twine, of polyethylene or polypropylene	US$ 18.9 million	7%	12,160 tons	9%	Canada
					Portugal
					Costa Rica
560749 Twine not elsewhere specified, cordage, ropes and cables, of polyethylene or polypropylene	US$ 41.1 million	13%	15,061 tons	11%	Mexico
					Canada
					Korea, Rep. of Korea

South Africa is the 11th ranked supplier of HS 550340 (Staple fibres of polypropylene, not carded or combed) in terms of value. It supplied US$ 56,000 (or ~40 tons) worth of this product to the US in 2003 at an average price per ton of US$ 1,400.

7.2.1.1 HS 550340 Staple fibres of polypropylene, not carded or combed

The USA was the 13th largest importer of HS 550340 in the world with total imports in 2003 of US$ 7.1 million, representing 2.7% of world imports in value terms (3,966 tons or 1.4 % of world imports by volume) at an average price per ton of US$ 1,791.

There has been a steady growth of both the value and volume of imports of this product category into the US, as per the following chart:

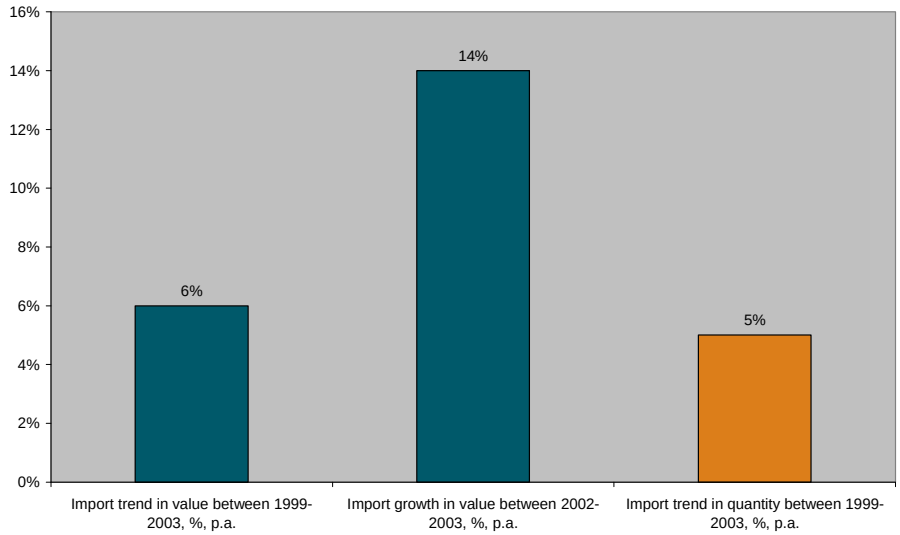

Figure 27: Growth trends for US imports of HS 550340

The largest proportion of US imports in this product category is supplied by the UK with 30.2% of value and 23% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

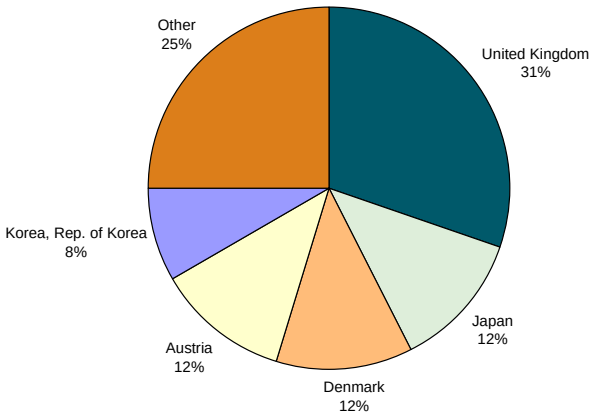

Figure 28: Top supply market share of imports of HS 550340 into the US by value, 2003

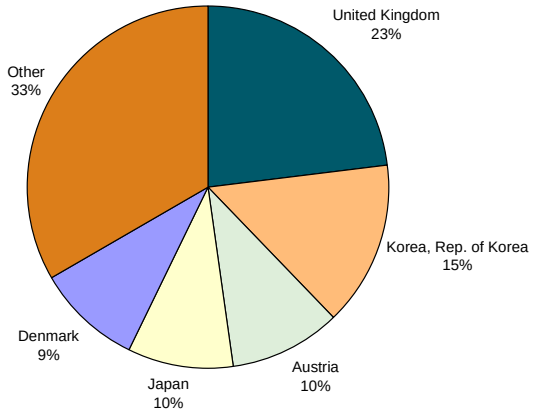

Figure 29: Top supply market share of imports of HS 550340 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

In comparison to trade in many other PP commodities, trade in HS 550340 is not dominated by North American Free Trade Agreement (NAFTA)[77] suppliers. Demand for HS 550340 from non-NAFTA suppliers accounts for US$ 6.3 million, representing 89.3% of total imports in 2003 (3,361 tons or 84.7% of US imports by volume) at an average price per ton of US$ 1,866.

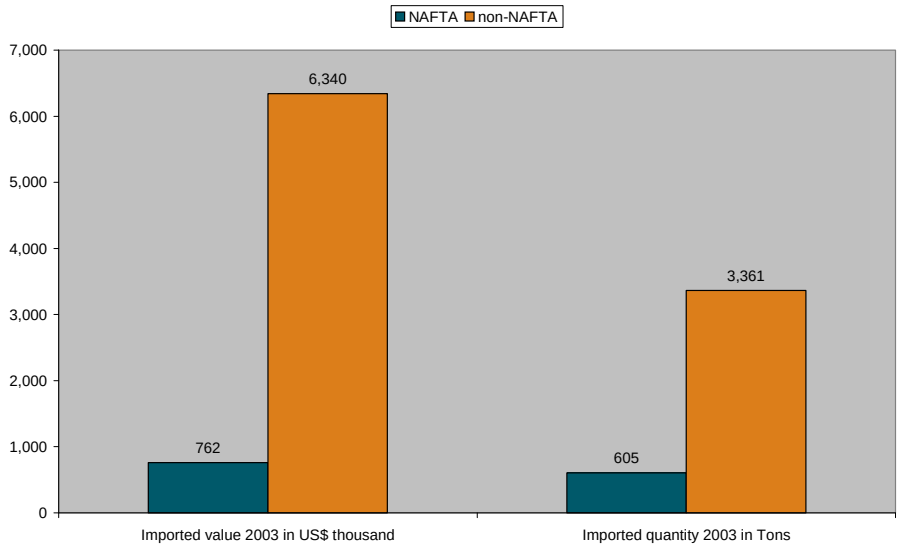

Figure 30: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 550340 into the US, 2003

7.2.1.2 HS 560741 Binder or baler twine, of polyethylene or polypropylene

The USA was the 2nd largest importer of HS 560741 in the world with total imports in 2003 of US$ 18.9 million, representing 15.9% of world imports by value (12,160 tons or 12.1% of world imports by volume) at an average price per ton of US$ 1,560.

[77] The USA, Canada and Mexico are the countries that fall under NAFTA

Between 1999 and 2003 there was a steady growth of both the value and volume of imports of this product category into the US, and significant growth from 2002 to 2003 of 27%, as per the following chart:

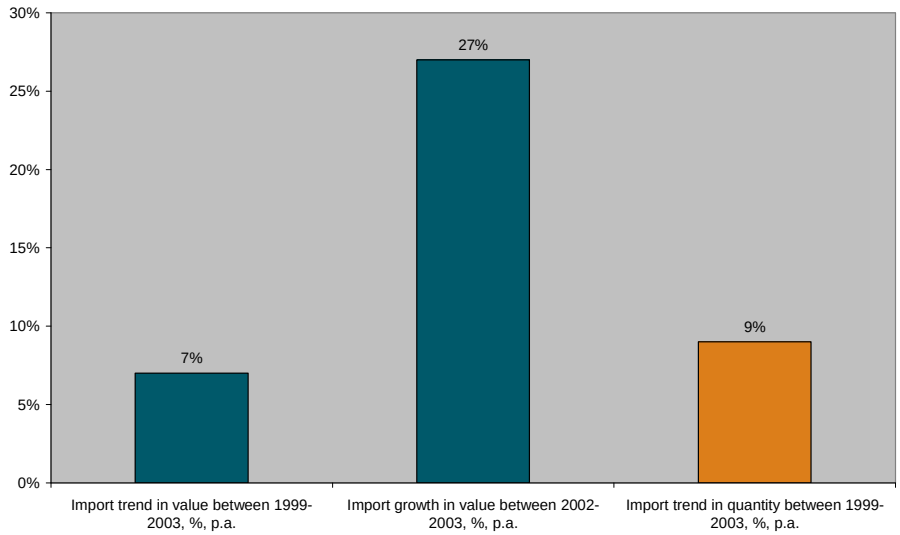

Figure 31: Growth trends for US imports of HS 560741

In 2003, the largest proportion of US import value in this product category was supplied by Canada with 20.4% of value. However, the largest proportion by volume was supplied by Portugal with 22.7% of volume. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

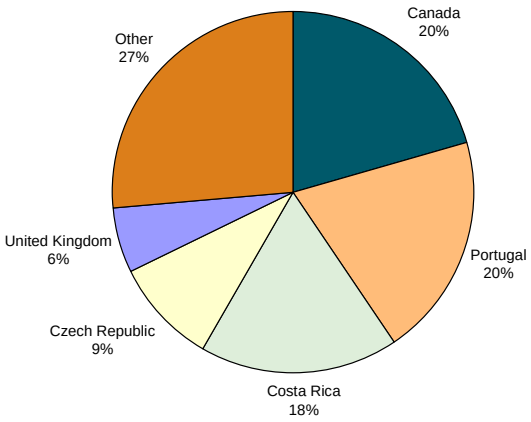

Figure 32: Top supply market share of imports of HS 560741 into the US by value, 2003

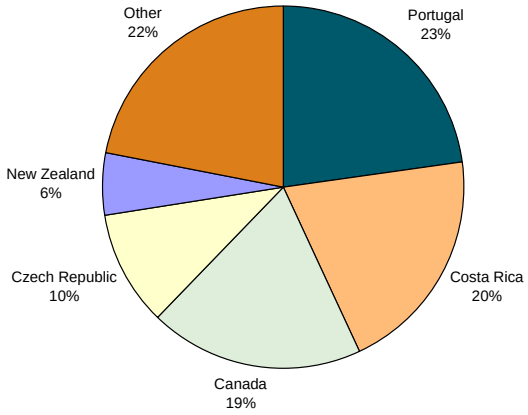

Figure 33: Top supply market share of imports of HS 560741 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

US imports of this commodity group are dominated by non-NAFTA suppliers. With the countries that fall under NAFTA[78] removed it can be seen that the size of demand for HS 560741 is US$ 14.4 million, representing 76.2% of total imports in 2003 (9,418 tons or 77.5% of US imports by volume) at an average price per ton of US$ 1,536.

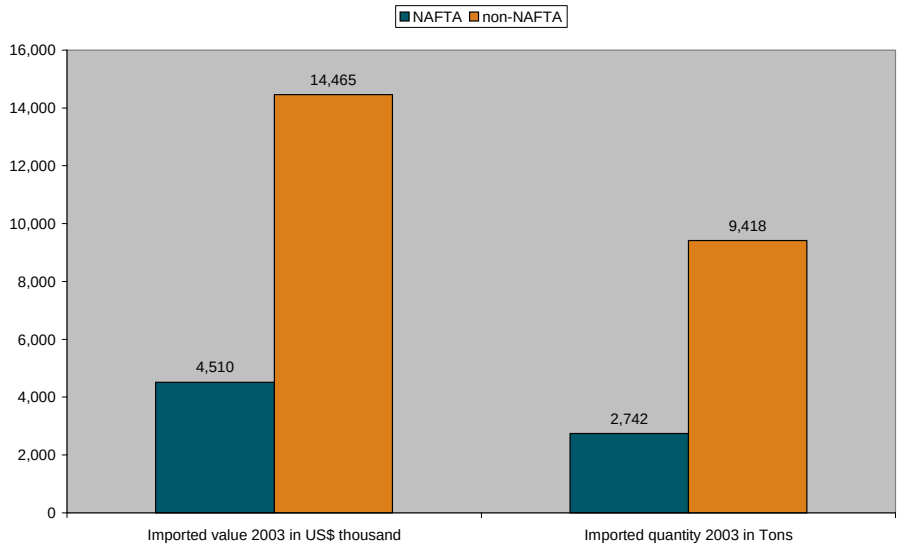

Figure 34: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 560741 into the US, 2003

7.2.1.3 HS 560749 Twine not elsewhere specified, cordage, ropes and cables, of polyethylene or polypropylene

The USA was the largest importer of HS 560749 in the world with total imports in 2003 of US$ 41.1 million, representing 13.1% of world imports (15,061 tons) at an average price per ton of US$ 2,734.

[78] The USA, Canada and Mexico are the countries that fall under NAFTA

There has been strong growth of both the value and volume of imports of this product category into the US, as per the following chart:

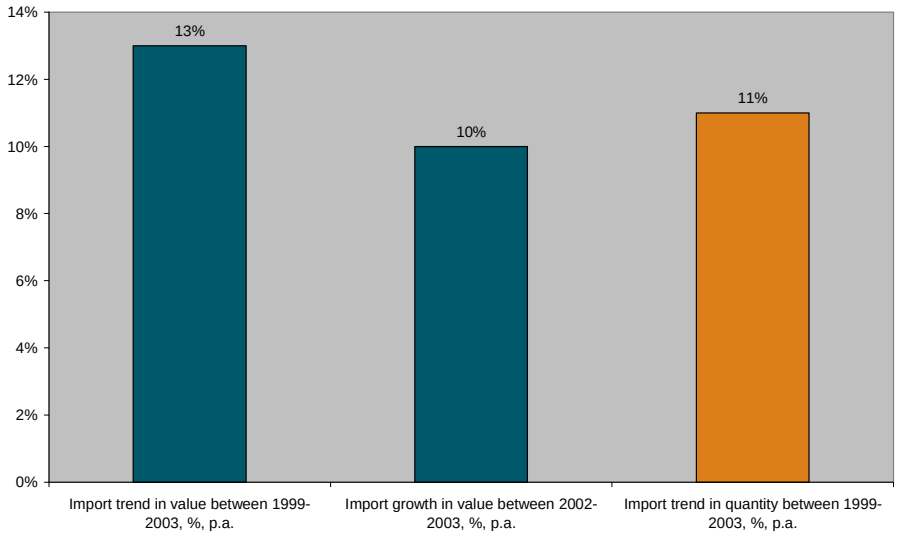

Figure 35: Growth trends for US imports of HS 560749

The largest proportion of US imports in this product category was supplied by Mexico with 27% of value and 29% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

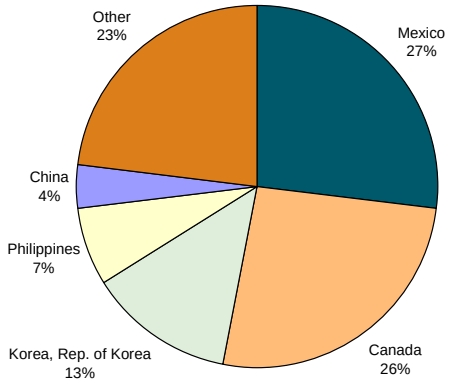

Figure 36: Top supply market share of imports of HS 560749 into the US by value, 2003

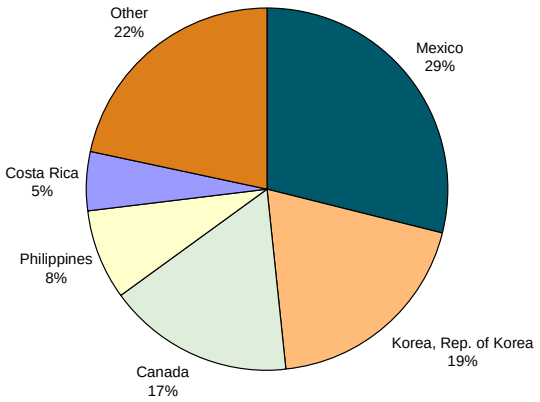

Figure 37: Top supply market share of imports of HS 560749 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

With the countries that fall under NAFTA[79] removed it can be seen that the size of demand for HS 560749 is significantly reduced with total imports in 2003 of US$ 19.3 million, representing 47% of US imports by value (8,177 tons or 54.3% of US imports by volume) at an average price per ton of US$ 2,368.

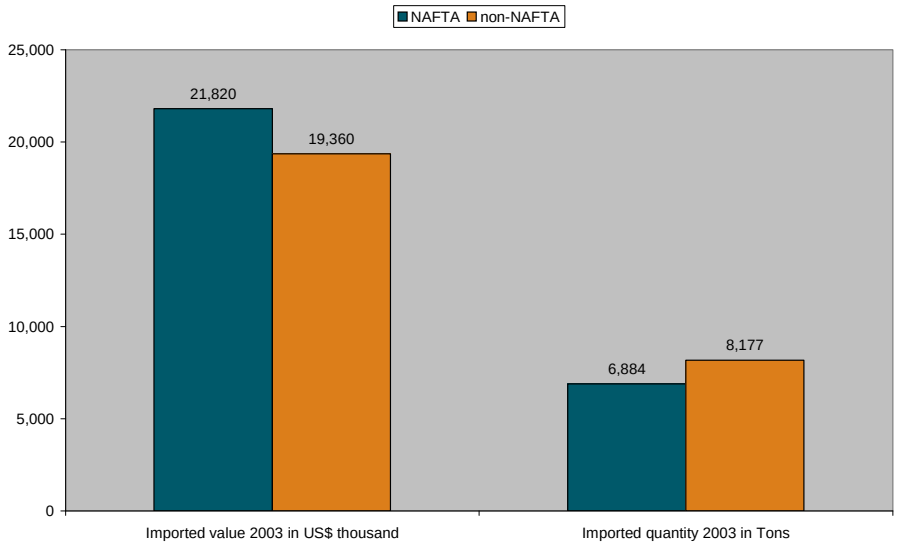

Figure 38: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 560749 into the US, 2003

Plate, sheets and film products

The US imported US$ 618 million worth (220,958 tons) of PP plate, sheets and film products in 2003. There has been a steady increase in both volume and value of imports of this product category into the US between 1999 and 2003, as per the following table:

[79] The USA, Canada and Mexico are the countries that fall under NAFTA

Product	US Import Value 2003	Growth % p.a. 1999-2003 Value	US Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	US$ 511.1 million	6%	173, 726 tons	7%	Canada
					Japan
					Mexico
630533 Sacks, bags, packing, of strip plastic material	US$ 107.5 million	6%	47, 232 tons	9%	Mexico
					Turkey
					China

South Africa was the 38th ranked supplier of HS 630533 to the US in terms of value in 2003 with imports of US$ 28,000 (3 tons) and an average price per ton of US$ 9,333.

South Africa did not supply any products of HS 392020 to the US in 2003.

7.2.1.4 HS 392020 Film and sheet etc, non-cellular etc, of polymers of propylene

The USA was the largest importer of HS 392020 with total imports in 2003 of US$ 511.1 million, representing 10.4% of world imports (173, 726 tons) at an average price per ton of US$ 2,942.

There has been a steady growth of both the value and volume of imports of this product category into the US, as per the following chart:

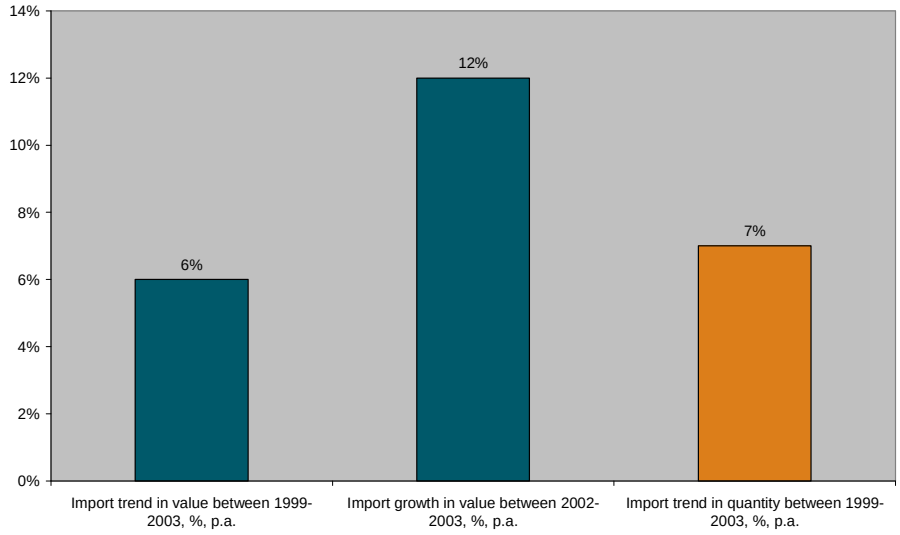

Figure 39: Growth trends for US imports of HS 392020

The largest proportion of US imports in this product category was supplied by Canada with 36% of value and 32% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

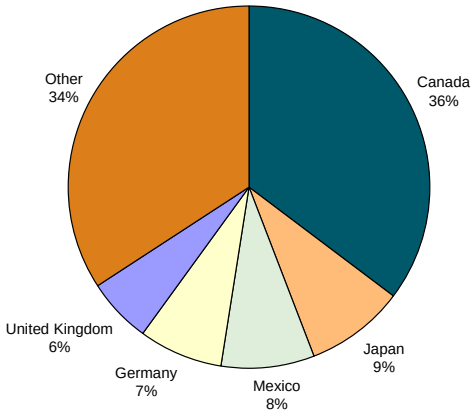

Figure 40: Top supply market share of imports of HS 392020 into the US by value, 2003

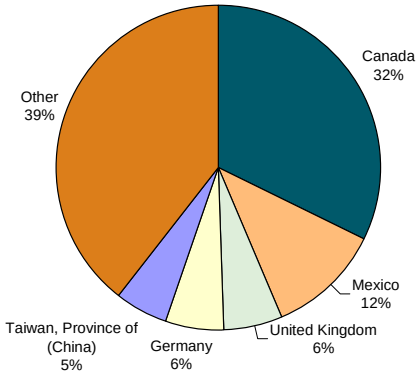

Figure 41: Top supply market share of imports of HS 392020 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

With the countries that fall under NAFTA[80] removed it can be seen that the size of demand for HS 392020 is reduced to of US$ 288.7 million, representing 56.5% of total imports in 2003 (97,799 tons or 56.3% of US imports by volume) at an average price per ton of US$ 2,953.

[80] The USA, Canada and Mexico are the countries that fall under NAFTA

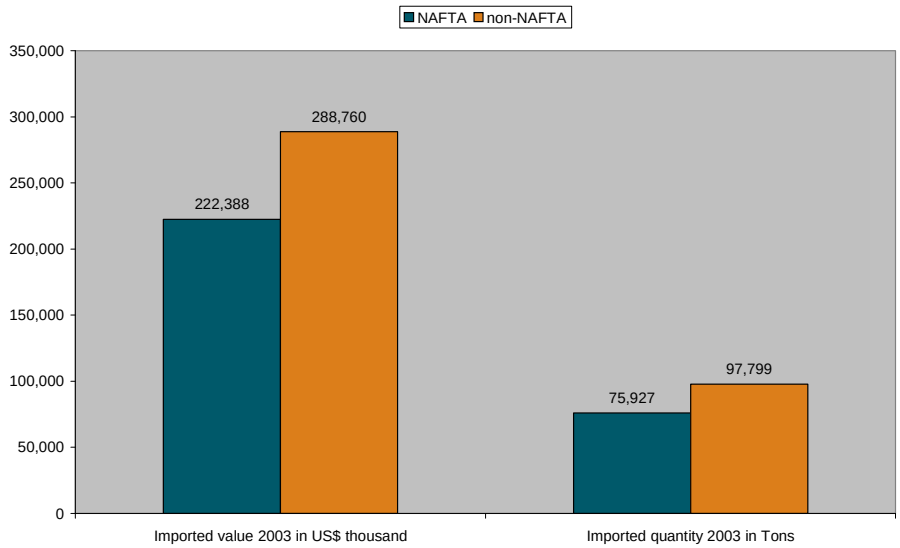

Figure 42: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 392020 into the US, 2003

7.2.1.5 HS 630533 Sacks, bags, packing, of strip plastic material

The USA was the largest importer of HS 630533 in the world with total imports in 2003 of US$ 107.5 million, representing 20.6% of world imports (47,232 tons) at an average price per ton of US$ 2,277.

There has been a steady growth of both the value and volume of imports of this product category into the US, as per the following chart:

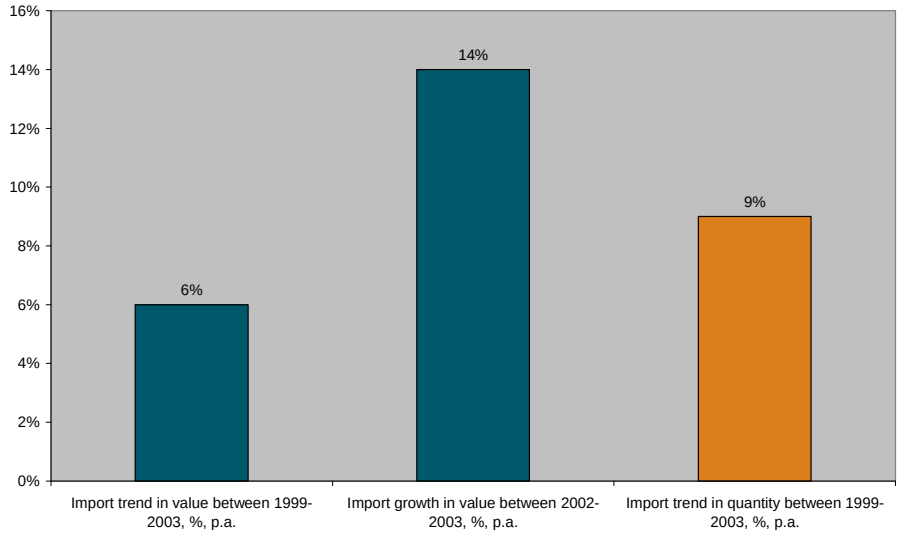

Figure 43: Growth trends for US imports of HS 630533

In 2003, the largest proportion of US import value in this product category was supplied by Mexico with 26% of value, whereas the largest proportion by volume was supplied by China with 19% of volume. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

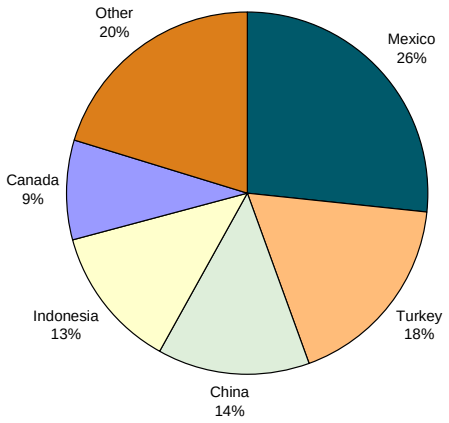

Figure 44: Top supply market share of imports of HS 630533 into the US by value, 2003

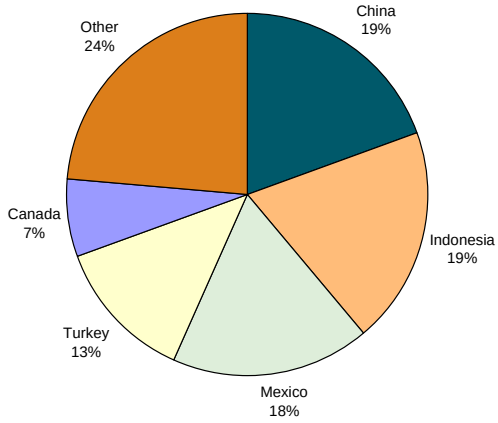

Figure 45: Top supply market share of imports of HS 630533 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

With the countries that fall under NAFTA[81] removed it can be seen that the size of demand for HS 630533 is reduced to US$ 69.3 million, representing 64.4% of total imports in 2003 (35,528 tons or 75.2% of US imports by volume) at an average price per ton of US$ 1,951.

[81] The USA, Canada and Mexico are the countries that fall under NAFTA

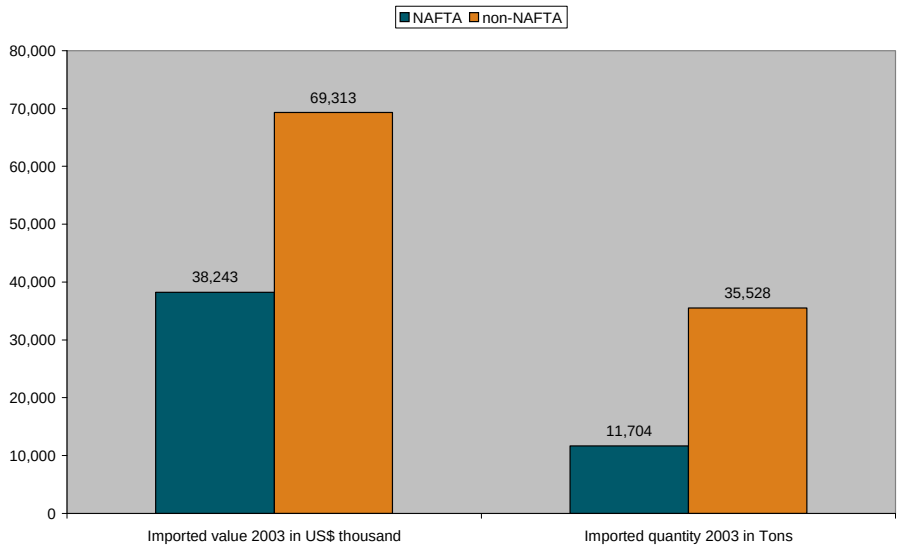

Figure 46: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 630533 into the US, 2003

Other products/applications

The US imported US$ 5.5 million worth (1,036 tons) of other PP products in 2003. There has been a strong increase in both volume and value of imports of this product category into the US between 1999 and 2003, as per the following table:

Product	US Import Value 2003	Growth % p.a. 1999-2003 Value	US Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
391722 Tubes, pipes and hoses, rigid; of polypropylene	US$ 5.5 million	16%	1,036 tons	18%	China
					Germany
					Canada

Note: South Africa was not reported as a supplier of HS 391722 PP to the US in 2003.

7.2.1.6 HS 391722 Tubes, pipes and hoses, rigid; of polypropylene

The US was the largest importer of HS 391722 in the world with total imports in 2003 of US$ 5.5 million, representing 2.1% of world imports, at an average price per ton of US$ 5,351.

There has been strong growth of both the value and volume of imports of this product category into the US, as per the following chart:

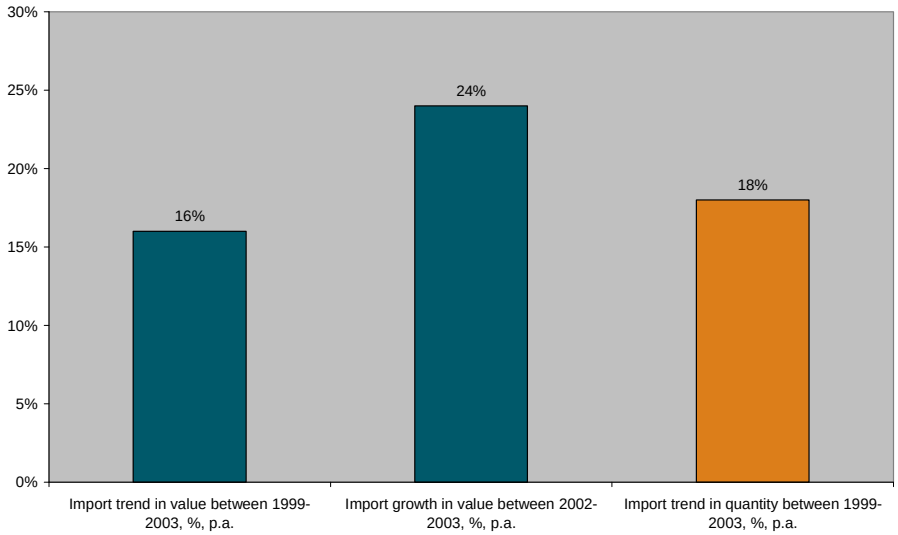

Figure 47: Growth trends for US imports of HS 391722

The largest proportion of US imports in this product category was supplied by China with 23% of value and 39% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

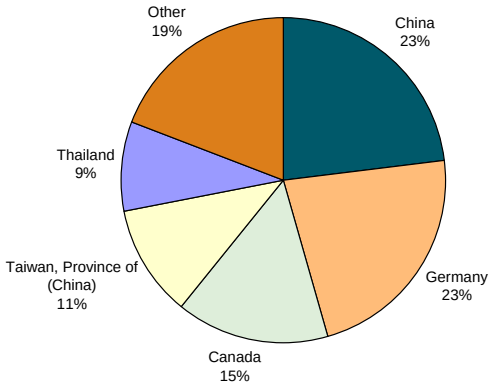

Figure 48: Top supply market share of imports of HS 391722 into the US by value, 2003

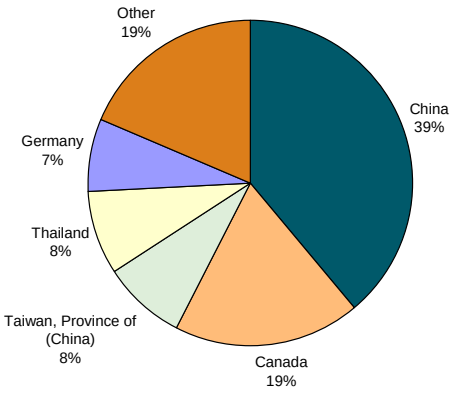

Figure 49: Top supply market share of imports of HS 391722 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

With the countries that fall under NAFTA[82] removed it can be seen that the size of demand for HS 391722 is reduced to US$ 4.6 million, representing 83.6% of total imports in 2003 (837 tons or 80.8% of US imports by volume) at an average price per ton of US$ 5,536.

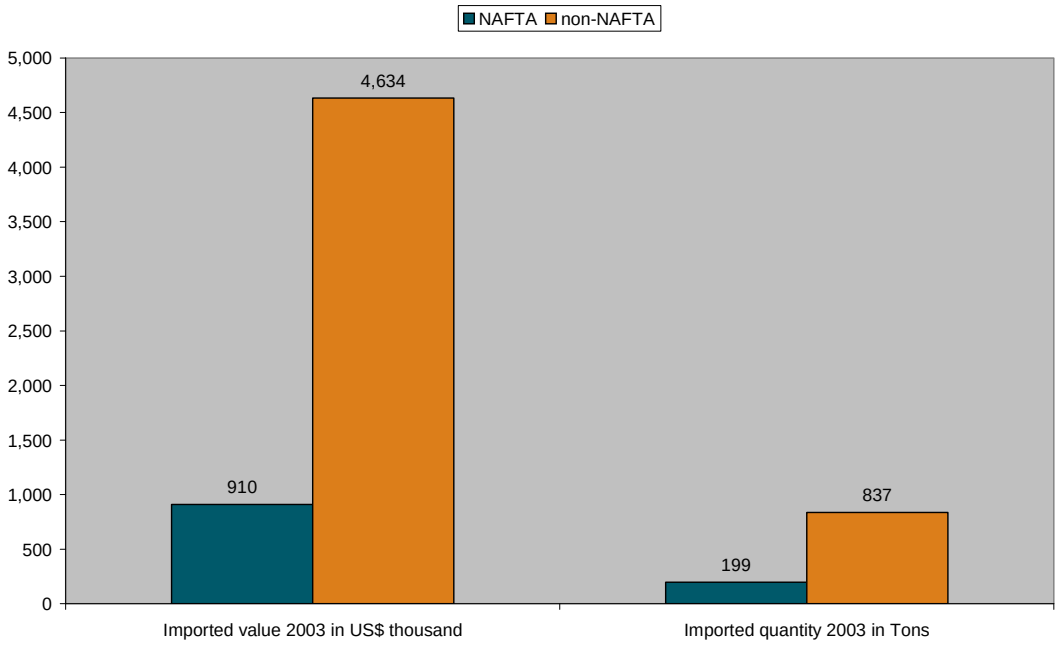

Figure 50: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 391722 into the US, 2003

[82] The USA, Canada and Mexico are the countries that fall under NAFTA

7.2.2 Imports of secondary PP products into the EU

Filament, fibre and textile products

The EU imported US$ 379.2 billion of filament, fibre and textile PP products in 2003[83]. Imports have been growing steadily between 1999 and 2003, as per the following table:

Product	US Import Value 2003	Growth % p.a. 1999-2003 Value	Top Suppliers
550340 Staple fibres of polypropylene, not carded or combed	US$ 234.7 million	4%	Denmark
			Belgium
			Germany
560741 Binder or baler twine, of polyethylene or polypropylene	US$ 63.5 million	6%	Portugal
			Austria
			Area Nes
560749 Twine not elsewhere specified, cordage, ropes and cables, of polyethylene or polypropylene	US$ 80.9 million	3%	Portugal
			Netherlands
			Czech Republic

South Africa was the 15th ranked supplier of HS 550340 to the EU in terms of value in 2003 with imports of US$ 792,000.

South Africa was not reported as a supplier of HS 560741 to the EU in 2003.

South Africa was the 43rd ranked supplier of HS 560749 to the EU in terms of value in 2003 with imports of US$ 37,000 (18 tons) and an average price per ton of US$ 2,506.

7.2.2.1 HS 550340 Staple fibres of polypropylene, not carded or combed

The EU reported total imports in 2003 of US$ 234.7 million, representing 90% of world imports.

There has been moderate growth of the value of imports of this product category into the EU, as per the following chart:

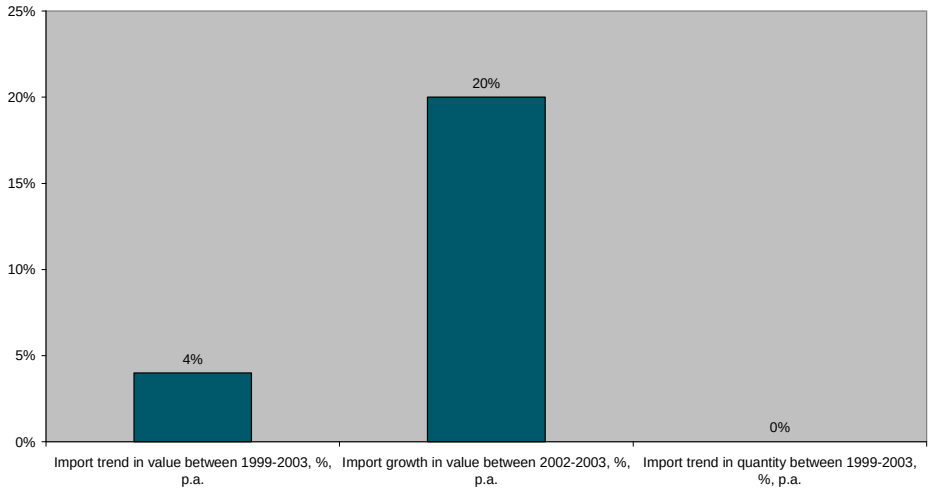

Figure 51: Growth trends for EU imports of HS 550340

[83] As set out in the methodology in section 2 above, this product category was defined to contain the following tariff codes: HS 550340, HS 560741, and HS 560749

EU countries supply the vast majority of EU imports in this product category. Denmark, Belgium, Germany, Austria and the United Kingdom were the top 5 suppliers and supplied 83% of value of imports in 2003 as per the following chart:

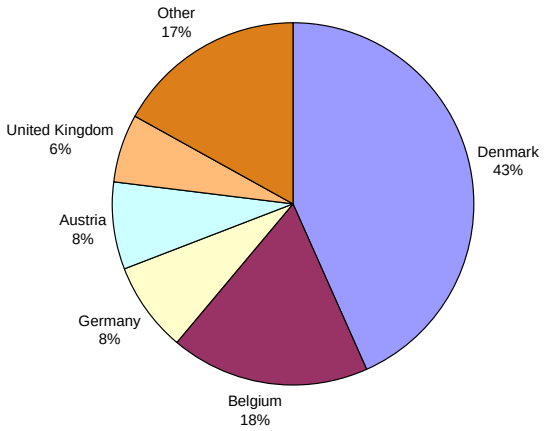

Figure 52: Top supply market share of imports of HS 550340 within the EU by value, 2003

Top 3 import markets for HS 550340 in the EU

The top three import markets for this product category in the EU are Germany, Italy and France, as per the table below. The majority of trade for this product is intra-EU trade.

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
Germany	US$ 77.5 million	1%	57,088 tons	-3%	Denmark
					Belgium
					Austria
Italy	US$ 63.5 million	13%	46,392 tons	10%	Denmark
					Belgium
					Germany
France	US$ 22.8 million	8%	14,735 tons	7%	Denmark
					United Kingdom
					Belgium

Germany

Germany was the largest importer of HS 550340 in the world in 2003, with total imports of US$ 77.5 million or 20% of world imports by value (57,088 tons) at an average price per ton of US$ 1,359.

There has been a slow growth of import value but a slow decline in import volume of this product category into Germany, as per the following chart:

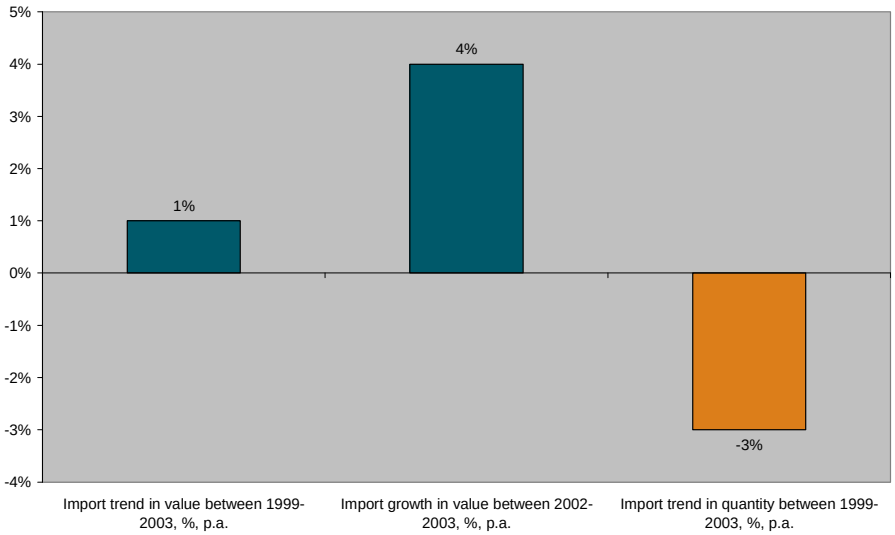

Figure 53: Growth trends for Germany's imports of HS 550340

Italy

Italy was the 2nd largest importer of HS 550340 in the world in 2003, with total imports of US$ 63.5 million or 17% of world imports by value (46,392 tons) at an average price per ton of US$ 1,370.

There has been a strong long-term growth of both value and volume of imports of this product category into Italy, as per the following chart:

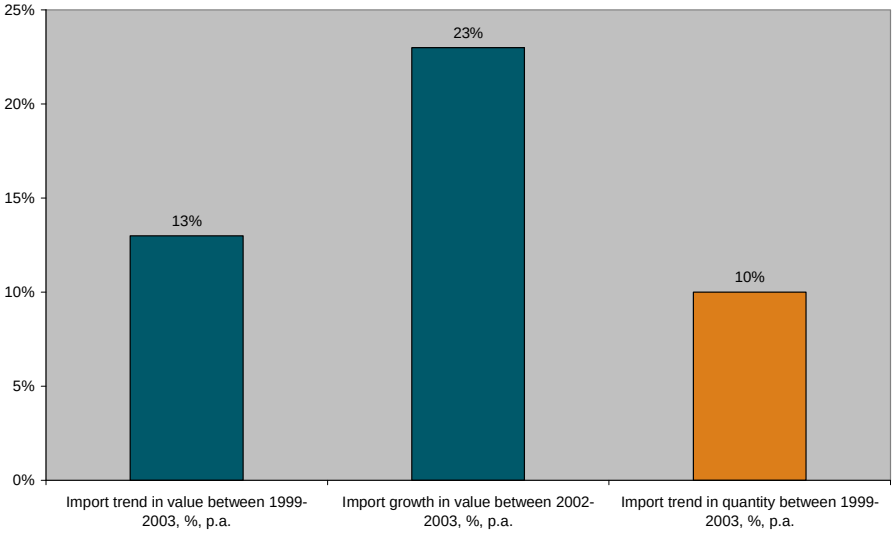

Figure 54: Growth trends for Italy's imports of HS 550340

France

France was the 3rd largest importer of HS 550340 in the world in 2003, with total imports of US$ 22.8 million or 6% of world imports by value (14,735 tons) at an average price per ton of US$ 1,550.

There has been a steady long-term growth of both value and volume of imports, and a strong growth in value of imports from 2002 to 2003 of this product category into France, as per the following chart:

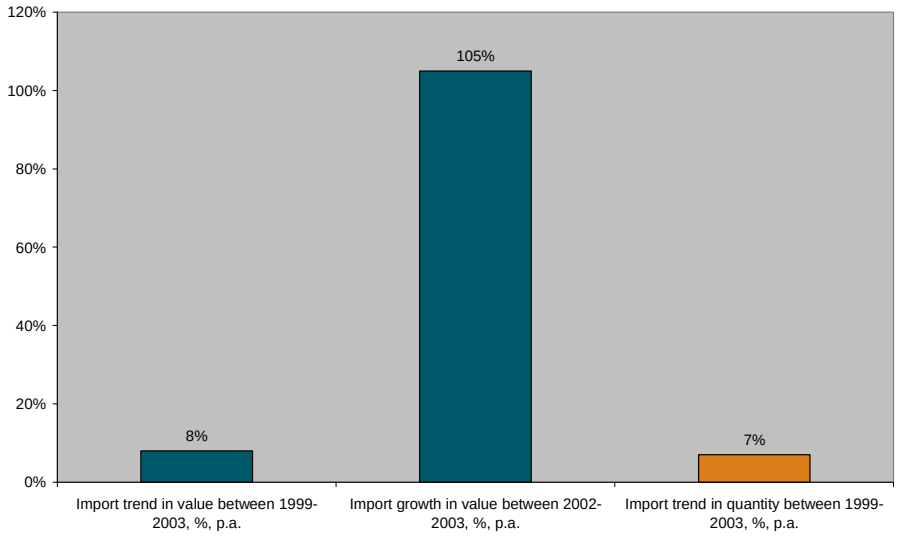

Figure 55: Growth trends for France's imports of HS 550340

Intra EU vs. Extra EU trade of HS 550340

With the countries that fall under the EU removed it can be seen that the size of demand for HS 550340 is greatly reduced with total imports in 2003 of only US$ 13.7 million, representing a mere 5.8% of the EU's imports.

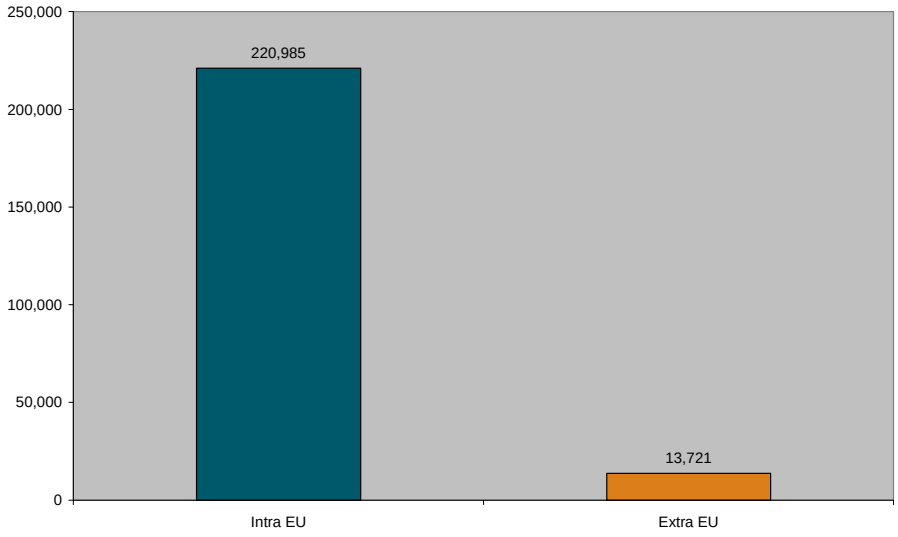

Figure 56: Comparison of value (US$ million) of supply of HS 550340by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 5th in terms of value with a 5.8% market share of non-EU supply of HS 550340.

7.2.2.2 HS 560741 Binder or baler twine, of polyethylene or polypropylene

The EU reported total imports in 2003 of US$ 63.5 million, representing 53.2% of world imports.

There has been a steady growth of the value of imports of this product category into the EU, as per the following chart:

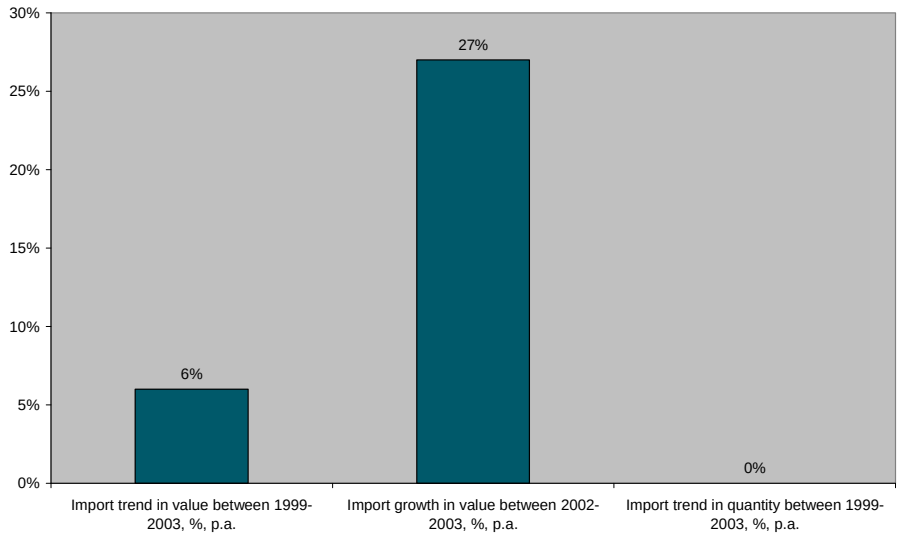

Figure 57: Growth trends for EU imports of HS 560741

EU countries supply the vast majority of EU imports in this product category. Portugal, Austria, Italy and the Czech Republic are four of the top 5 suppliers and supplied 58% of value of imports in 2003, as per the following chart:

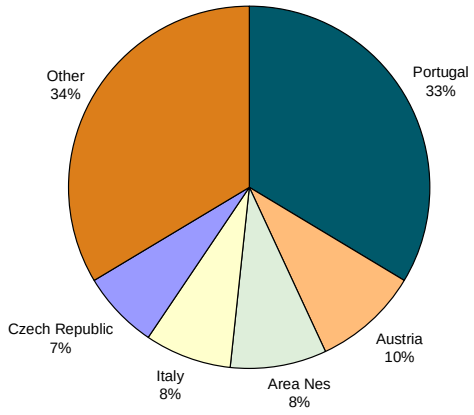

Figure 58: Top supply market share of imports of HS 560741 within the EU by value, 2003

Top 3 import markets for HS 560741 in the EU

The top three import markets for this product category in the EU are France, Germany and the UK, as per the table below:

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
France	US$ 19.6 million	5%	13,734 tons	0%	Portugal
					Austria
					Italy
Germany	US$ 11.2 million	6%	7,956 tons	0%	Czech Republic
					Austria
					France
UK	US$ 6.9 million	7%	4,497 tons	-2%	Portugal
					Italy
					Spain

Once again the majority of trade comprises intra-EU trade.

France

France was the largest importer of HS 560741 in the world in 2003, with total imports of US$ 19.6 million or 14% of world imports by value (13,734 tons) at an average price per ton of US$ 1,428.

There has been moderate long-term growth in the value of imports of this product category into France, as per the following chart:

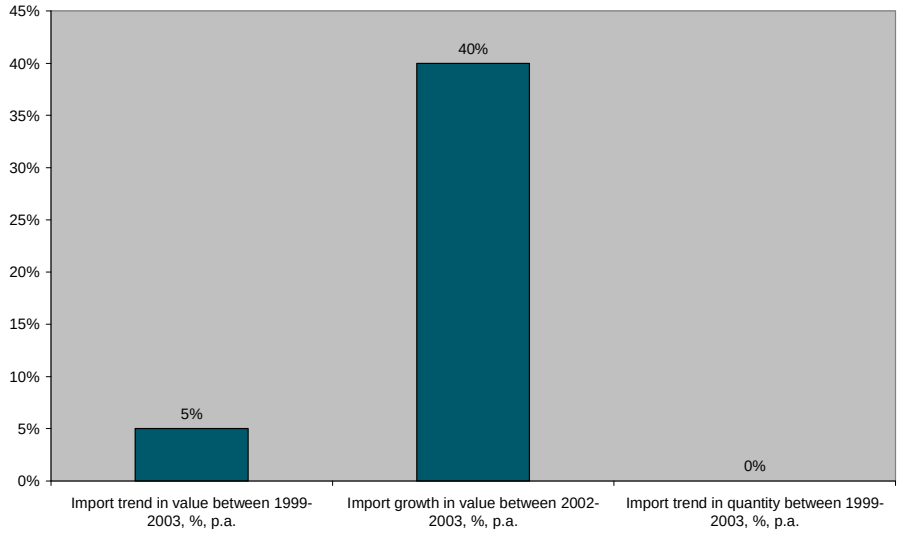

Figure 59: Growth trends for France's imports of HS 560741

Germany

Germany was the 4th largest importer of HS 560741 in the world in 2003, with total imports of US$ 11.2 million or 8% of world imports by value (7,956 tons) at an average price per ton of US$ 1,410.

There has been long-term growth in the value of imports of this product category into Germany, but a short-term decline from 2002 to 2003, as per the following chart:

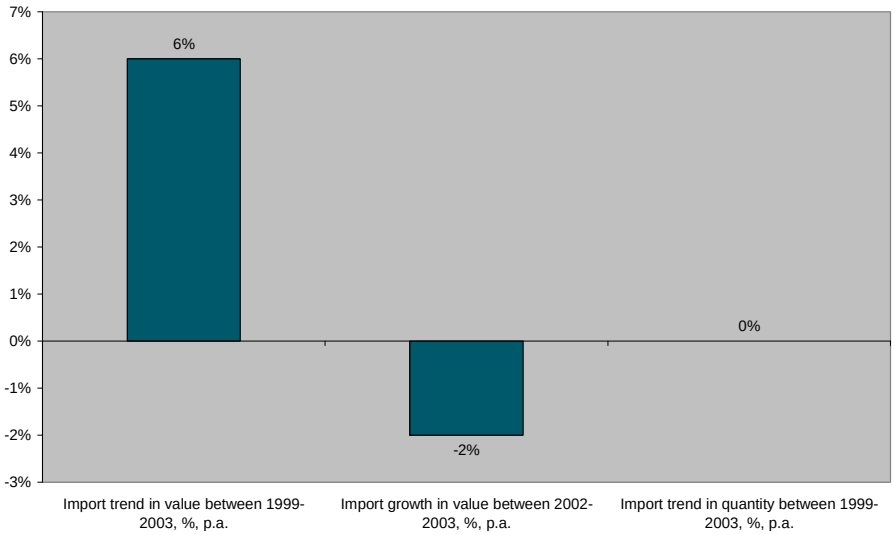

Figure 60: Growth trends for Germany's imports of HS 560741

UK

The UK was the 6th largest importer of HS 560741 in the world in 2003, with total imports of US$ 6.9 million or 5% of world imports by value (4,497 tons) at an average price per ton of US$ 1,540.

There has been long-term growth in the value of imports of this product category into the UK, as per the following chart:

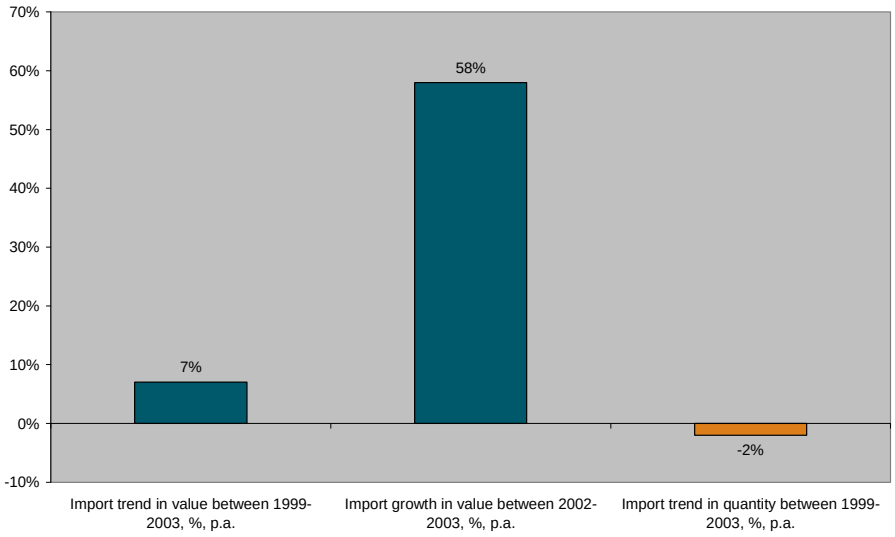

Figure 61: Growth trends for the UK's imports of HS 560741

Intra EU vs. Extra EU trade of HS 560741

With the countries that fall under the EU removed it can be seen that the size of demand for HS 560741 is greatly reduced with total imports in 2003 of only US$ 9.5 million, representing a mere 15% of the EU's imports.

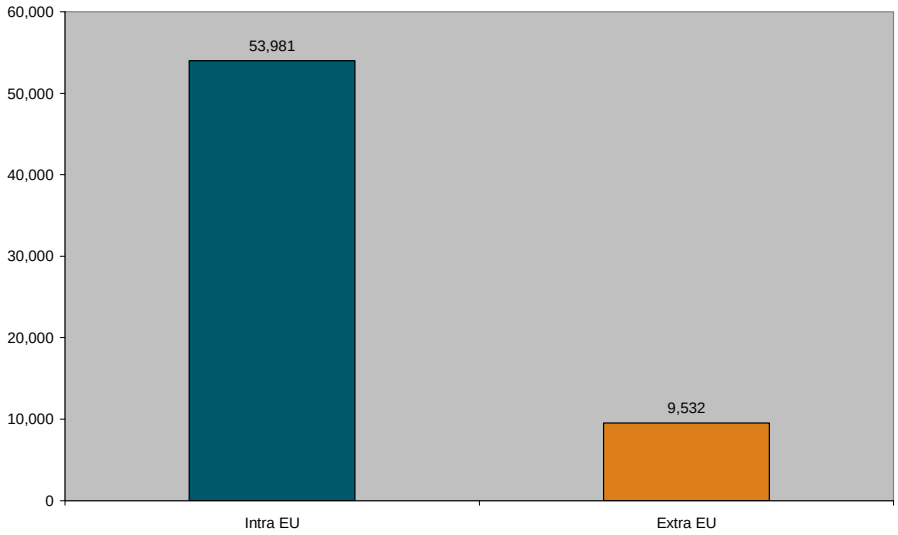

Figure 62: Comparison of value (US$ million) of supply of HS 560741 by EU and non-EU countries, 2003

7.2.2.3 HS 560749 Twine not elsewhere specified, cordage, ropes and cables, of polyethylene or polypropylene

The EU reported total imports in 2003 of US$ 80.9 million, representing 25.7% of world imports.

There has been moderate growth of the value of imports of this product category into the EU, as per the following chart:

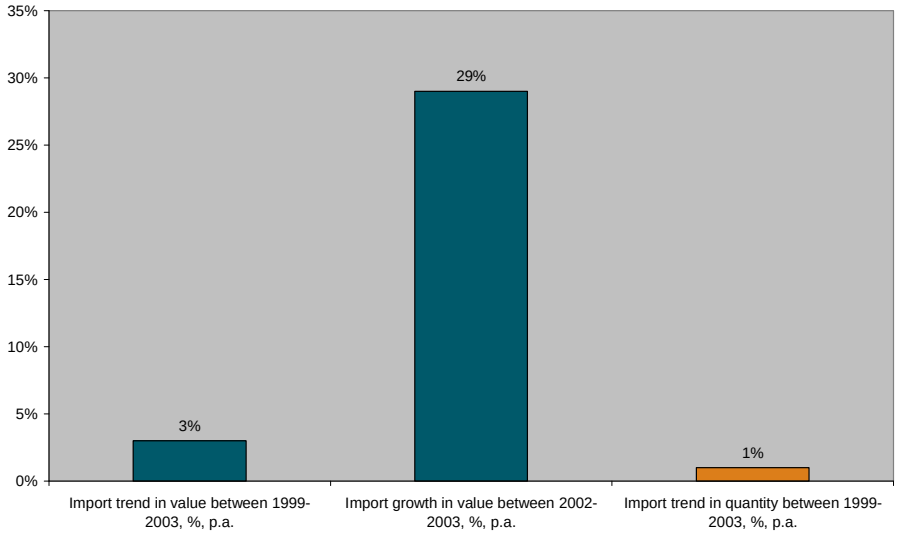

Figure 63: Growth trends for EU imports of HS 560749

EU countries supply the vast majority of EU imports in this product category. Portugal, Netherlands, Czech Republic, Slovakia and Germany were the top 5 suppliers and supplied 62.6% of value of imports in 2003 as per the following chart:

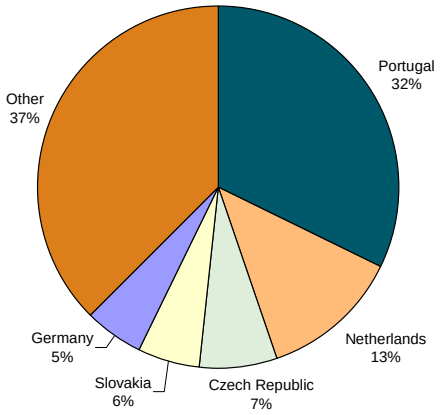

Figure 64: Top supply market share of imports of HS 560749 within the EU by value, 2003

Top 3 import markets for HS 560749 in the EU

The top three import markets for this product category in the EU are the Netherlands, Germany and the UK, as per the table below. Again, the majority of trade comprises intra-EU trade.

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
Netherlands	US$ 15.9 million	14%	9,681 tons	21%	Portugal
					Greece
					Slovakia
Germany	US$ 15.8 million	6%	7,218 tons	1%	Netherlands
					Poland
					Slovakia
UK	US$ 12.2 million	1%	6,623 tons	4%	Portugal
					Netherlands
					Tunisia

Netherlands

Netherlands was the 2nd largest importer of HS 560749 in 2003, with total imports of US$ 15.9 million or 6% of world imports by value (9,681 tons) at an average price per ton of US$ 1,648.

There has been a strong growth of both import value and volume of this product category into the Netherlands, as per the following chart:

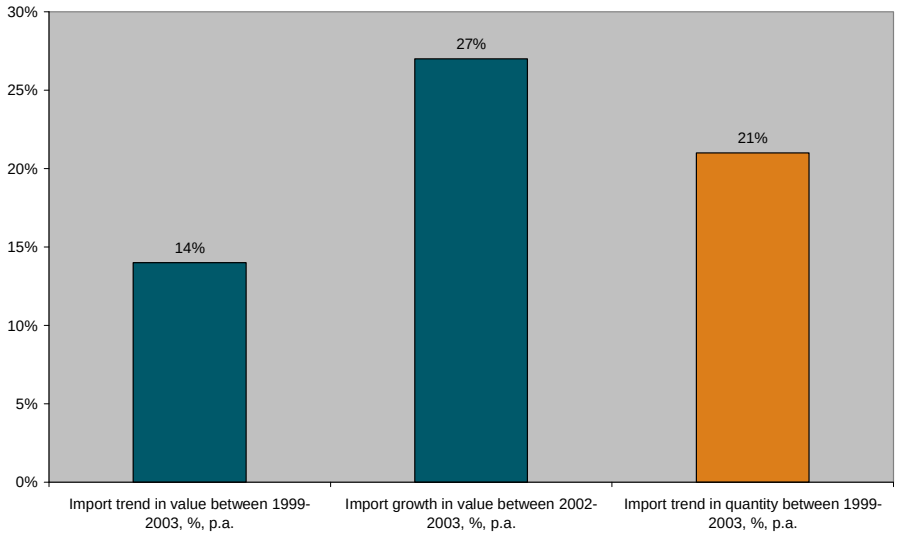

Figure 65: Growth trends for Netherlands's imports of HS 560749

Germany

Germany was the 3rd largest importer of HS 560749 in 2003, with total imports of US$ 15.8 million or 6% of world imports by value (7,218 tons) at an average price per ton of US$ 2,192.

There has been steady growth of both import value and volume of this product category into Germany, as per the following chart:

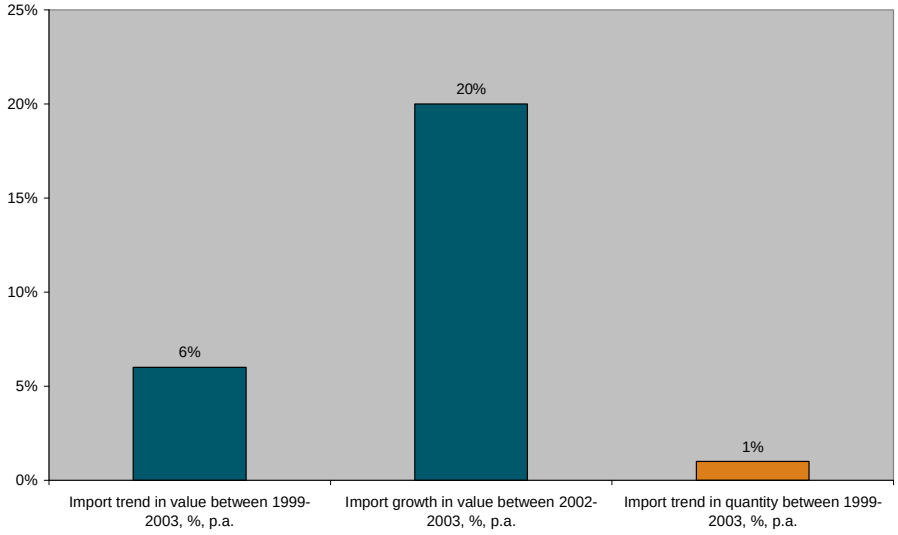

Figure 66: Growth trends for Germany's imports of HS 560749

The UK

The UK was the 4thlargest importer of HS 560749 in 2003, with total imports of US$ 12.2 million or 5% of world imports by value (6,623 tons) at an average price per ton of US$ 1,848.

There has been a slow but steady growth of both import value and volume of this product category into the UK, and a strong rise in import value from 2002 to 2003, as per the following chart:

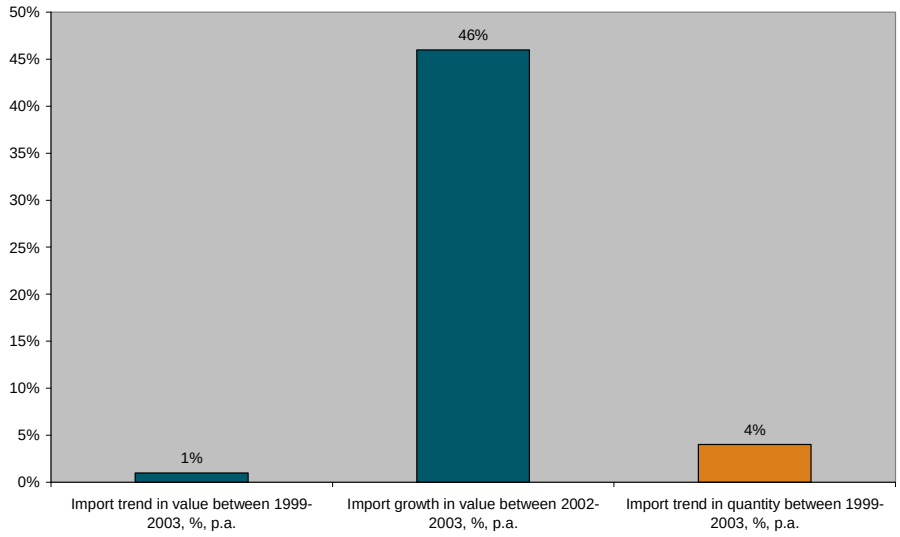

Figure 67: Growth trends for The UK's imports of HS 560749

Intra EU vs. Extra EU trade of HS 560749

With the countries that fall under the EU removed it can be seen that the size of demand for HS 560749 is greatly reduced with total imports in 2003 of only US$ 10.8 million, representing only 13.4% of the EU's imports.

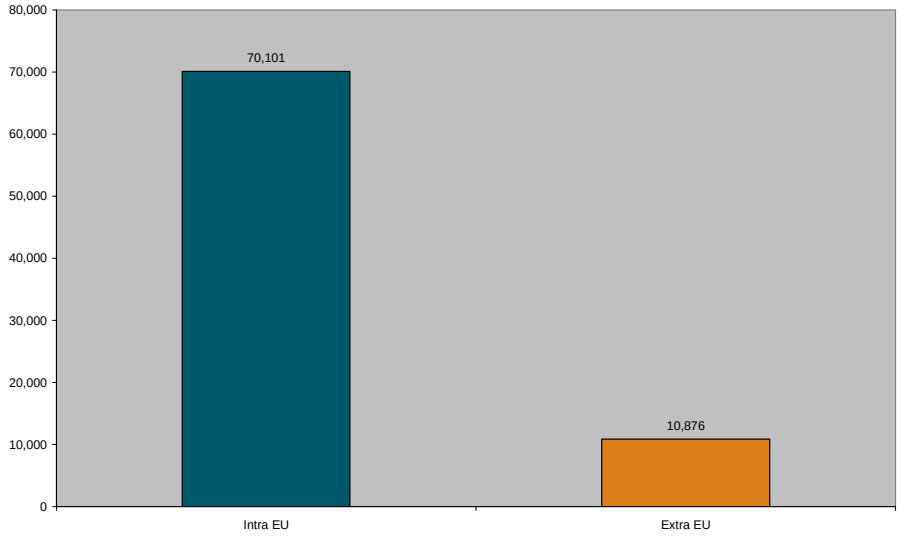

Figure 68: Comparison of value (US$ million) of supply of HS 560749 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 24th in terms of value with a 0.3% market share of non-EU supply of HS 560749.

Plate, sheets and film products

The EU imported US$ 2.2 billion of plate, sheets and film products in 2003. Imports have been growing steadily between 1999 and 2003, as per the following table:

Product	US Import Value 2003	Growth % p.a. 1999-2003 Value	Top Suppliers
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	US$ 2,155.1 million	10%	Italy
			Belgium
			Germany
630533 Sacks, bags, packing, of strip plastic material	US$ 140.1 million	9%	Turkey
			China
			Viet Nam

South Africa was the 60th ranked supplier of HS 392020 to the EU in terms of value in 2003 with imports of US$ 66,000.

South Africa was not reported as a supplier of HS 630533 to the EU in 2003.

7.2.2.4 HS 392020 Film and sheet etc, non-cellular etc, of polymers of propylene

The EU reported total imports in 2003 of US$ 2.1 billion representing 43.8% of world imports.

There has been a steady growth of the both the value and volume of imports of this product category into the EU, as per the following chart:

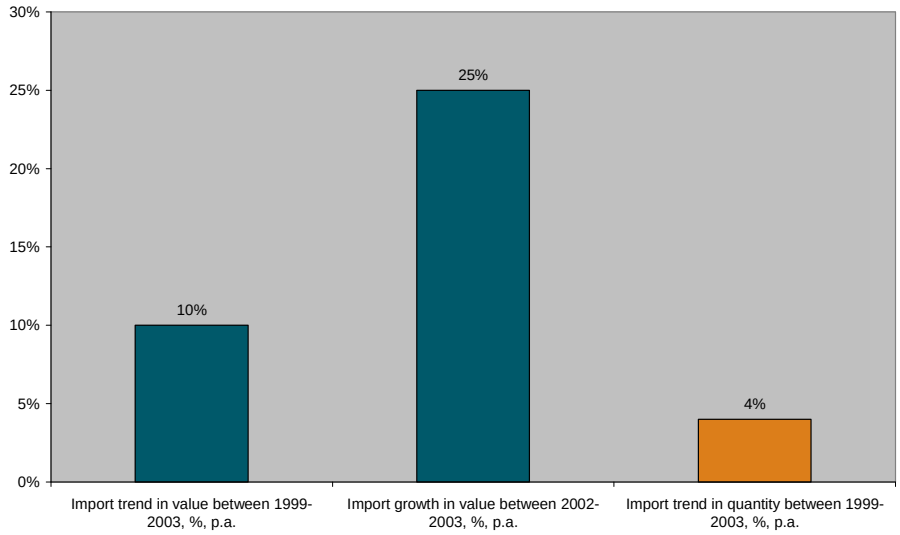

Figure 69: Growth trends for EU imports of HS 392020

EU countries supply the vast majority of EU imports in this product category. Italy, Belgium, Germany, Netherlands and the United Kingdom were the top 5 suppliers and supplied 73% of value of imports in 2003 as per the following chart:

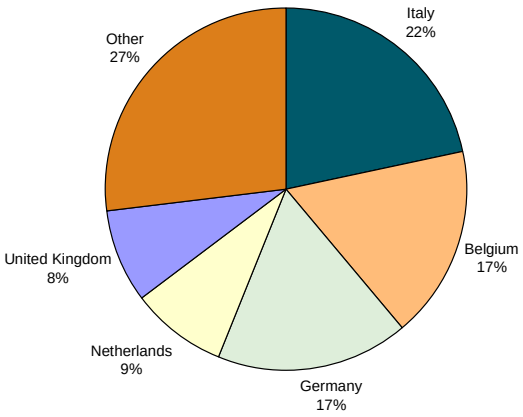

Figure 70: Top supply market share of imports of HS 392020 within the EU by value, 2003

Top 3 import markets for HS 392020 in the EU

The top three import markets for this product category in the EU are the UK, Germany and Belgium, as per the table below. Again, the majority of trade comprises intra-EU trade.

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
UK	US$ 430.7 million	16%	163,191 tons	-2%	Belgium
					Germany
					Italy
Germany	US$ 309.8 million	10%	111,314 tons	7%	Italy
					United Kingdom
					Belgium
Belgium	US$ 284.9 million	10%	95,770 tons	8%	Netherlands
					Italy
					Germany

The UK

The UK was the 2nd largest importer of HS 392020 in 2003, with total imports of US$ 430.7 million or 9% of world imports by value (163,191 tons) at an average price per ton of US$ 2,640.

There has been strong long-term growth of import value but a slow decline in import volume of this product category into The UK, as per the following chart:

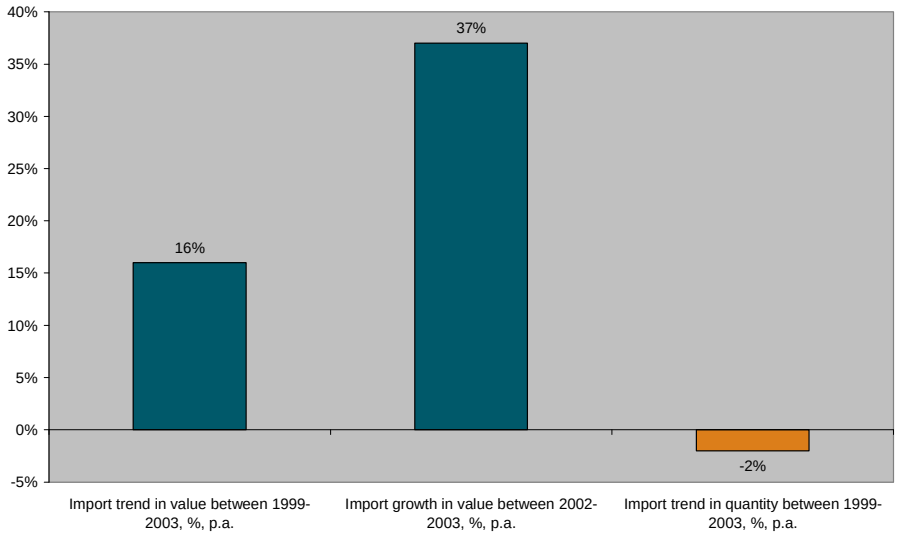

Figure 71: Growth trends for The UK's imports of HS 392020

Germany

Germany was the 3rd largest importer of HS 392020 in 2003, with total imports of US$ 309.8 million or 6% of world imports by value (111,314 tons) at an average price per ton of US$ 2,783.

There has been steady growth of both import value and volume of this product category into Germany, as per the following chart:

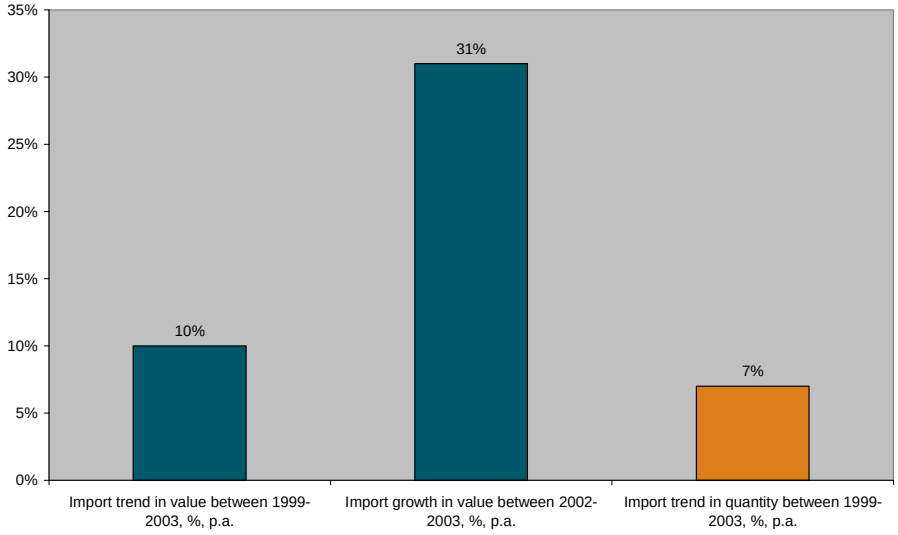

Figure 72: Growth trends for Germany's imports of HS 392020

Belgium

Belgium was the 4th largest importer of HS 392020 in 2003, with total imports of US$ 284.9 million or 6% of world imports by value (95,770 tons) at an average price per ton of US$ 2,975.

There has been steady growth of both import value and volume of this product category into Belgium, as per the following chart:

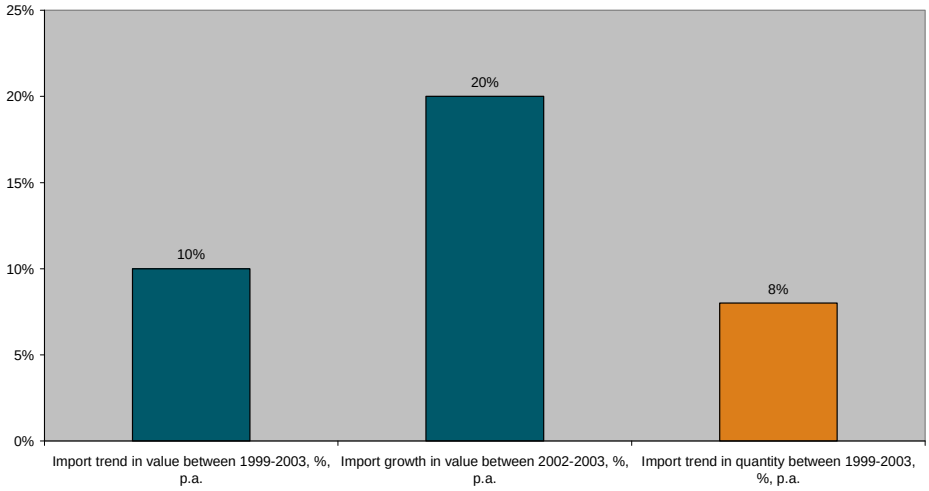

Figure 73: Growth trends for Belgium's imports of HS 392020

Intra EU vs. Extra EU trade of HS 392020

With the countries that fall under the EU removed it can be seen that the size of demand for HS 392020 is greatly reduced with total imports in 2003 of only US$ 228 million, representing only 10.6% of the EU's imports.

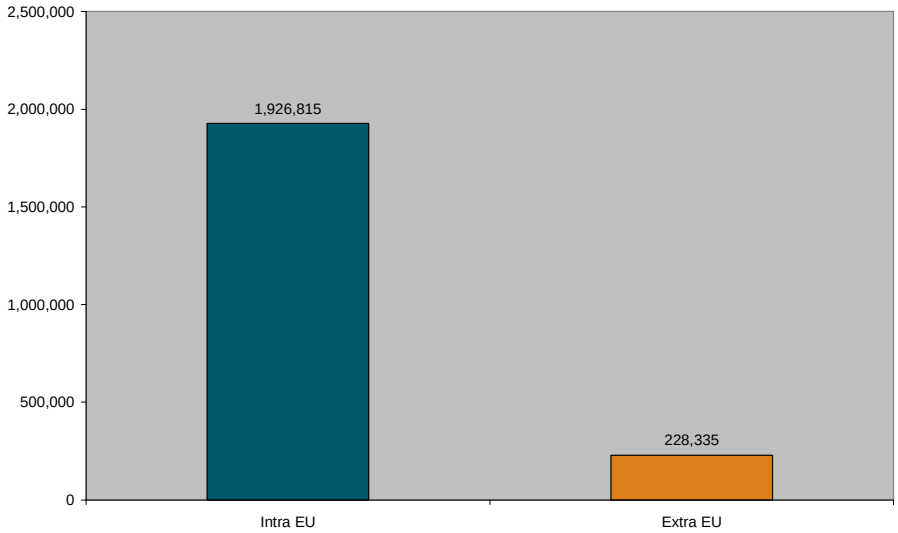

Figure 74: Comparison of value (US$ million) of supply of HS 392020 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 40th in terms of value with a 0.03% market share of non-EU supply of HS 392020.

7.2.2.5 HS 630533 Sacks, bags, packing, of strip plastic material

The EU reported total imports in 2003 of US$ 140.1 million, representing 26.8% of world imports.

There has been a steady growth of the both the value and volume of imports of this product category into the EU, as per the following chart:

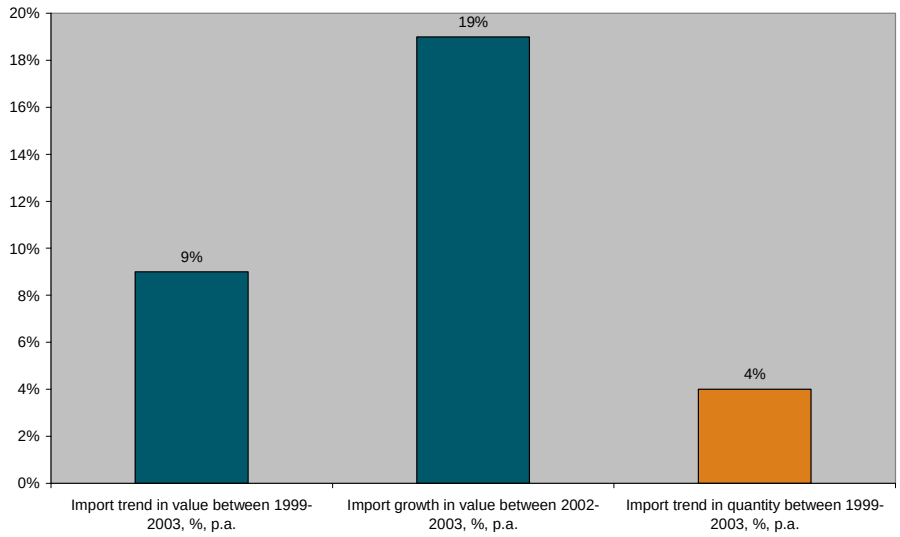

Figure 75: Growth trends for EU imports of HS 630533

Turkey, with 19.2% of value, supplied the largest proportion of EU imports in this product category. The following chart shows the share of the top 5 suppliers to the EU in terms of value:

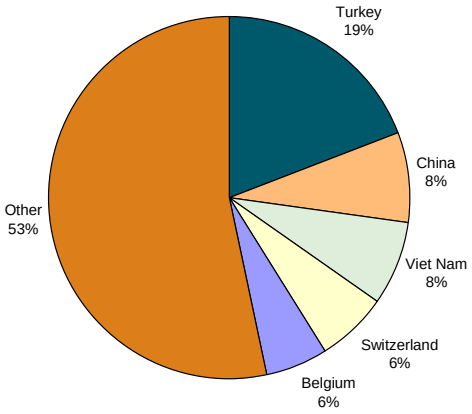

Figure 76: Top supply market share of imports of HS 630533 within the EU by value, 2003

Top 3 import markets for HS 630533 in the EU

The top three import markets for this product category in the EU are Germany, Netherlands and Italy, as per the table below:

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
Germany	US$ 29 million	19%	9,500 tons	11%	Switzerland
					Turkey
					China
Netherlands	US$ 18.7 million	4%	8,047 tons	3%	Turkey
					Greece
					Belgium
Italy	US$ 18.2 million	7%	10,704 tons	2%	Turkey
					Viet Nam
					Czech Republic

Germany

Germany was the 3rd largest importer of HS 630533 in 2003, with total imports of US$ 29 million or 6% of world imports by value (9,500 tons) at an average price per ton of US$ 3,061.

There has been strong growth of both import value and volume of this product category into Germany, as per the following chart:

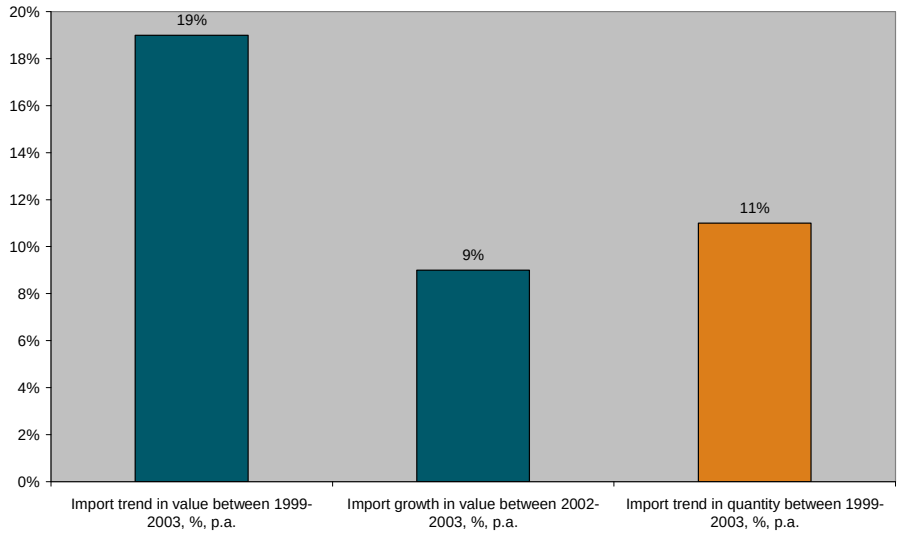

Figure 77: Growth trends for Germany's imports of HS 630533

Netherlands

The Netherlands was the 5th largest importer of HS 630533 in 2003, with total imports of US$ 18.7 million or 4% of world imports by value (8,047 tons) at an average price per ton of US$ 2,331.

There has been moderate growth of both import value and volume of this product category into the Netherlands, as per the following chart:

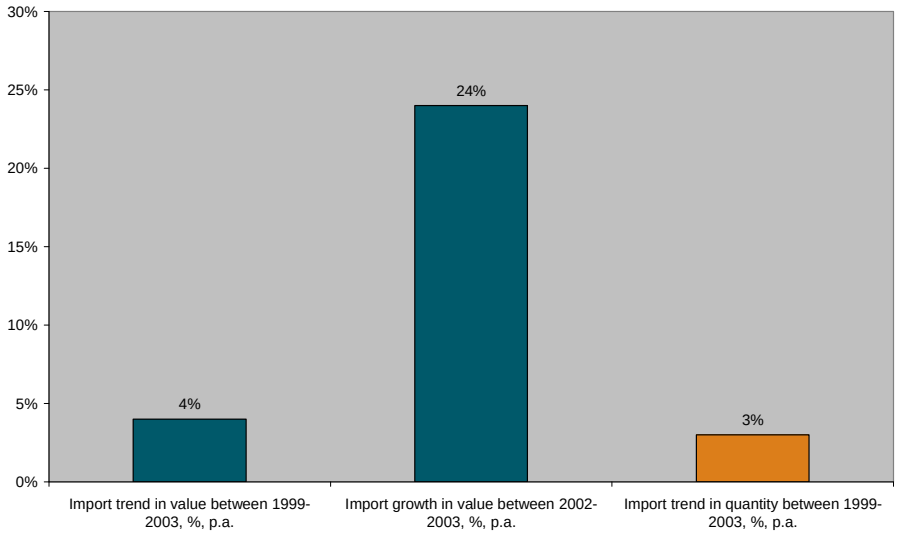

Figure 78: Growth trends for the Netherlands's imports of HS 630533

Italy

Italy was the 6th largest importer of HS 630533 in 2003, with total imports of US$ 18.2 million or 3% of world imports by value (10,704 tons) at an average price per ton of US$ 1,706.

There has been slow but steady growth of both import value and volume of this product category into Italy, as per the following chart:

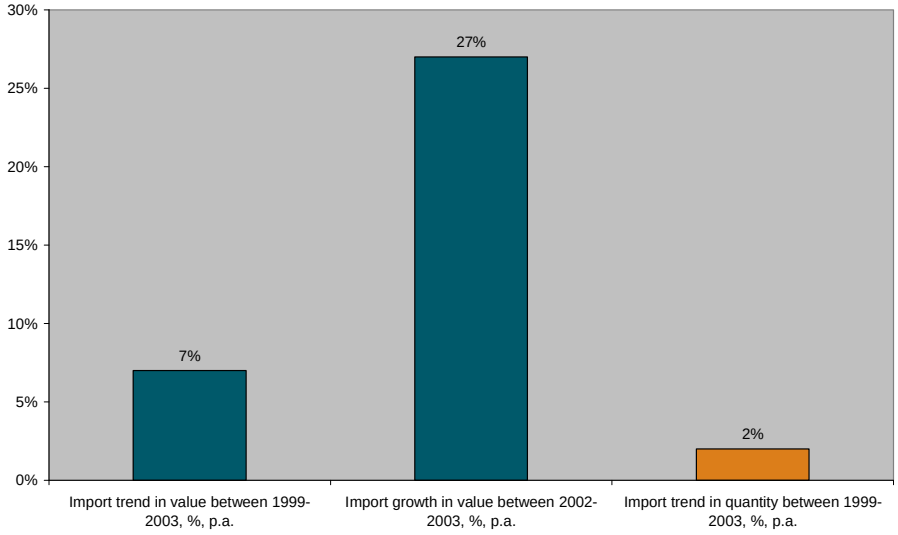

Figure 79: Growth trends for Italy's imports of HS 630533

Intra EU vs. Extra EU trade of HS 630533

With the countries that fall under the EU removed it can be seen that the size of demand for HS 630533 is reduced with total imports in 2003 of US$ 84.1 million, representing a 60.1% of the EU's imports.

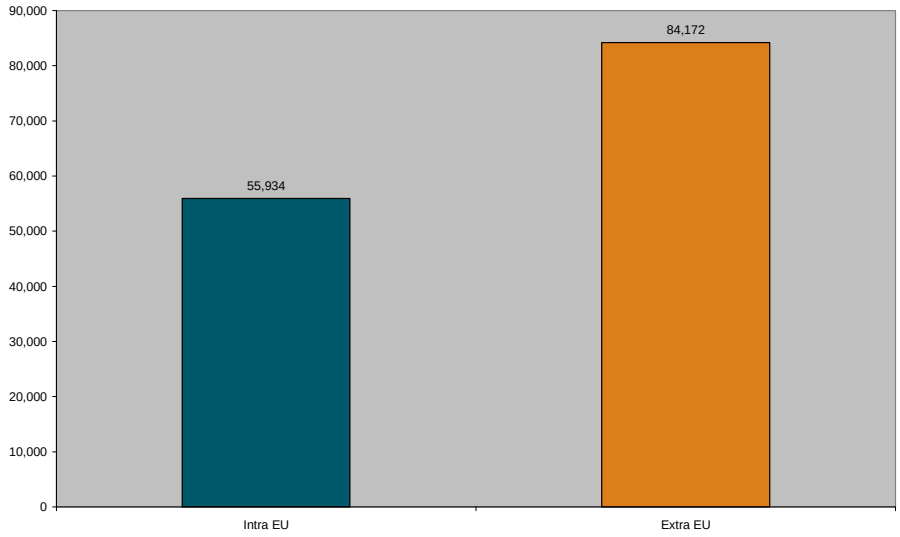

Figure 80: Comparison of value (US$ million) of supply of HS 630533 by EU and non-EU countries, 2003

Other products/applications

The EU imported US$ 125.2 million of other PP products in 2003. Imports have been growing steadily between 1999 and 2003, as per the following table:

Product	US Import Value 2003	Growth % p.a. 1999-2003 Value	Top Suppliers
391722 Tubes, pipes and hoses, rigid; of polypropylene	US$ 125.2 million	12%	Germany
			Italy
			Austria

South Africa was not reported as a supplier of HS 391722 to the EU in 2003.

7.2.2.6 HS 391722 Tubes, pipes and hoses, rigid; of polypropylene

The EU reported total imports in 2003 of US$ 125.2 million, representing 47.1% of world imports.

There has been a strong growth of both the value and volume of imports of this product category into the EU, as per the following chart:

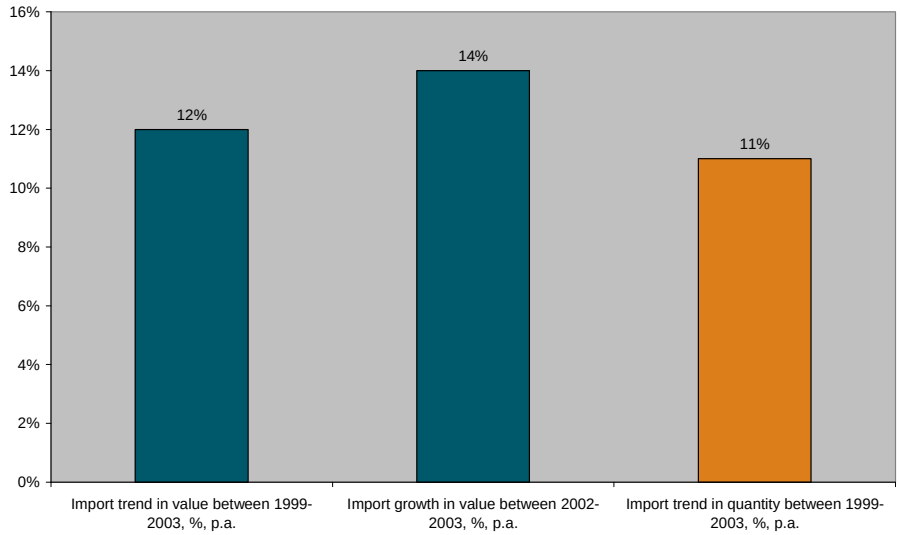

Figure 81: Growth trends for EU imports of HS 391722

EU countries supply the vast majority of EU imports in this product category. Germany, Italy, Austria and the United Kingdom are among the top 5 suppliers that supplied 69.3% of value of imports in 2003, as per the following chart:

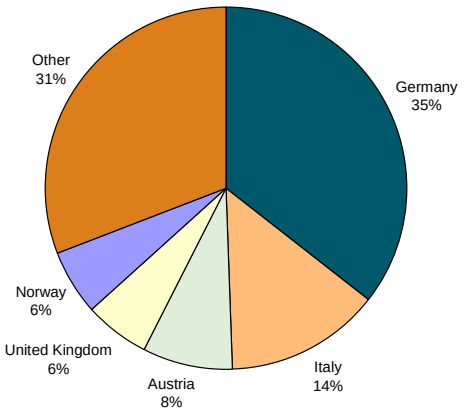

Figure 82: Top supply market share of imports of HS 391722 within the EU by value, 2003

Top 3 import markets for HS 391722 in the EU

The top three import markets for this product category in the EU are Spain, Italy and the UK, as per the table below. Again, the majority of trade comprises intra-EU trade.

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
Spain	US$ 27.2 million	22%	8,543 tons	26%	Germany
					Italy
					United Kingdom

Country	Import Value 2003	Growth % p.a. 1999-2003 Value	Import Volume 2003	Growth % p.a. 1999-2003 Volume	Top Suppliers
Italy	US$ 18.8 million	10%	8,176 tons	15%	Germany
					Netherlands
					Austria
UK	US$ 11.6 million	34%	1,945 tons	11%	Germany
					Japan
					Indonesia

Spain

Spain was the world's largest importer of HS 391722 in 2003, with total imports of US$ 27.2 million or 10% of world imports by value (8,543 tons) at an average price per ton of US$ 3,192.

There has been strong growth of both import value and volume of this product category into Spain, as per the following chart:

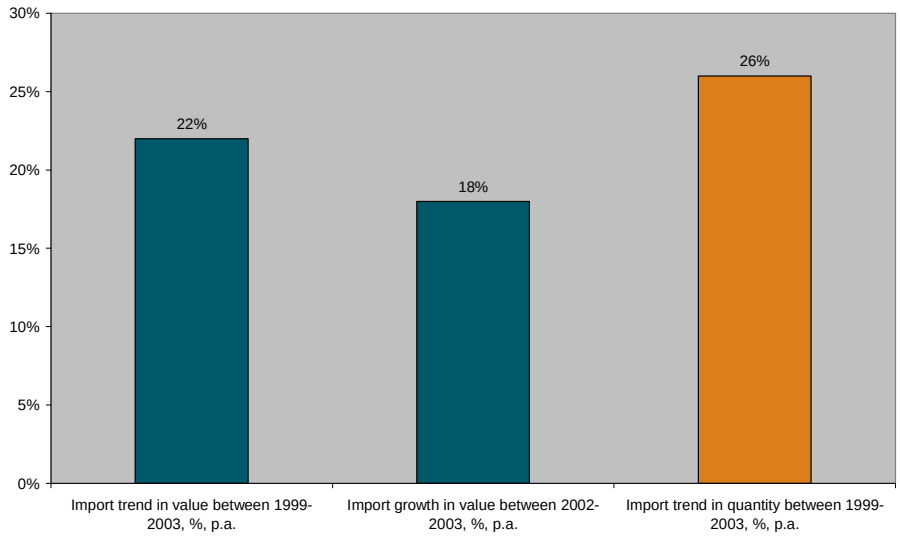

Figure 83: Growth trends for Spain's imports of HS 391722

Italy

Italy was the 2nd largest importer of HS 391722 in 2003, with total imports of US$ 18.8 million or 7% of world imports by value (8,176 tons) at an average price per ton of US$ 2,306.

There has been strong growth of both import value and volume of this product category into Italy, as per the following chart:

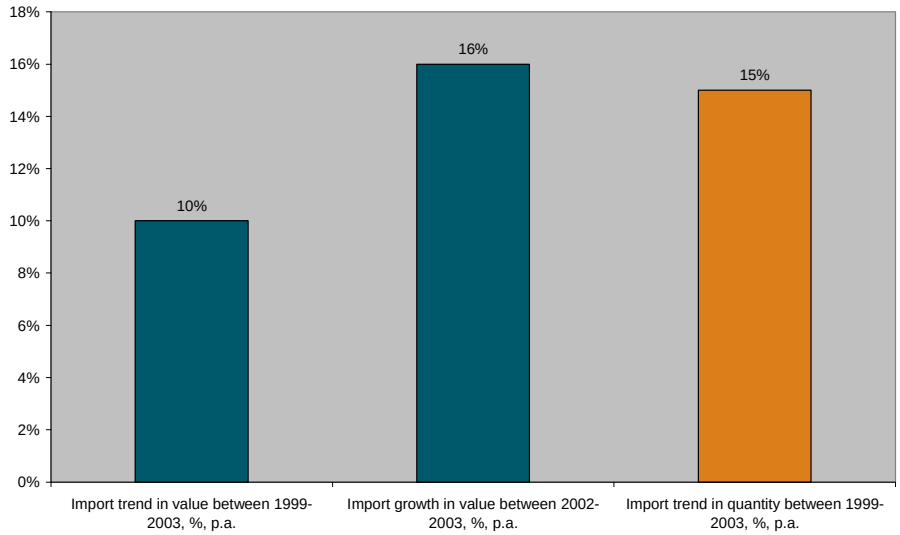

Figure 84: Growth trends for Italy's imports of HS 391722

The UK

The UK was the 3rd largest importer of HS 391722 in 2003, with total imports of US$ 11.6 million or 4% of world imports by value (1,945 tons) at an average price per ton of US$ 5,978.

There has been strong growth of both import value and volume of this product category into the UK, as per the following chart:

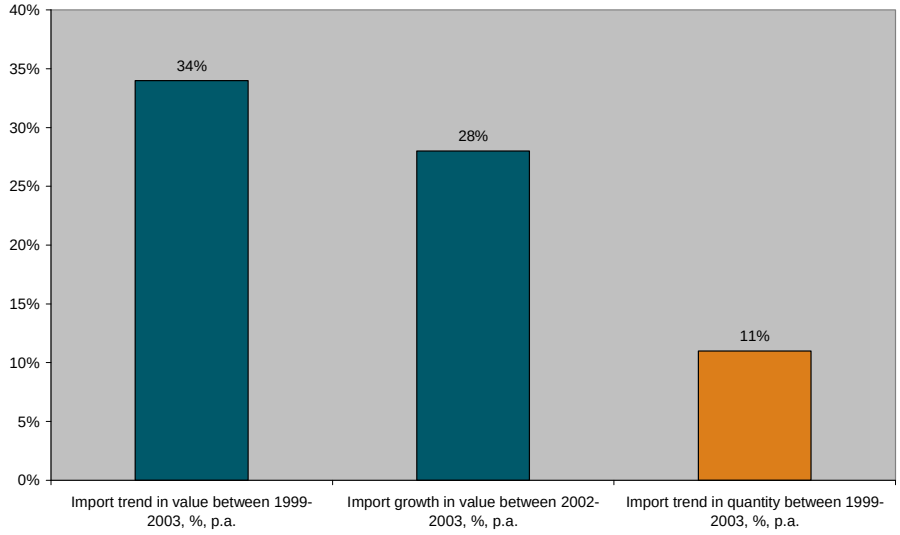

Figure 85: Growth trends for the UK's imports of HS 391722

Intra EU vs. Extra EU trade of HS 391722

With the countries that fall under the EU removed it can be seen that the size of demand for HS 391722 is greatly reduced with total imports in 2003 of only US$ 19.2 million, representing 15.4% of the EU's imports.

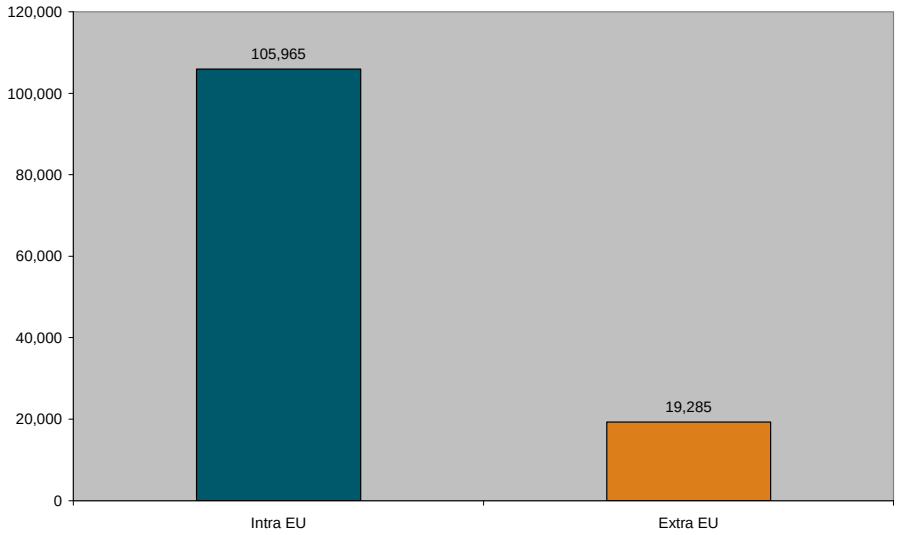

Figure 86: Comparison of value (US$ million) of supply of HS 391722 by EU and non-EU countries, 2003

7.3 Nonwoven products

7.3.1 Imports of nonwoven products into the US

The US imported US$ 946.8 million worth (269,688 tons) of the nonwoven products included in this analysis in 2003. Imports of all product categories have been increasing in value terms and in volume terms between 1999 and 2003, as per the following table:

Product	US Import Value 2003 (US$'000)	Growth % p.a. 1999-2003 Value	US Import Volume 2002 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers
560311 Nonwovens, man-made filaments weighing <25g/m2	119,902	17	43,981	20	Israel Italy Canada
560312 Nonwovens, man-made filaments weighing 25-70g/m2	120,126	17	35,667	25	Italy Canada Luxembourg
560313 Nonwovens, man-made filaments weighing 70-150g/m2	74,456	25	15,149	33	Germany Mexico Luxembourg
560314 Nonwovens, man-made filaments weighing >150g/m2	54,087	3	6,414	16	Japan Israel Canada
392190 Film and sheet etc, nes of plastics	578,250	5	168,567	9	Canada Korea Germany

7.3.1.1 HS 560311 Nonwovens, man-made filaments weighing <25g/m2

The USA was the largest importer of HS 560311 Nonwovens, man-made filaments weighing <25g/m2, with total imports in 2003 of US$ 119 million, representing 12% of world imports at an average price per ton of US$ 2,726.

There has been strong growth in the demand for this product, especially in the short-term, as can be seen in the chart below:

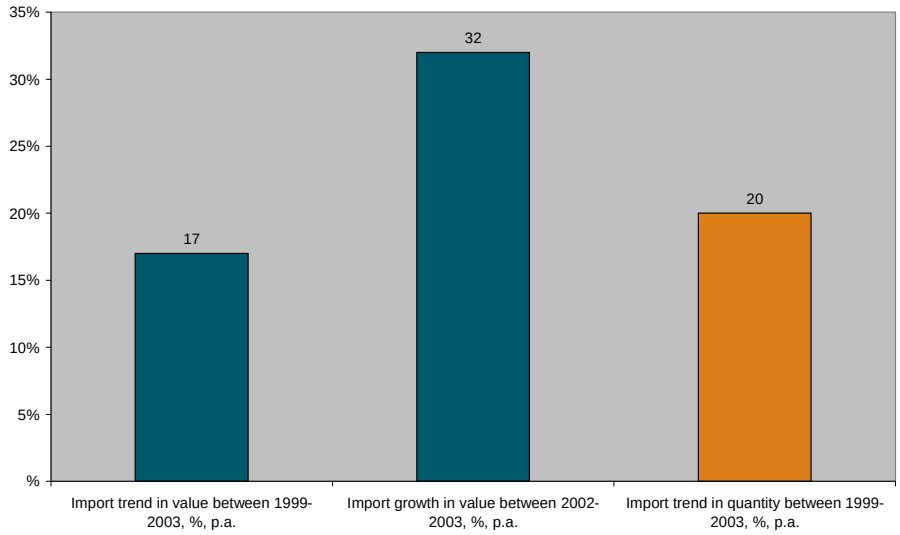

Figure 87: Growth trends for US imports of HS 560311 Nonwovens, man-made filaments weighing <25g/m2

As set out in the chart below, the largest supplier in value terms is Israel followed by Italy:

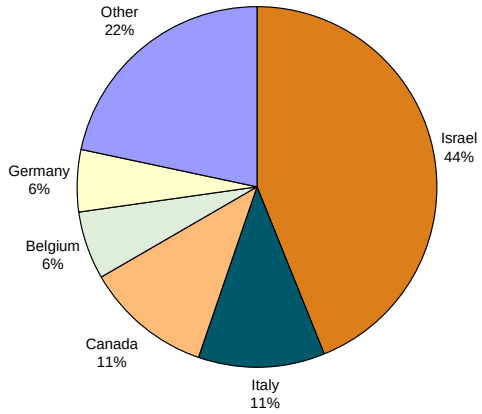

Figure 88: Top supply market share of imports of HS 560311 Nonwovens, man-made filaments weighing <25g/m2 into the US by value, 2003

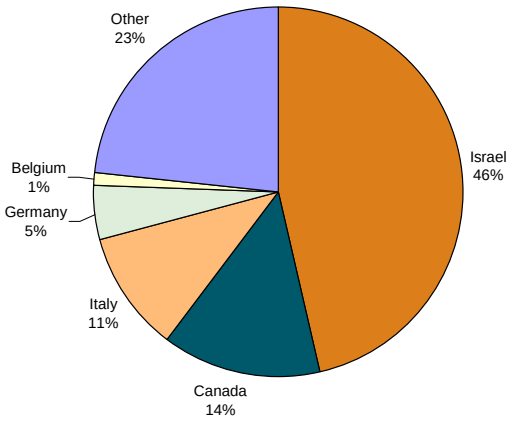

Figure 89: Top supply market share of imports of HS 560311 Nonwovens, man-made filaments weighing <25g/m2 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

Non-NAFTA supply of HS 560311 accounted for US$ 104.755 million in 2003 or 87.4% of total US imports by value (and 37,130 tons or 84.4% of total US imports by volume).

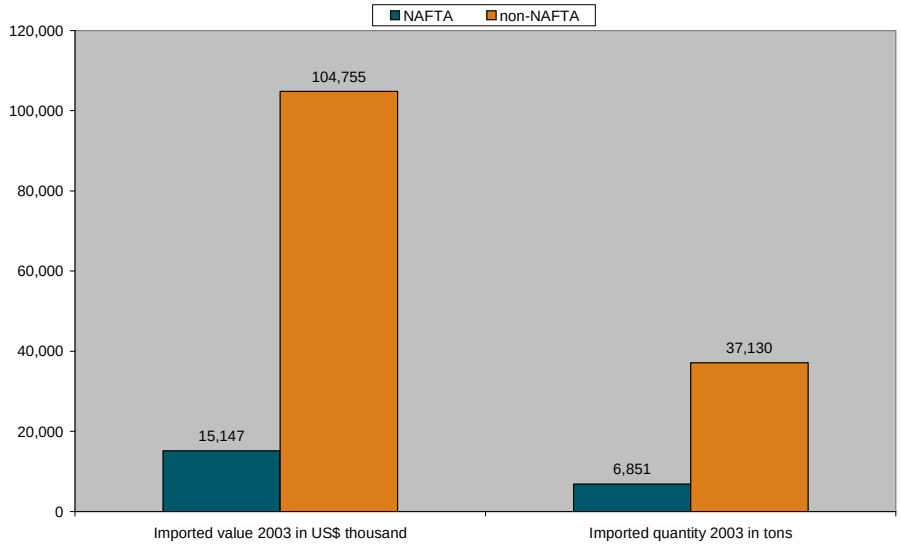

Figure 90: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 560311 Nonwovens, man-made filaments weighing <25g/m2 into the US, 2003

Despite shorter shipping distances and preferential trade arrangements, the low market share of NAFTA suppliers in comparison to non-NAFTA suppliers may indicate a potential for South Africa to increase exports of this product to the US.

7.3.1.2 HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

The USA was the 4th largest importer in the world of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2 in 2003, with total imports of US$ 120.126 million or 8% of world imports by value at an average price per ton of US$ 3,368.

The graph below shows strong growth in value and volume of imports over the long-term, and a pronounced over the short-term:

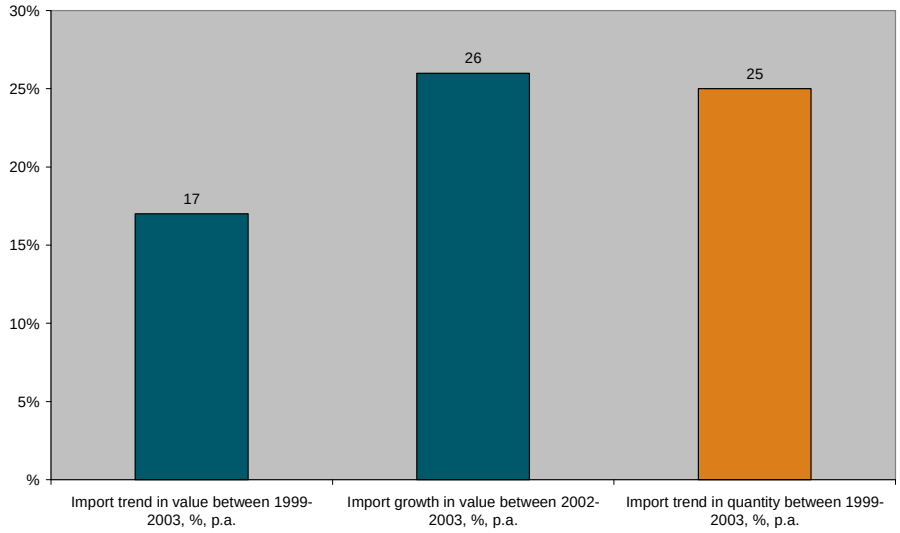

Figure 91: Growth trends for US imports of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

The majority of US imports in this product category are supplied by Italy with 20% of value and 16% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

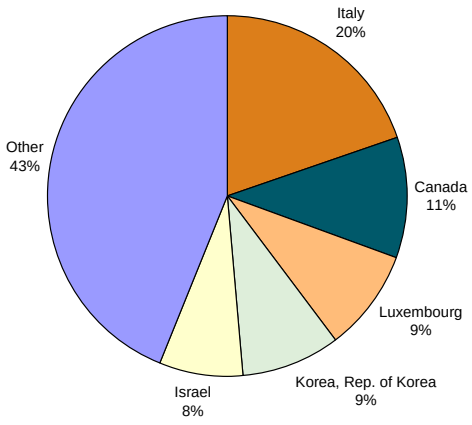

Figure 92: Top supply market share of imports of 560312 Nonwovens, man-made filaments weighing 25-70g/m2 into the US by value, 2003

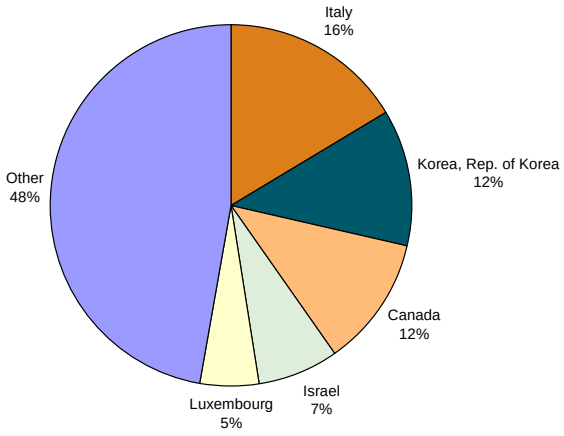

Figure 93: Top supply market share of imports of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

Non-NAFTA supply of HS 560312 accounted US$ 100.291 million or 83.5% of total US imports by value (and 29,223 tons or 82% of total US imports by volume) in 2003.

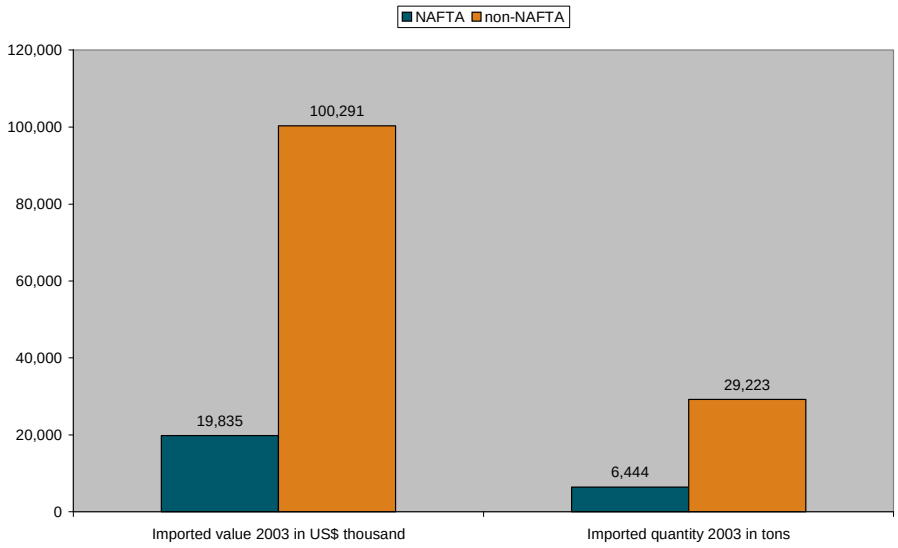

Figure 94: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2 into the US, 2003

Despite shorter shipping distances and preferential trade arrangements, the low market share of NAFTA suppliers in comparison to non-NAFTA suppliers may indicate a potential for South Africa to increase exports of this product to the US.

7.3.1.3 HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

The USA was the largest importer of in the world of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2 in 2003, with total imports of US$ 74.456 million or 9% of world imports by value at an average price per ton of US$ 4,915.

Growth, particularly in the short-term, has been strong in terms of both value and volume as shown in the graph below.

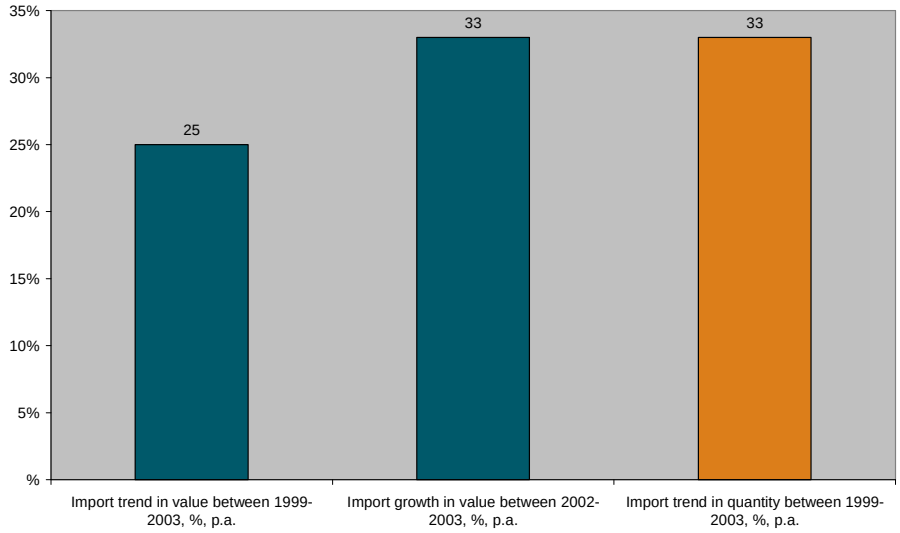

Figure 95: Growth trends for US imports of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

The majority of US imports in this product category are supplied by Germany with 32% of value and 28% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

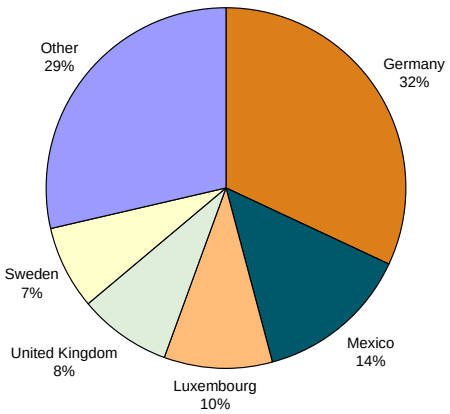

Figure 96: Top supply market share of imports of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2 into the US by value, 2003

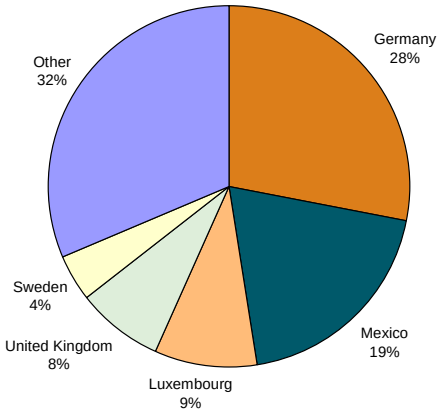

Figure 97: Top supply market share of imports of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

Non-NAFTA supply of HS 560313 accounted US$ 61.504 million or 82.6% of total US imports by value (and 11,952 tons or 78.9% of total US imports by volume) in 2003.

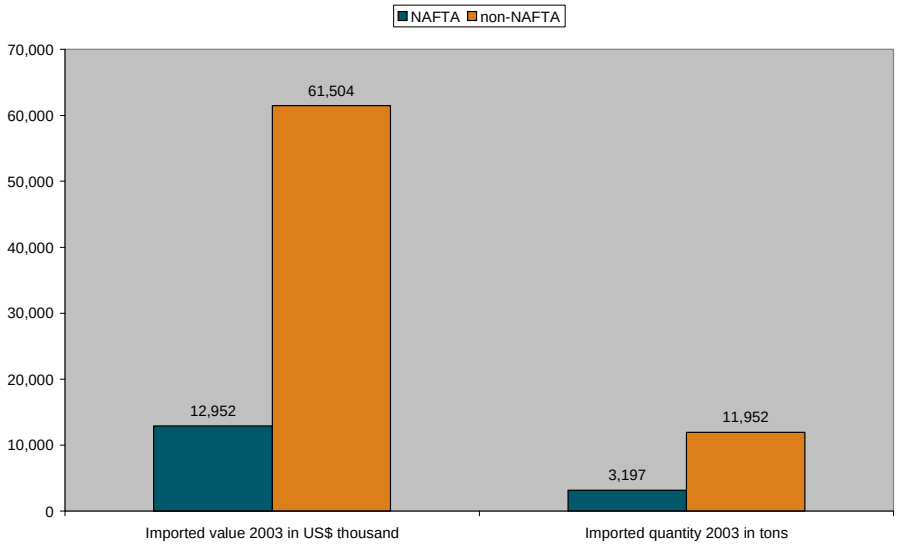

Figure 98: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2 into the US, 2003

Despite shorter shipping distances and preferential trade arrangements, the low market share of NAFTA suppliers in comparison to non-NAFTA suppliers may indicate a potential for South Africa to increase exports of this product to the US.

7.3.1.4 HS 560314 Nonwovens, man-made filaments weighing >150g/m2

The USA was the 3rd largest importer in the world of HS 560314 Nonwovens, man-made filaments weighing >150g/m2 in 2003, with total imports of US$ 54.807 million or 6% of world imports by value at an average price per ton of US$ 8,433.

Despite weak long-term growth in the import value of this product category into the US, long-term volume growth has been moderate to strong. Short-term growth in import value shows signs of improvement and has been strong as per the following chart:

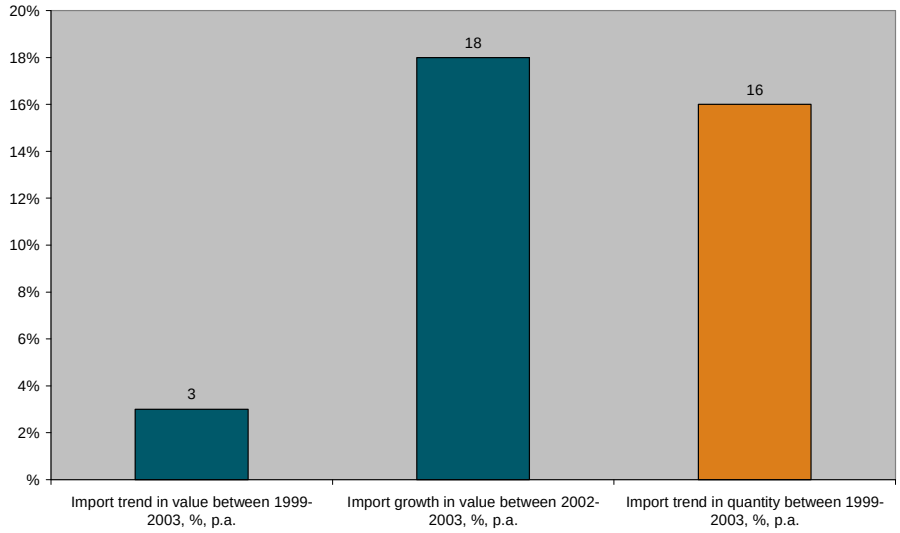

Figure 99: Growth trends for US imports of HS 560314 Nonwovens, man-made filaments weighing >150g/m2

Japan has the highest market share by value (38%) however this comes from only 15% of volume supplied. This is due to the high price per ton (US$ 20,355), which is more than double the average price per ton imported (US$ 8,433). Canada is the largest supplier by volume, importing 23% (1,491 tons) in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

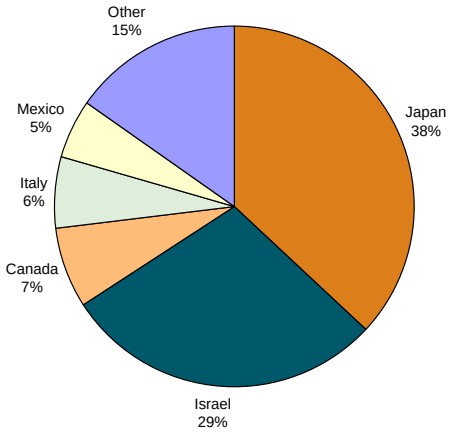

Figure 100: Top supply market share of imports of HS 560314 Nonwovens, man-made filaments weighing >150g/m2 into the US by value, 2003

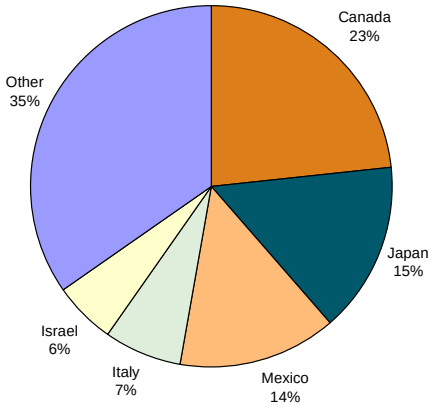

Figure 101: Top supply market share of imports of HS 560314 Nonwovens, man-made filaments weighing >150g/m2 into the US by volume, 2003

NAFTA vs. non-NAFTA trade

Non-NAFTA supply of HS 560314 accounted US$ 47.348 million or 87.5% of total US imports by value (and 4,016 tons or 62.6% of total US imports by volume) in 2003.

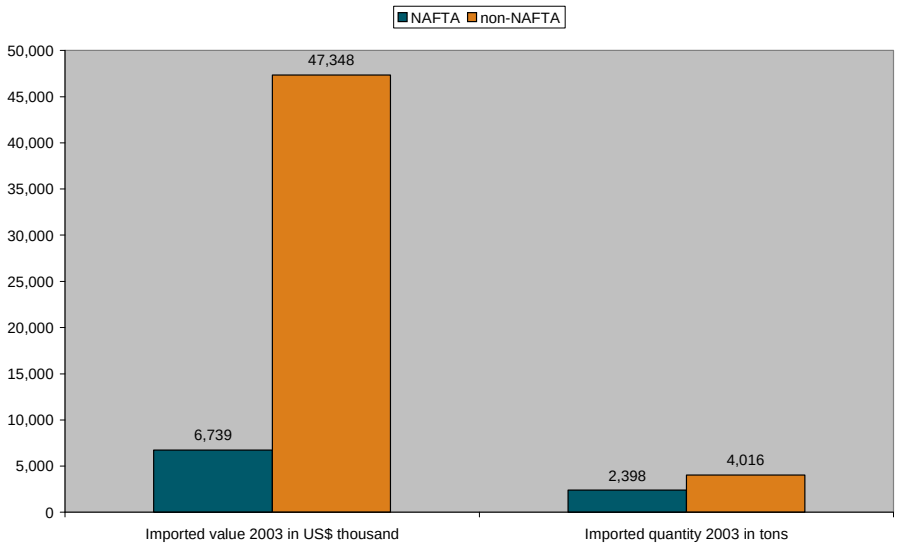

Figure 102: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 560314 Nonwovens, man-made filaments weighing >150g/m2 into the US, 2003

The disparity between value and volume supplied by non-NAFTA countries indicates that, on average, products supplied by non-NAFTA countries are more expensive than those of NAFTA supplies. This could be the result of increased transport costs, although Japan, in particular, may influence this heavily due to the high price per ton of volumes imported.

7.3.1.5 HS 392190 Film and sheet etc, nes of plastics

The USA was the largest importer in the world of HS 392190 Film and sheet etc, nes of plastics in 2003, with total imports of US$ 578.25 million or 9% of world imports by value at an average price per ton of US$ 3,430.

Despite weak long-term growth in the import value of this product category into the US, there has been moderate long-term growth in terms of import volumes. Short-term import values show signs of improvement as per the following chart:

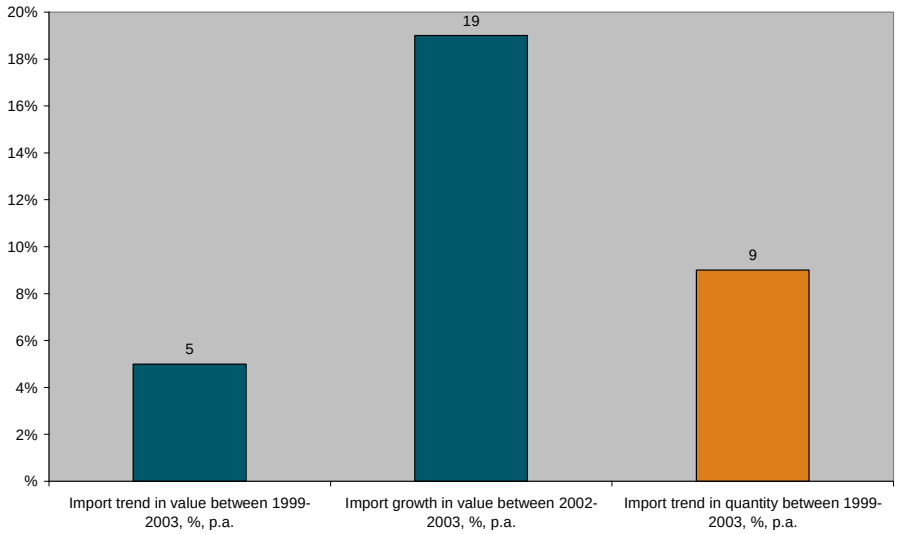

Figure 103: Growth trends for US imports of HS 392190 Film and sheet etc, nes of plastics

The majority of US imports in this product category are supplied by Canada with 25% of value and 30% of volume in 2003. The following charts show the share of the top 5 suppliers to the US in terms of volume and value:

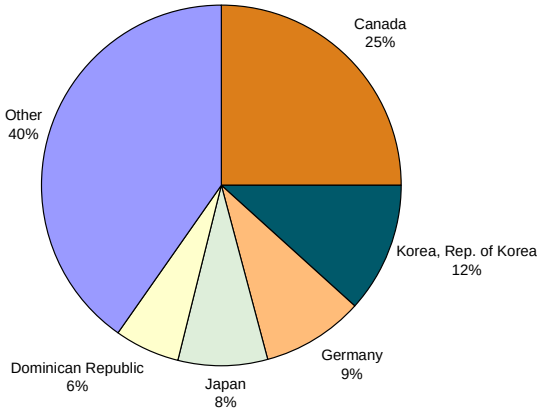

Figure 104: Top supply market share of imports of HS 392190 Film and sheet etc, nes of plastics into the US by value, 2003

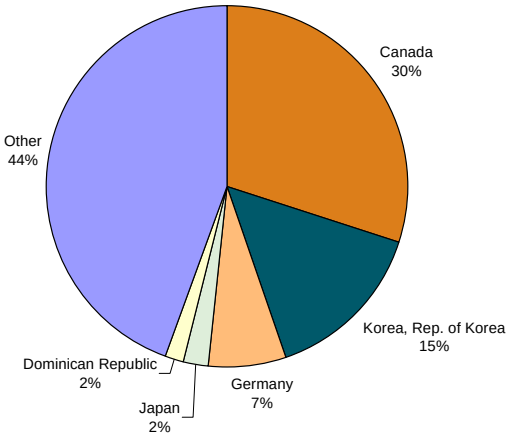

Figure 105: Top supply market share of imports of HS 392190 Film and sheet etc, nes of plastics into the US by volume, 2003

NAFTA vs. non-NAFTA trade

Non-NAFTA supply of HS 392190 accounted US$ 403.441 million or 69.7% of total US imports by value (and 99,683 tons or 59.1% of total US imports by volume) in 2003.

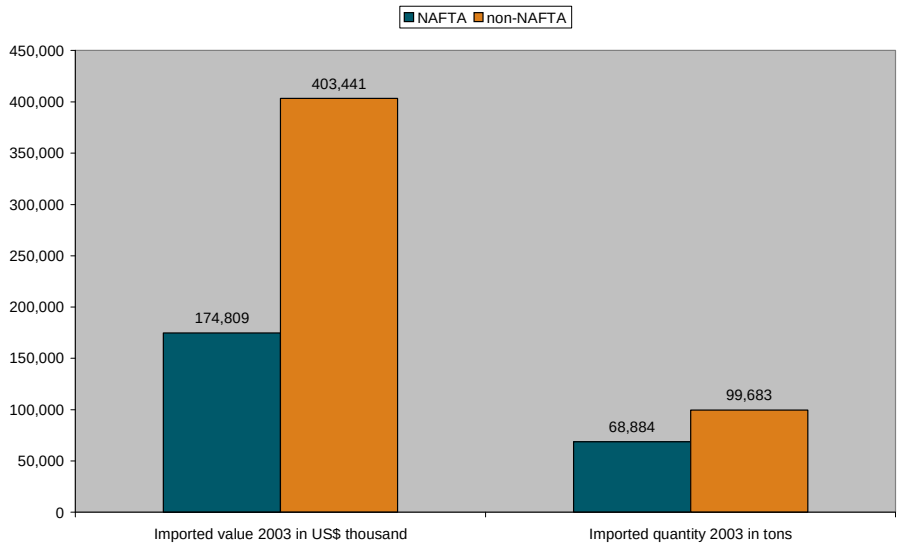

Figure 106: Comparison of value and volume of NAFTA and non-NAFTA supply of HS 392190 Film and sheet etc, nes of plastics into the US, 2003

7.3.2 Imports of Nonwoven products into the EU

The EU imported US$ 4.3 billion of the Nonwoven products included in the analysis in 2003. Import growth has been moderate between 1999 and 2003, as per the following table[84]:

Product	EU Import Value 2003 (US$'000)	Growth % p.a. 1999-2003 Value	EU Import Volume 2002 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers
560311 Nonwovens, man-made filaments weighing <25g/m2	422,599	6	-	5	Italy Germany France
560312 Nonwovens, man-made filaments weighing 25-70g/m2	667,797	10	-	10	US Italy Germany
560313 Nonwovens, man-made filaments weighing 70-150g/m2	351,136	1	-	12	Germany Italy Netherlands
560314 Nonwovens, man-made filaments weighing >150g/m2	443,610	3	-	1	Italy Germany France
392190 Film and sheet etc, nes of plastics	2,422,792	3	-	4	Germany Italy France

[84] Please note that no import volume information was available

7.3.2.1 HS 560311 Nonwovens, man-made filaments weighing <25g/m2

The EU reported total imports in 2003 of US$ 422.599 million representing 41% of world imports.

Long-term growth of the imports (by value and volume) of this product category into the EU has been weak. However, short-term growth shows signs of improvement and there has been strong over 2002-2003 as per the following chart:

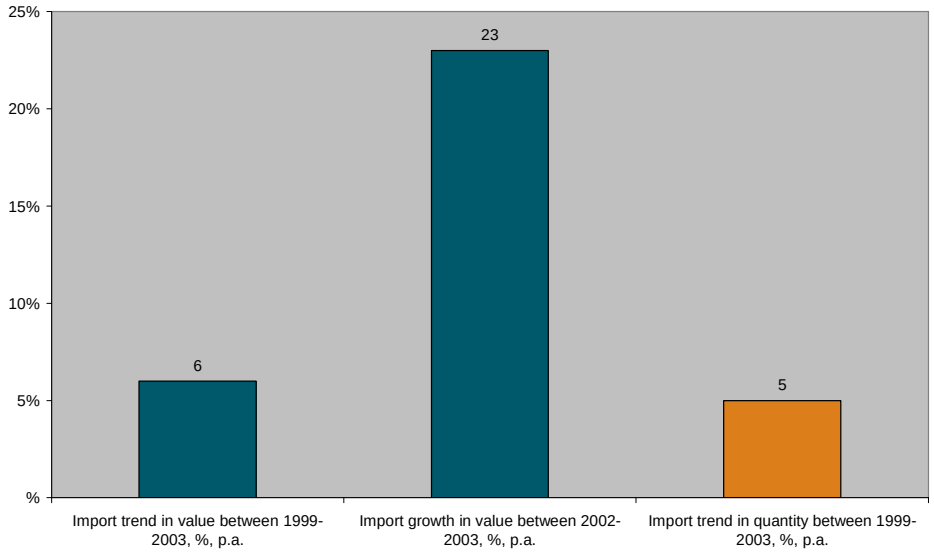

Figure 107: Growth trends for EU imports of HS 560311 Nonwovens, man-made filaments weighing <25g/m2

EU countries supply the vast majority of EU imports in this product category. Italy, Germany, France, Sweden and Denmark were the top 5 suppliers and supplied 66% of value of imports in 2003 as per the following chart:

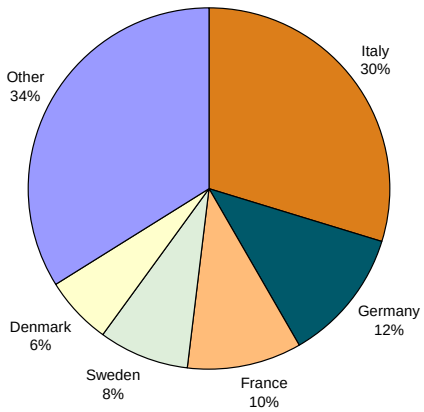

Figure 108: Top supply market share of imports of HS 560311 within the EU by value, 2003

Top 3 import markets for HS 560311 Nonwovens, man-made filaments weighing <25g/m2 in the EU

The top three import markets for this product category in the EU are Germany, France and Spain, as per the table below. The majority of trade comprises intra-EU trade

Country	Import Value 2003 (US$'000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers
Germany	95,333	12	35,842	13	Italy
					France
					Denmark
France	73,015	4	27,766	3	Italy
					Sweden
					Germany
Spain	54,018	8	15,517	3	Italy
					France
					Germany

Germany

Germany was the 2nd largest importer of HS 560311 in 2003, with total imports of US$ 95.333 million or 9% of world imports by value (35,842 tons) at an average price per ton of US$ 2,660.

There has been moderate long-term growth in terms of import value and volume into Germany. Short-term growth has been particularly strong, as per the following chart:

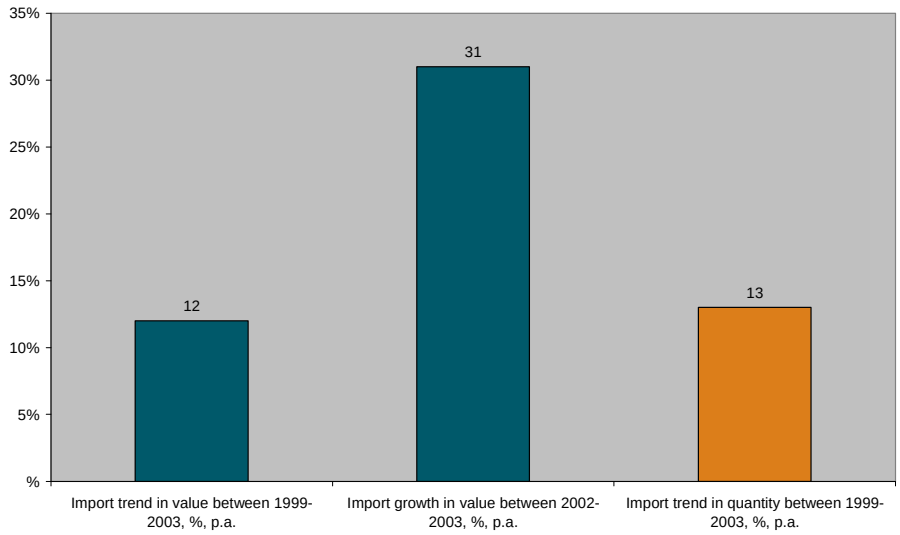

Figure 109: Growth trends for Germany's imports of HS 560311 Nonwovens, man-made filaments weighing <25g/m2

France

France was the 3rd largest importer of HS 560311 in 2003, with total imports of US$ 73.015 million or 7% of world imports by value (27,776 tons) at an average price per ton of US$ 2,630.

Short-term growth by value of imports has been significant, with long-term growth reflecting weak to moderate growth, as per the following graph:

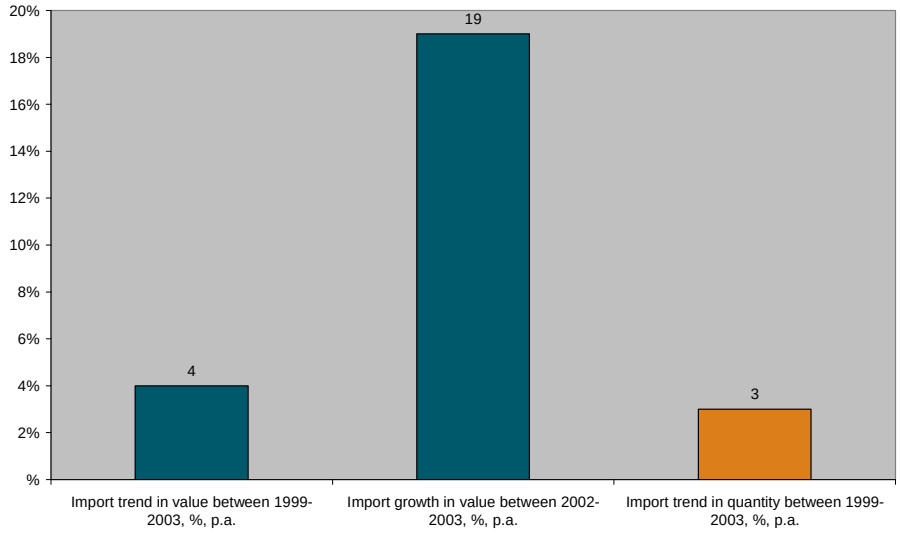

Figure 110: Growth trends for France's imports of HS 560311 Nonwovens, man-made filaments weighing <25g/m2

Spain

Spain was the 4th largest importer of HS 560311 in 2003, with total imports of US$ 54.018 million or 5% of world imports by value (15,517) at an average price per ton of US$ 3,481.

Short-term growth of import value has been particularly strong. This is reflected in moderate long-term growth in import value although growth in import volumes has been weak, as per the following chart:

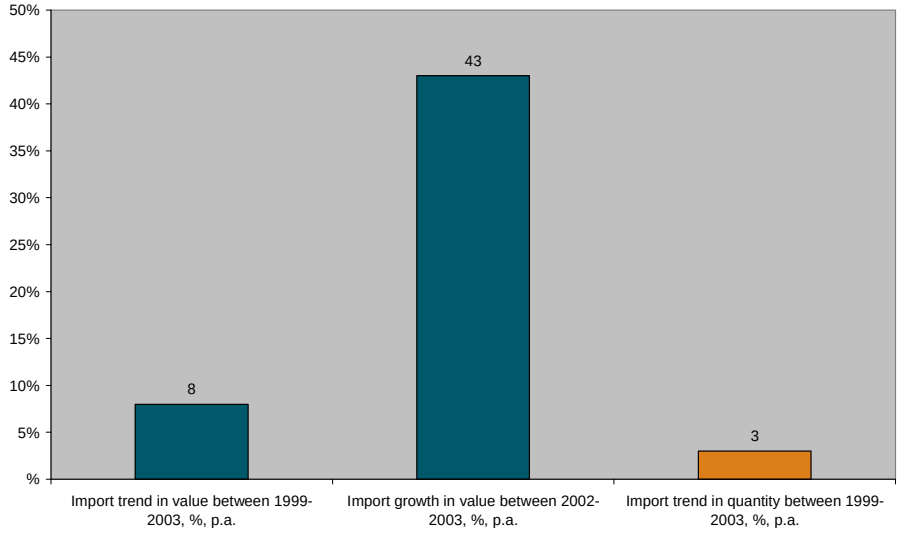

Figure 111: Growth trends for Spain's imports of HS 560311 Nonwovens, man-made filaments weighing <25g/m2

Intra EU vs. Extra EU trade of HS 560311 Nonwovens, man-made filaments weighing <25g/m2

Extra-EU supply of HS 560311 accounted only US$ US$ 48.309 million or 11.4% of total EU imports by value in 2003.

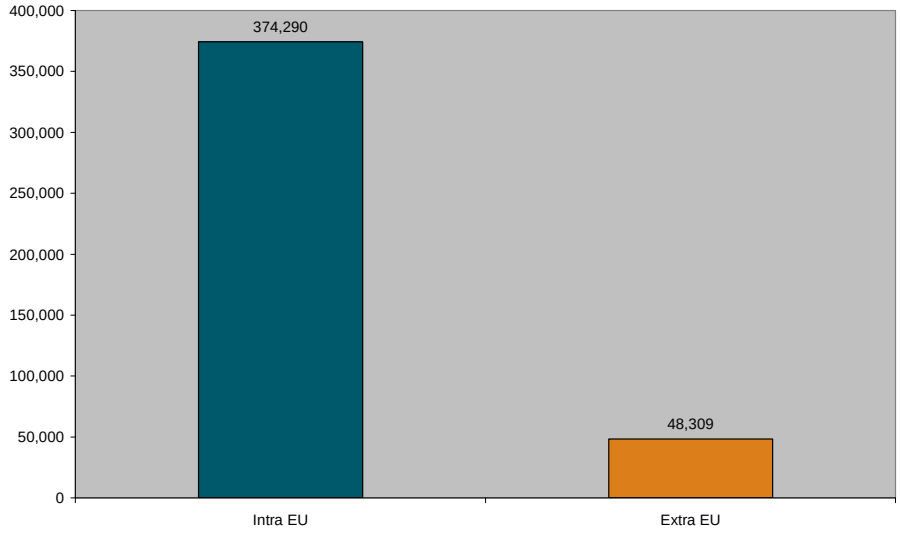

Figure 112: Comparison of value (US$ million) of supply of HS 560311 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 28th in terms of value with a 0.85% market share of non-EU supply of HS 560311.

7.3.2.2 HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

The EU reported total imports of HS 560312 in 2003 of US$ 667.797 million representing 44% of world imports.

There has been a strong long-term growth trend in the imports of this product category into the EU with improved short-term growth of the value of imports as per the following chart:

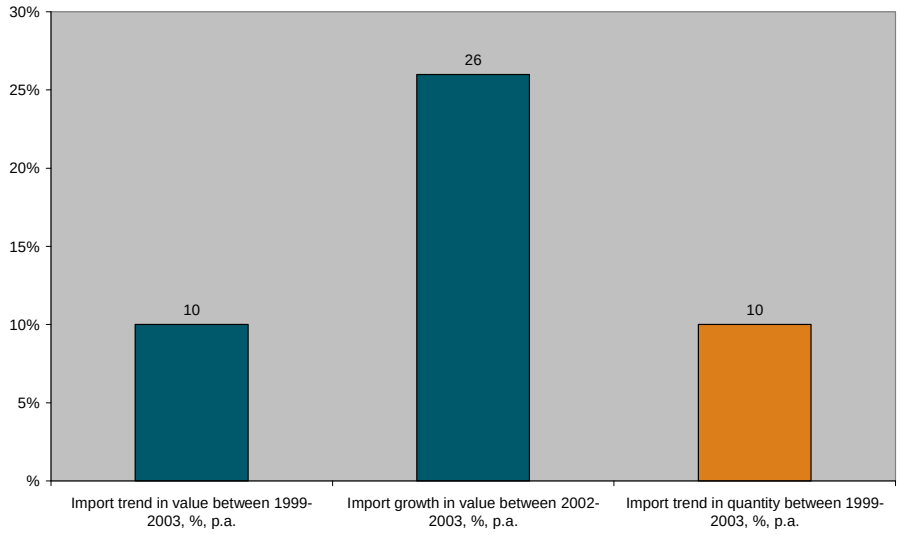

Figure 113: Growth trends for EU imports of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

EU countries comprise four of the top five suppliers by value. However, the US is the single largest supplier by value, supplying 15% of imports. Italy, Germany, Belgium and France make up the rest of the top five and together supply 44% of imports by value, as per the following chart:

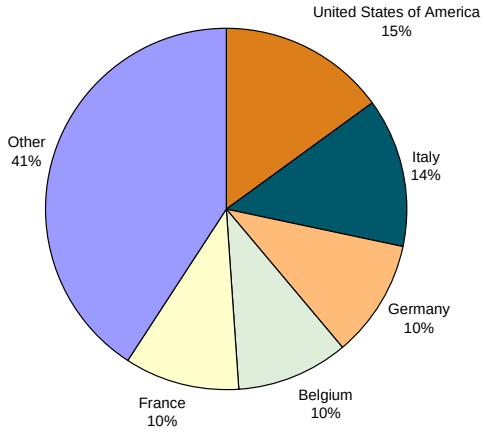

Figure 114: Top supply market share of imports of HS 560312 within the EU by value, 2003

Top 3 import markets for HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2in the EU

The top three import markets for this product category in the EU are the United Kingdom, Germany and Belgium, as per the table below. The majority of trade comprises intra-EU trade.

Country	Import Value 2003 (US$'000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers
United Kingdom	177,389	12	50,644	9	Italy
					US
					France
Germany	134,661	10	29,872	13	Luxembourg
					Italy
					US
Belgium	72,971	1	9,028	1	US
					Sweden
					Netherlands

United Kingdom

The United Kingdom was the largest importer of HS 560312 in 2003, with total imports of US$ 177.389 million or 12% of world imports by value (50,644 tons) at an average price per ton of US$ 3,503.

There has been moderate to strong long-term growth of import value and volume, although growth in import value has been particularly strong in the short-term, as per the following chart:

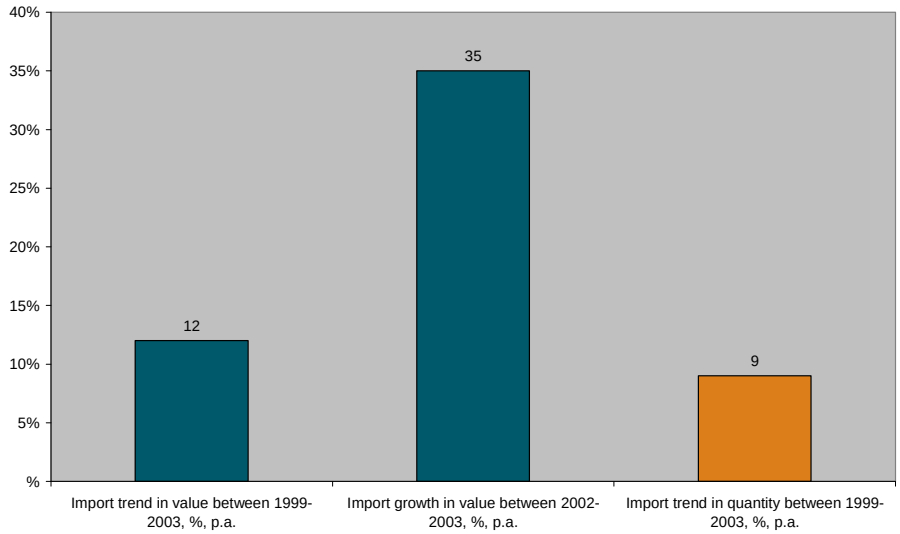

Figure 115: Growth trends for United Kingdom's imports of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

Germany

Germany was the 2nd largest importer of HS 560312 in 2003, with total imports of US$ 134.661 million or 9% of world imports by value (29,872 tons) at an average price per ton of US$ 4,508.

There has been moderate to strong long-term growth of import value and volume, although growth in import value has been particularly strong in the short-term, as per the following chart:

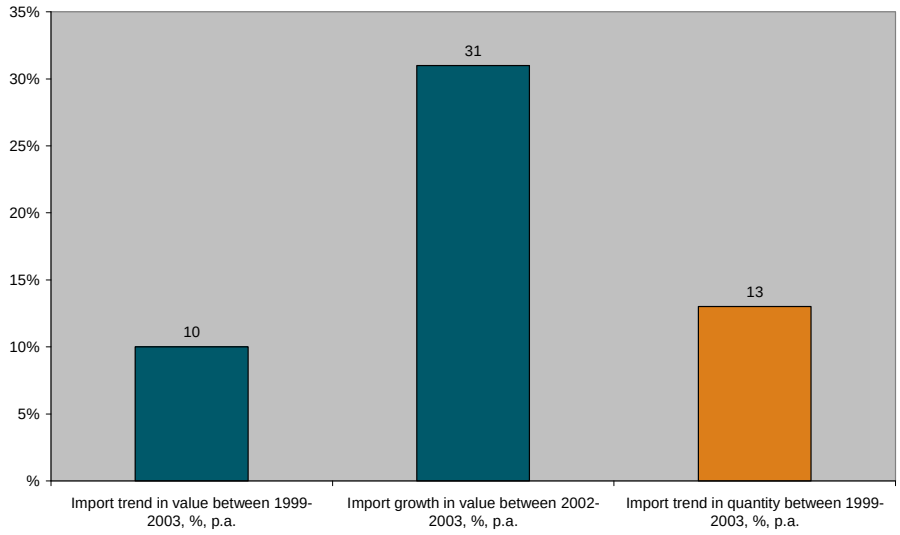

Figure 116: Growth trends for Germany's imports of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

Belgium

Belgium was the 10th largest importer of HS 560312 in 2003, with total imports of US$ 33.356 million or 3% of world imports by value (18,973 tons) at an average price per ton of US$ 1,758.

There has been weak long-term growth in terms of both the value and volume of imports. However, short-term growth in value shows significant improvement, as per the following chart:

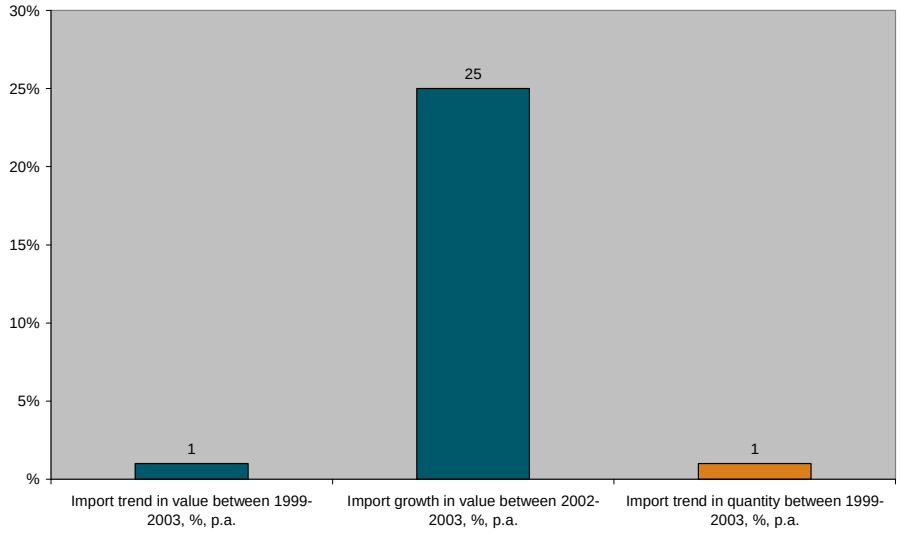

Figure 117: Growth trends for Belgium's imports of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

Intra EU vs. Extra EU trade of HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

Extra-EU supply of HS 560312 accounted only US$ 172.133 million or 25.8% of total EU imports by value in 2003.

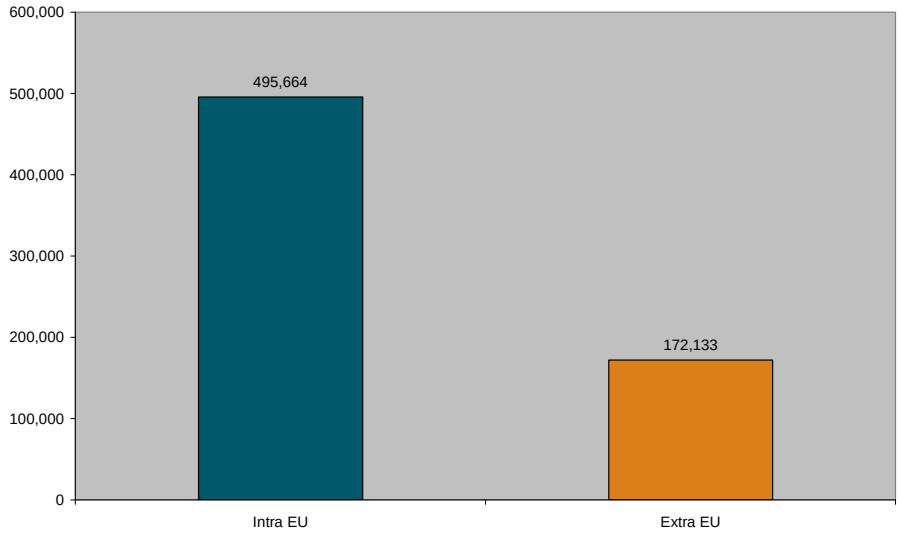

Figure 118: Comparison of value (US$ million) of supply of HS 560312 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 19th in terms of value with a 1.9% market share of non-EU supply of HS 560312.

7.3.2.3 HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

The EU reported total imports of HS 560313 in 2003 of US$ 351.136 million representing 43% of world imports.

Although long-term growth by import value has been weak, volume growth over the same period has been moderate to strong and growth in value has improved strongly over the short term, as per the following chart:

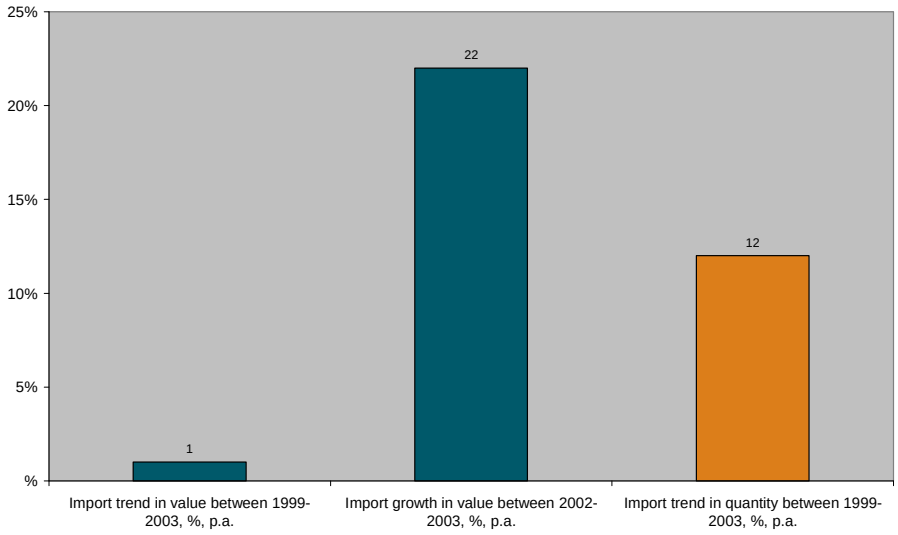

Figure 119: Growth trends for EU imports of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

EU countries supply the vast majority of EU imports in this product category, with Germany, Italy, the Netherlands and Luxembourg making up the top four suppliers by value. The US ranks fifth as per the following chart:

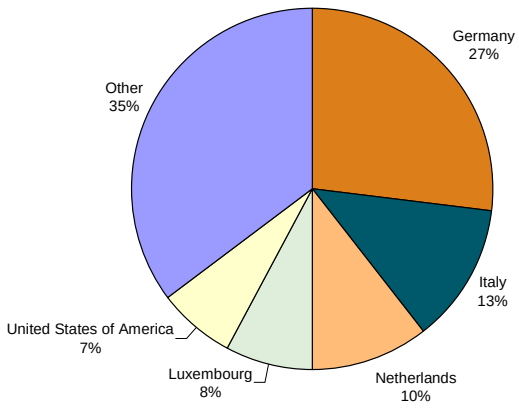

Figure 120: Top supply market share of imports of HS 560313 within the EU by value, 2003

Top 3 import markets for HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2in the EU

The top three import markets for this product category in the EU are Germany, United Kingdom and France, as per the table below. The majority of trade comprises intra-EU trade.

Country	Import Value 2003 (US$'000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers
Germany	67,814	-5	15,054	-5	Netherlands
					Italy
					France
United Kingdom	47,457	-2	15,043	7	Germany
					Netherlands
					Italy
France	46,187	2	11,848	0	Germany
					Luxembourg
					Italy

Germany

Germany was the 2nd largest importer of HS 560313 in 2003, with total imports of US$ 67.814 million or 8% of world imports by value (15,054 tons) at an average price per ton of US$ 4,505.

Although long-term growth in terms of both import values and volumes has been negative, there are signs of recovery in the short-term as indicated in the following chart:

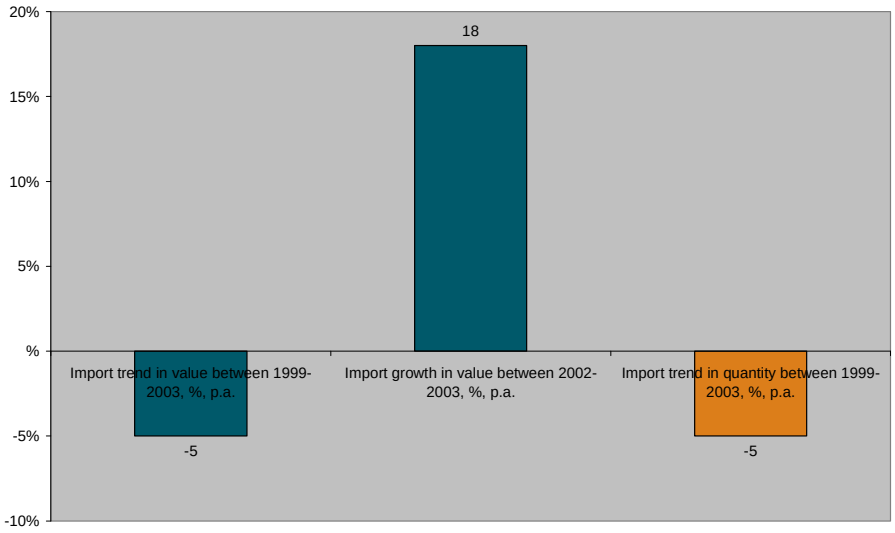

Figure 121: Growth trends for Germany's imports of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

United Kingdom

The United Kingdom was the 3rd largest importer of HS 560313 in 2003, with total imports of US$ 47.457 million or 6% of world imports by value (15,043 tons) at an average price per ton of US$ 3,155.

Although long-term growth by import value has been negative, growth by import volumes over the same period has been moderate to strong. However, there has been significant improvement in the growth of import values over the short-term as per the following chart:

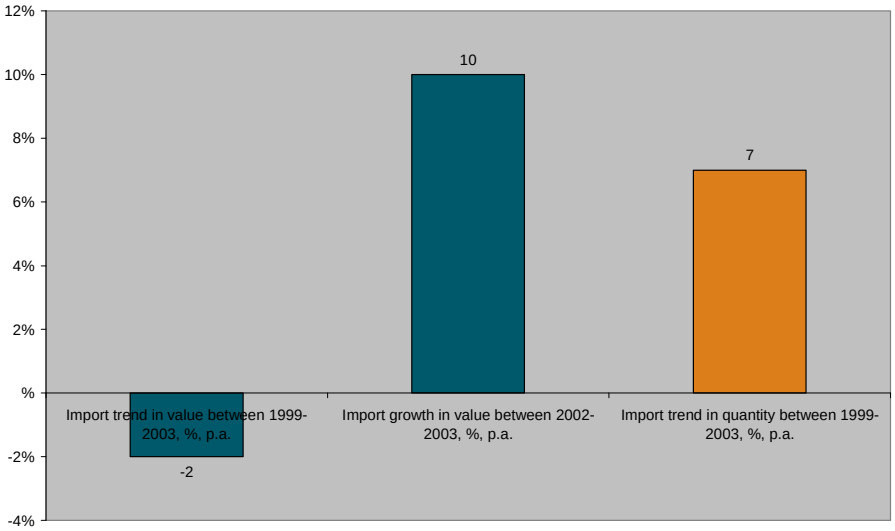

Figure 122: Growth trends for United Kingdom's imports of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

France

France was the 4th largest importer of HS 560313 in 2003, with total imports of US$ 46.187 million or 6% of world imports by value (11,848 tons) at an average price per ton of US$ 3,898.

Although there has been weak growth of import values (over the short- and long-term), import volumes have remained stagnant, as per the following chart:

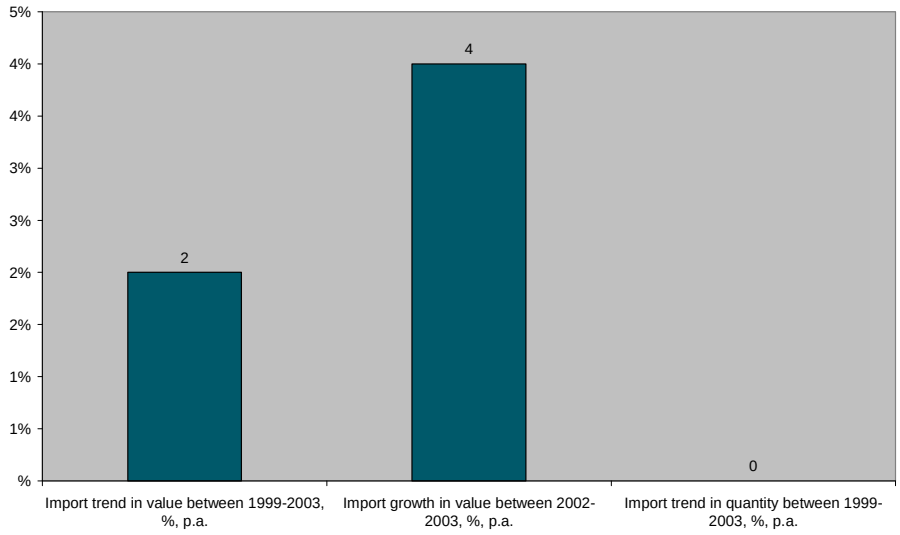

Figure 123: Growth trends for France's imports of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

Intra EU vs. Extra EU trade of HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

Extra-EU supply of HS 560313 accounted only US$ 61.557 million or 17.5% of total EU imports by value in 2003.

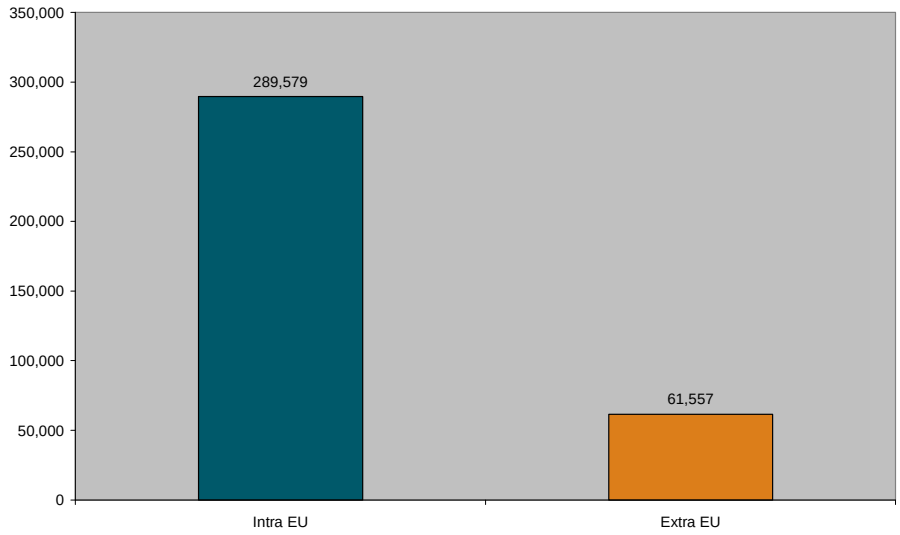

Figure 124: Comparison of value (US$ million) of supply of HS 560313 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 11th in terms of value with a 14.2% market share of non-EU supply of HS 560313.

7.3.2.4 HS 560314 Nonwovens, man-made filaments weighing >150g/m2

The EU reported total imports of HS 560314 in 2003 of US$ 443.61 million representing 50% of world imports.

Although long-term growth in the imports of this product category into the EU has been weak, there are some signs of improvement in the short-term growth of the value of imports as per the following chart:

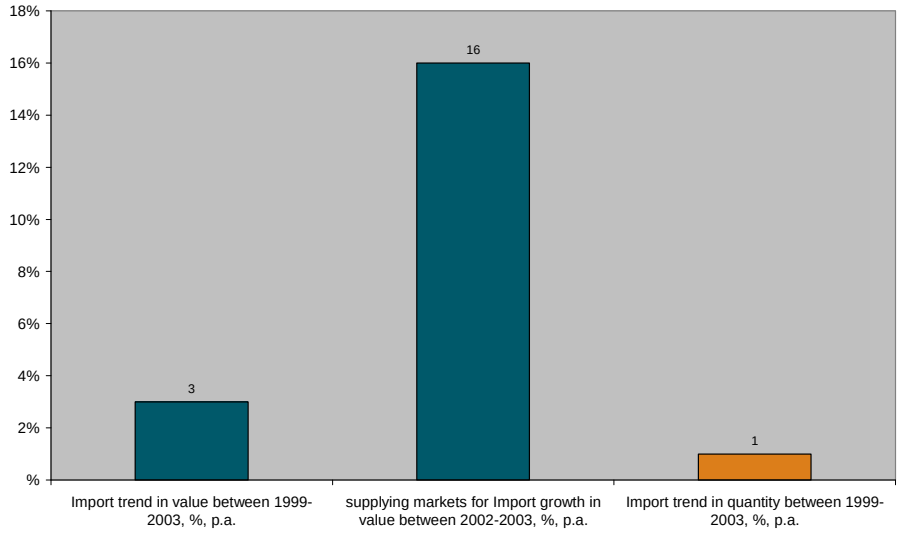

Figure 125: Growth trends for EU imports of HS 560314 Nonwovens, man-made filaments weighing >150g/m2

EU countries supply the vast majority of EU imports in this product category. In this case, the top three suppliers are Italy, Germany and France respectively. These suppliers contribute 57% of imports. The next two largest suppliers by value are the US and Japan supplying some 14% of imports, as per the following chart:

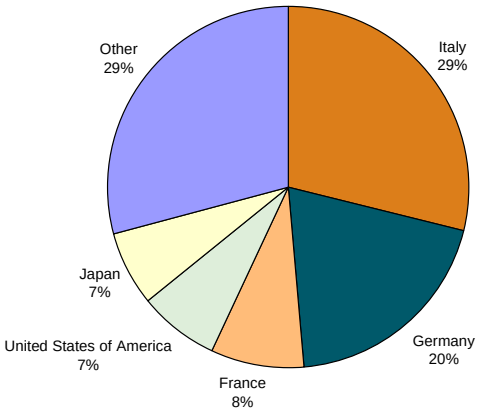

Figure 126: Top supply market share of imports of HS 560314 within the EU by value, 2003

Top 3 import markets for HS 560314 Nonwovens, man-made filaments weighing >150g/m2 in the EU

The top three import markets for this product category in the EU are Germany, France, and Italy, as per the table below. The majority of trade comprises intra-EU trade.

Country	Import Value 2003 (US$'000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers
Germany	113,654	0	26,906	-2	Italy
					France
					US
France	69,161	7	14,208	11	Italy
					Germany
					UK
Italy	49,046	-1	7,475	0	Japan
					Germany
					Austria

Germany

Germany was the largest importer of HS 560314 in 2003, with total imports of US$ 113.654 million or 13% of world imports by value (26,906 tons) at an average price per ton of US$ 4,224.

Although there have been signs of improvement in the short-term growth of imports, the long-term growth is stagnant (for imports by both value and volume), as per the following chart:

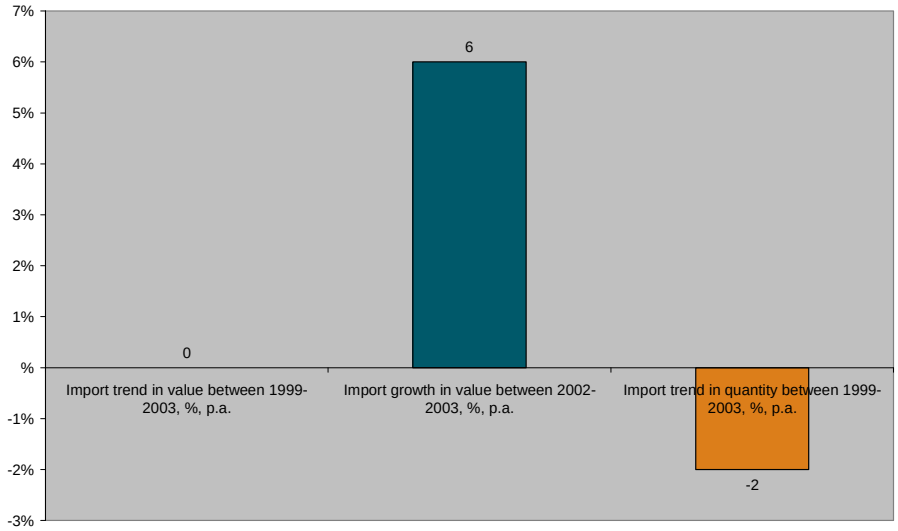

Figure 127: Growth trends for Germany's imports of HS 560314 Nonwovens, man-made filaments weighing >150g/m2

France

France was the 2nd largest importer of HS 560314 in 2003, with total imports of US$ 69.161 million or 8% of world imports by value (14,208 tons) at an average price per ton of US$ 4,868.

There has been significant growth in both the value and volume of imports into France; this is particularly significant over the short term as per the following graph:

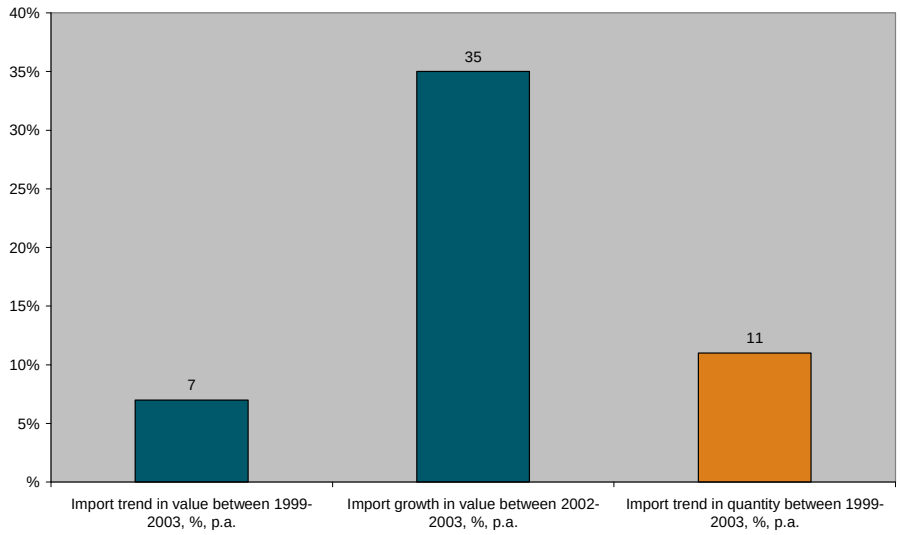

Figure 128: Growth trends for France's imports of HS 560314 Nonwovens, man-made filaments weighing >150g/m2

Italy

Italy was the 4th largest importer of HS 560314 in 2003, with total imports of US$ 49 million or 5% of world imports by value (7,475 tons) at an average price per ton of US$ 6,561.

Growth of both import values and volumes has remained stagnant over the long-term. There are, however, signs of improvement in the short-term with strong growth in value of imports over the 2002-2003 year, as per the following chart:

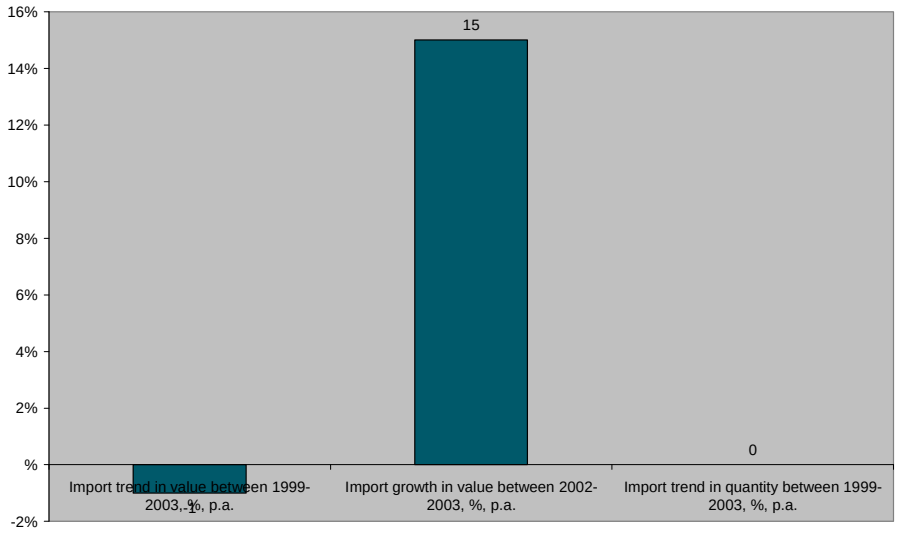

Figure 129: Growth trends for Italy's imports of HS 560314 Nonwovens, man-made filaments weighing >150g/m2

Intra EU vs. Extra EU trade of HS 560314 Nonwovens, man-made filaments weighing >150g/m2

Extra-EU supply of HS 560314 accounted only US$ 86.3 million or 19.5% of total EU imports by value in 2003.

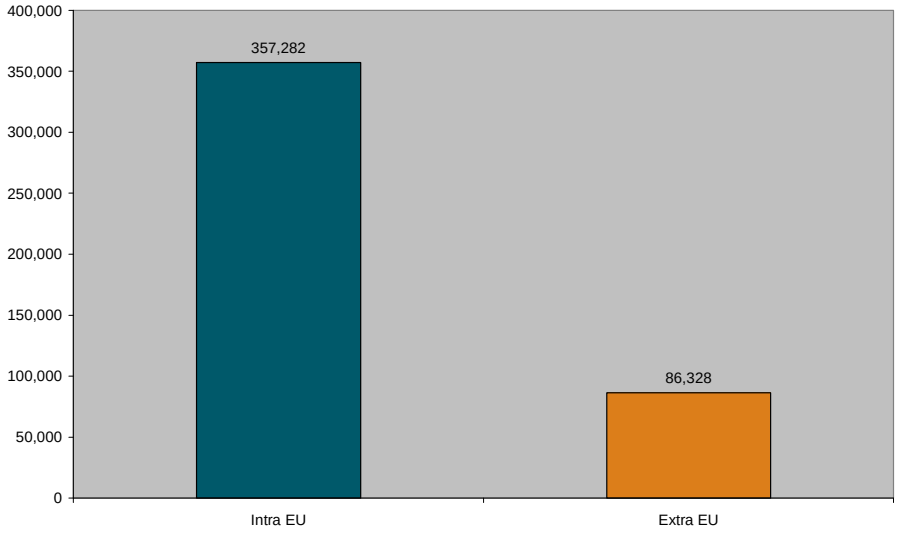

Figure 130: Comparison of value (US$ million) of supply of HS 560314 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 29th in terms of value with a 0.5% market share of non-EU supply of HS 560314.

7.3.2.5 HS 392190 Film and sheet etc, nes of plastics

The EU reported total imports of HS 392190 in 2003 of US$ 2.42 billion representing 39% of world imports.

There has been a moderate long-term growth trend in the imports of this product category into the EU with some signs of improvement in the short-term growth of the value of imports as per the following chart:

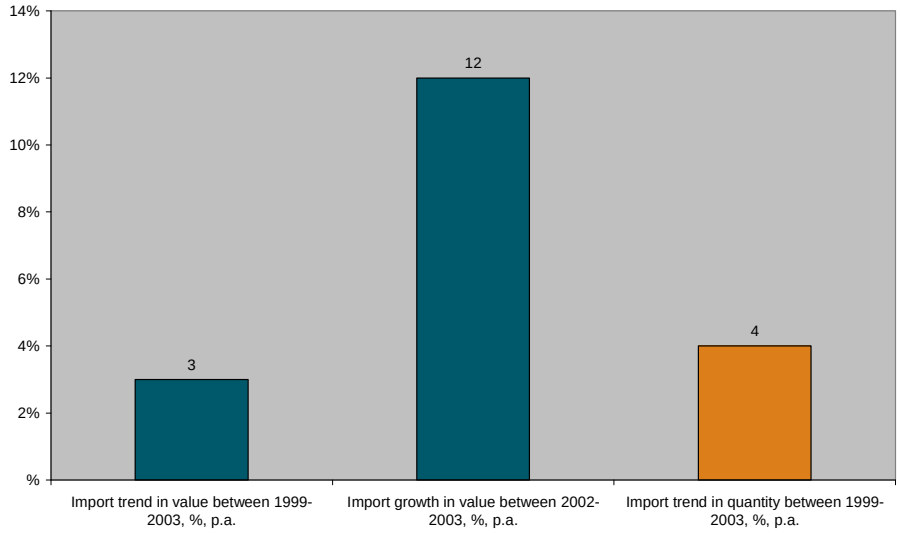

Figure 131: Growth trends for EU imports of HS 392190 Film and sheet etc, nes of plastics

EU countries supply the vast majority of EU imports in this product category. Germany, Italy, France, Switzerland and Belgium were the top 5 suppliers and supplied 61% of value of imports in 2003 as per the following chart:

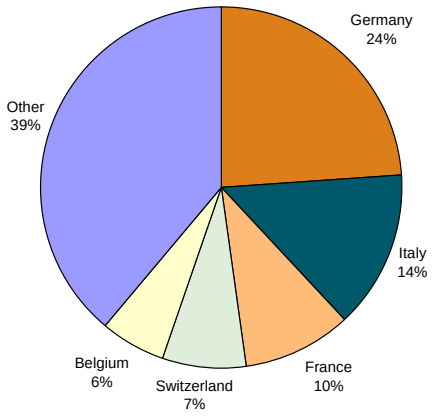

Figure 132: Top supply market share of imports of HS 392190 within the EU by value, 2003

Top 3 import markets for HS 392190 Film and sheet etc, nes of plastics in the EU

The top three import markets for this product category in the EU are France, Germany and United Kingdom, as per the table below. The majority of trade comprises intra-EU trade.

Country	Import Value 2003 (US$'000)	Growth % p.a. 1999-2003 Value	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Volume	Top Suppliers
France	432,542	4	115,370	0	Germany
					Italy
					Spain
Germany	405,597	0	103,134	-3	Switzerland
					Italy
					France
United Kingdom	363,163	3	98,158	10	Germany
					France
					Italy

France

France was the 2nd largest importer of HS 392190 in 2003, with total imports of US$ 432.542 million or 7% of world imports by value (115,370 tons) at an average price per ton of US$ 3,749.

Although growth by import volume has been stagnant over the long-term, import values have shown moderate growth in the long-term with more significant short-term improvement, as per the following chart:

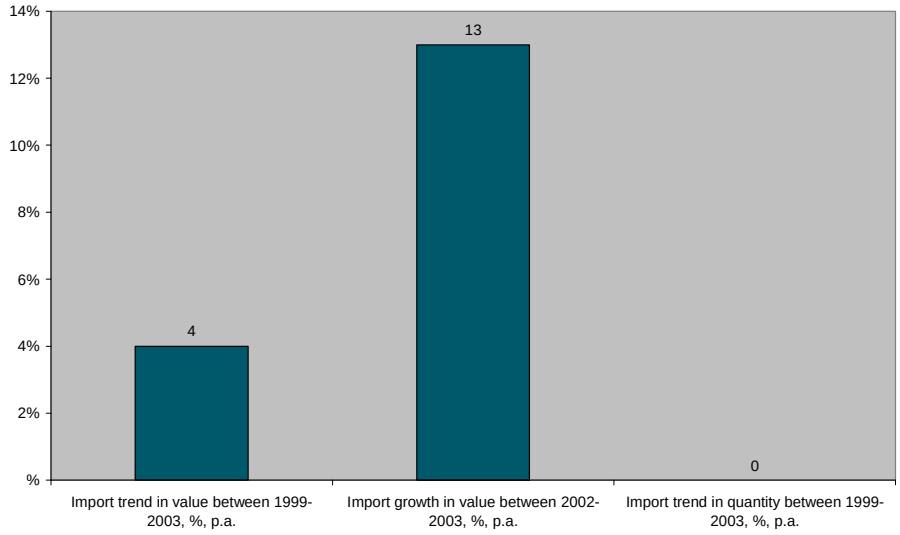

Figure 133: Growth trends for France's imports of HS 392190 Film and sheet etc, nes of plastics

Germany

Germany was the 3rd largest importer of HS 392190 in 2003, with total imports of US$ 405.597 million or 7% of world imports by value (103,134 tons) at an average price per ton of US$ 3,933.

Long-term growth in import volumes has been negative. Growth by import value has been stagnant in the long-term with signs of a weak recovery in the short-term, as per the following chart:

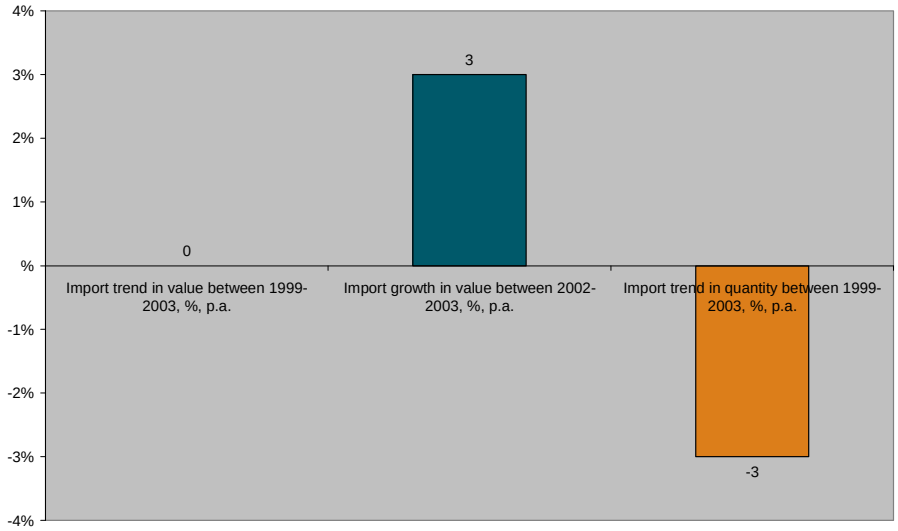

Figure 134: Growth trends for Germany's imports of HS 392190 Film and sheet etc, nes of plastics

United Kingdom

The United Kingdom was the 4th largest importer of HS 392190 in 2003, with total imports of US$ 363.163 million or 6% of world imports by value (98,158 tons) at an average price per ton of US$ 3,700.

Although there has been a steady long-term growth of the import volume, growth in import value has been weak and, in the short-term, negative. This is indicated in the following chart:

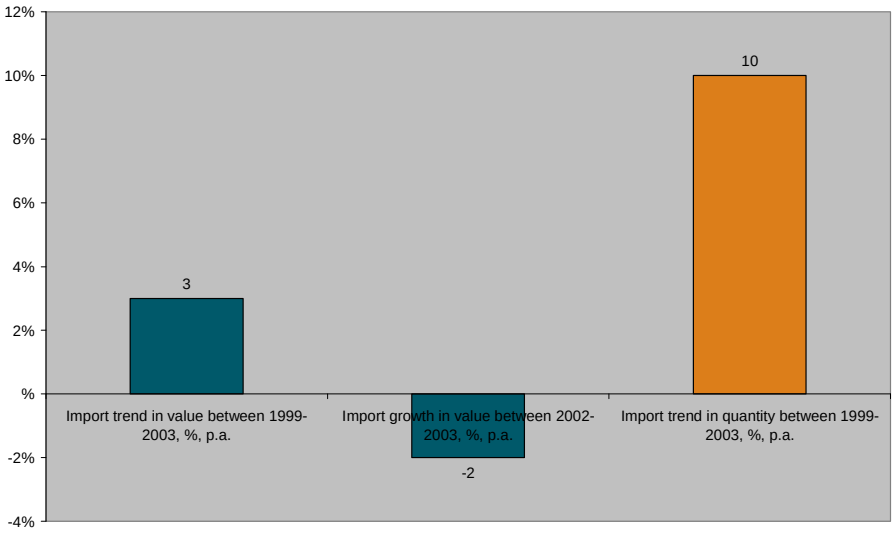

Figure 135: Growth trends for United Kingdom's imports of HS 392190 Film and sheet etc, nes of plastics

Intra EU vs. Extra EU trade of HS 392190 Film and sheet etc, nes of plastics

Extra-EU supply of HS 392190 accounted only US$ 446.5 million or 18.4% of total EU imports by value in 2003.

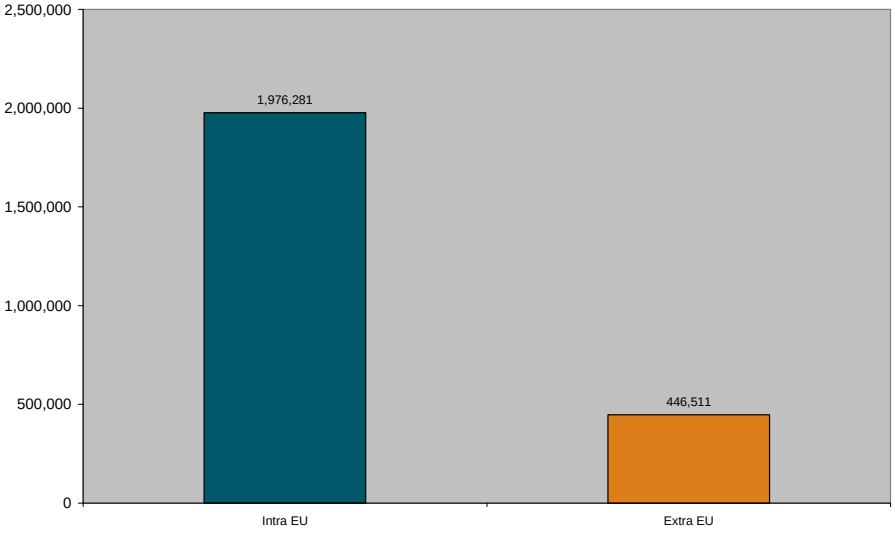

Figure 136: Comparison of value (US$ million) of supply of HS 392190 by EU and non-EU countries, 2003

In terms of non-EU suppliers South Africa ranks 25th in terms of value with a 1.35% market share of non-EU supply of HS 392190.

8 Detailed trade flow analysis – supply from South Africa

8.1 Overview of total South African PP exports

South Africa exported US$105.7m of polypropylene products in 2003. The majority of exports went to African countries, with Hong Kong the only significant non-African market for the polypropylene products included in the analysis.

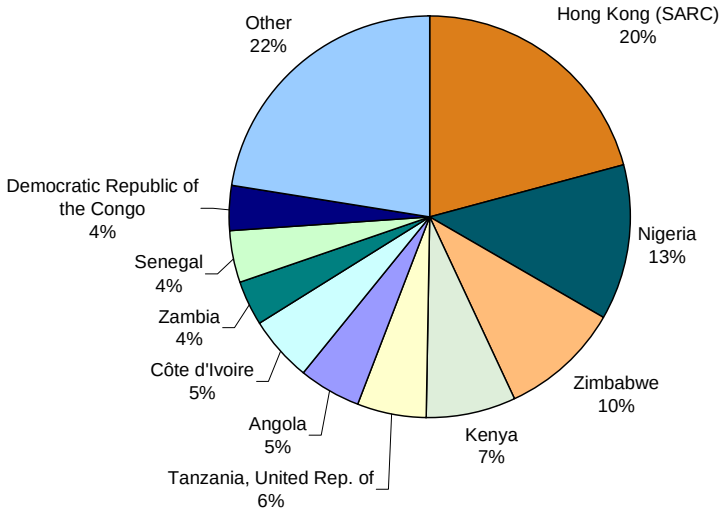

Figure 137: Top 10 export markets by value for polypropylene products in 2003

The majority of exports by value were in primary form, with secondary products included in the analysis making up only 7% of exports.

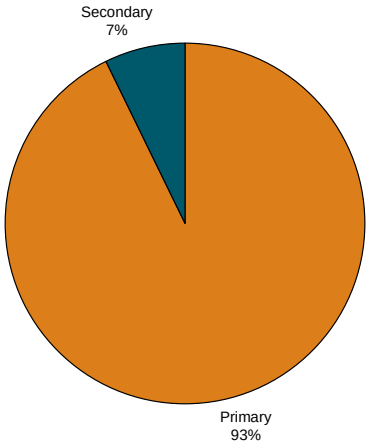

Figure 138: Share of primary and secondary or end use products exported by South Africa in 2003 by value

8.1.1 Total South African PP exports to the US

According to the ITC trade statistics analysed, there were no exports to the US from South Africa for the products included in this study.

8.1.2 Total South African PP exports to the EU

South Africa's exports to Europe in 2003 represented 4% of South Africa's total PP product exports. South Africa exported the primary PP products HS 390210 and HS 390230 and the secondary products HS 392020 and HS 550340 to the EU in 2003.

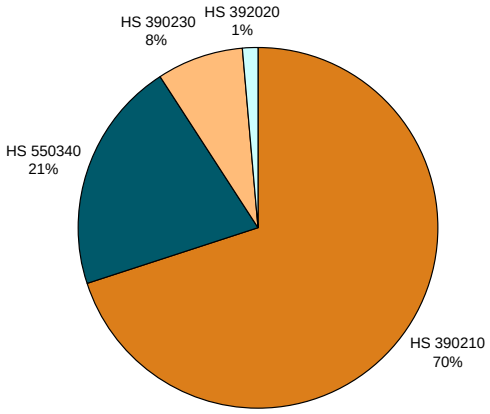

Figure 139: PP products supplied to the EU in 2003 by value

8.2 Overview of total South African Nonwoven exports

South Africa exported US$29.7m of the nonwoven products selected for this analysis in 2003. The majority of exports went to EU countries, with the US also a significant market receiving 5% of exports of the products included in the analysis.

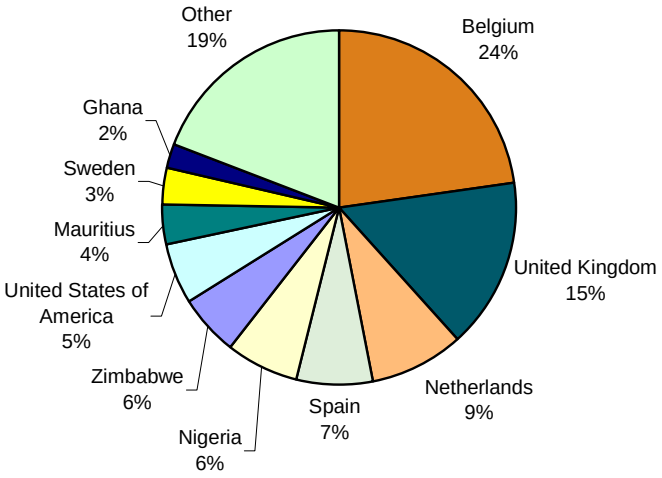

Figure 140: Top 10 export markets by value for nonwovens in 2003

8.2.1 Total South African Nonwoven exports to the US

South Africa supplied HS 560313 (Nonwovens, man-made filaments weighing 70-150g/m2), HS 560314 (Nonwovens, man-made filaments weighing >150g/m2) and HS 392190 (Film and sheet etc, nes of plastics) to the United States to the value of US$1.625m in 2003.

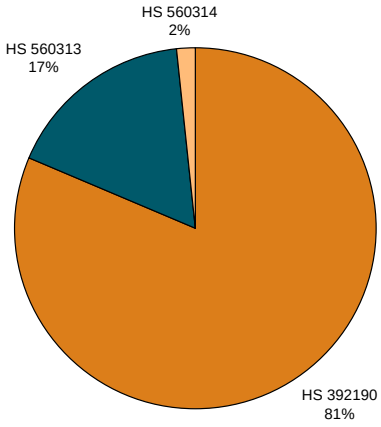

Figure 141: Nonwovens supplied to the United States in 2003 by value

8.2.2 Total South African Nonwoven exports to the EU

South Africa exported US$13.8m of HS 560311, HS 560312, HS 560313 and HS 560314 (Nonwovens, man-made filaments) to the EU in 2003. Over 40% of South African exports for each product category went to EU countries. South Africa exported 37% of its HS 392190

(Film and sheet etc, nes of plastics) to Europe, valued at US$4.5m. A further breakdown is shown in the graph below:

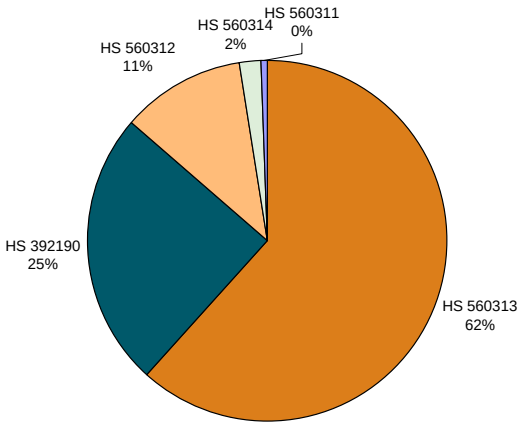

Figure 142: Nonwoven products supplied to the EU in 2003 by value

8.3 Primary PP products

8.3.1 South Africa exports of primary products to world

South Africa supplied a total of US$97,970,000 of primary propylene products in 2003.

Product	Export value in 2003 (US$ 000)	Growth in value 1999-2003 (% p.a.)	Export volume in 2003 (tons)	Growth in volume 1999 – 2003 (%p.a.)	Top 3 markets by value	SA Market share (%)[85]
HS 390210 Polypropylene	78,221	30	108,223	22	Hong Kong	3
					Nigeria	12
					Zimbabwe	100
HS 390230 Propylene copolymers	19,749	48	25,983	40	Nigeria	17
					Tanzania	122
					Kenya	26

8.3.1.1 HS 390210 Polypropylene

South Africa supplied just less than 1% of the world's 390210 Polypropylene imports in 2003, with an export value of US$78,221,000. This was after strong growth at an average of 30% per year in value from 1999. The volume exported was 108,223 tons at an average value of US$723 per ton.

The top export destination in 2003 was Hong Kong, followed by Nigeria, Zimbabwe, Kenya and Cote d'Ivoire as shown below. Ghana was the fastest growing market with an annual growth in value of 225% from 1999 to 2003, and short-term growth from 2002 to 2003 of 61%, however in 2003 it consumed only 4% of South Africa's exports.

[85] Percentages arise from differences in recording import and export amounts

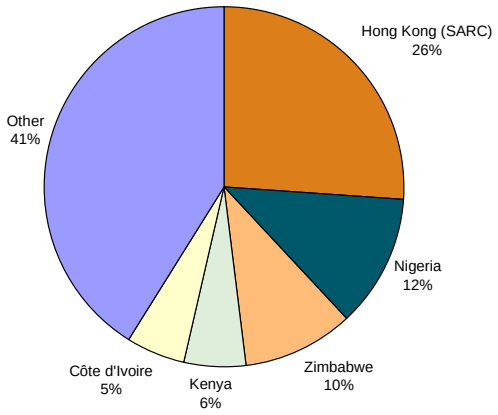

Figure 143: Top 5 export markets by value for HS 390210 Polypropylene in 2003

8.3.1.2 HS 390230 Polypropylene copolymers

South Africa exported US$19,749,000 of polypropylene copolymers in 2003, achieving strong growth at a rate of 48% per year from 1999, and a 24% increase from 2002 exports. The average price for the 25,983 tons exported was US$760 per ton.

84% of exports went to African countries lead by Nigeria, Tanzania and Kenya; however Hong Kong was also a significant buyer, buying 6% of exports.

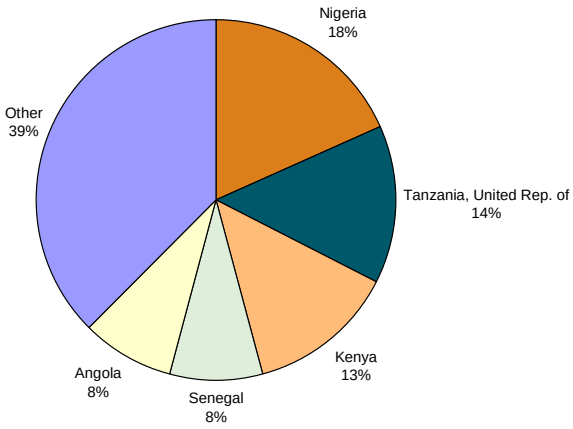

Figure 144: Top 5 export markets by value for HS 390230 Polypropylene copolymers in 2003

8.3.2 South Africa exports of primary products to the US

South Africa did not export these products to the United States in 2003.

8.3.3 South Africa exports of primary products to the EU

South Africa supplied a total of US$3,376,000 of primary polypropylene products to the EU in 2003:

Product	Export value in 2003 (US$ 000)	Export quantity 2003 (tons)	Growth in value 1999-2003 (% p.a.)	Top EU markets
HS 390210 Polypropylene	3,045	4,118	63	Germany
				United Kingdom
				Italy
HS 390230 Propylene copolymers	331	494	30	Belgium
				France
				Spain

8.3.3.1 HS 390210 Polypropylene

4% of South Africa's 390210 Polypropylene exports, valued at US$3,045,000 went to EU countries in 2003. The total volume exported to EU countries was 4,118 tons, at an average price per unit ranging from US$658 for Italy to US$4,095 for Belgium.

The top export destination in 2003 was Germany, followed by the United Kingdom and Italy, whose polypropylene imports from South Africa are further detailed in the table below. Exports to Germany have shown strong average long term growth, boosted by a substantial increase in value from 2002 to 2003.

Country	US Import Value 2003 (US$'000)	US Import Volume 2003 (tons)	Growth in value 1999-2003 (% p.a.)
Germany	2,201	3,032	108
United Kingdom	453	605	-
Italy	152	231	-

8.3.3.2 HS 390230 Polypropylene copolymers

South Africa exported US$331,000, or 494 tons, of polypropylene copolymers to the EU in 2003. The average price was US$649 per ton. Exports to Belgium, France and Spain are detailed below. The United Kingdom was the only other significant importer of polypropylene copolymers, importing about 0.001% of South Africa's exports.

Country	US Import Value 2002 (US$'000)	US Import Volume 2002 (tons)	Growth % p.a. 2001-2002 in value
Belgium	137	202	-
France	97	140	-
Spain	8	124	-

8.4 Secondary PP products

8.4.1 South African exports of secondary products to world

The following table provides an overview of the export volumes and main trading relationships for the secondary PP products included in this analysis:

Category	Product	Export value in 2003 (US$ 000)	Growth in value 1999-2003 (% p.a.)	Export volume in 2003 (tons)	Growth in volume 1999-2003 (% p.a.)	Top 3 markets by value	SA Market share (%)[86]
Filament, fibre and textile products	HS 550340 Staple fibres of polypropylene, not carded or combed	1,616	-1	1,351	-6	Germany	1
						New Zealand	11
						Australia	4
	HS 560741 Binder or baler twine, of polyethylene or polypropylene	21	5	14	-6	-	-
	HS 560749 Twine not elsewhere specified, cordage, ropes and cables, of polyethylene or polypropylene	227	-1	97	-	Seychelles	100
						Zambia	46
						Mauritius	31
Plates, sheets, and film products	HS 392020 Film and sheet etc, non-cellular etc, of polymers of propylene	4,090	1	1,952	-4	Zimbabwe	65
						Mozambique	89
						Kenya	14

[86] Percentages arise from differences in recording import and export amounts

Category	Product	Export value in 2003 (US$ 000)	Growth in value 1999-2003 (% p.a.)	Export volume in 2003 (tons)	Growth in volume 1999-2003 (% p.a.)	Top 3 markets by value	SA Market share (%)[86]
Other	HS 630533 Sacks, bags, packing, of strip plastic material	1,507	36	1,461	49	Zimbabwe	78
						Angola	22
						Malawi	101
	HS 391722 Tubes, pipes and hoses, rigid; of polypropylene	292	42	164	31	Mali	99
						Mauritius	106
						Mozambique	100

The growth in export value and volume of these products is shown below:

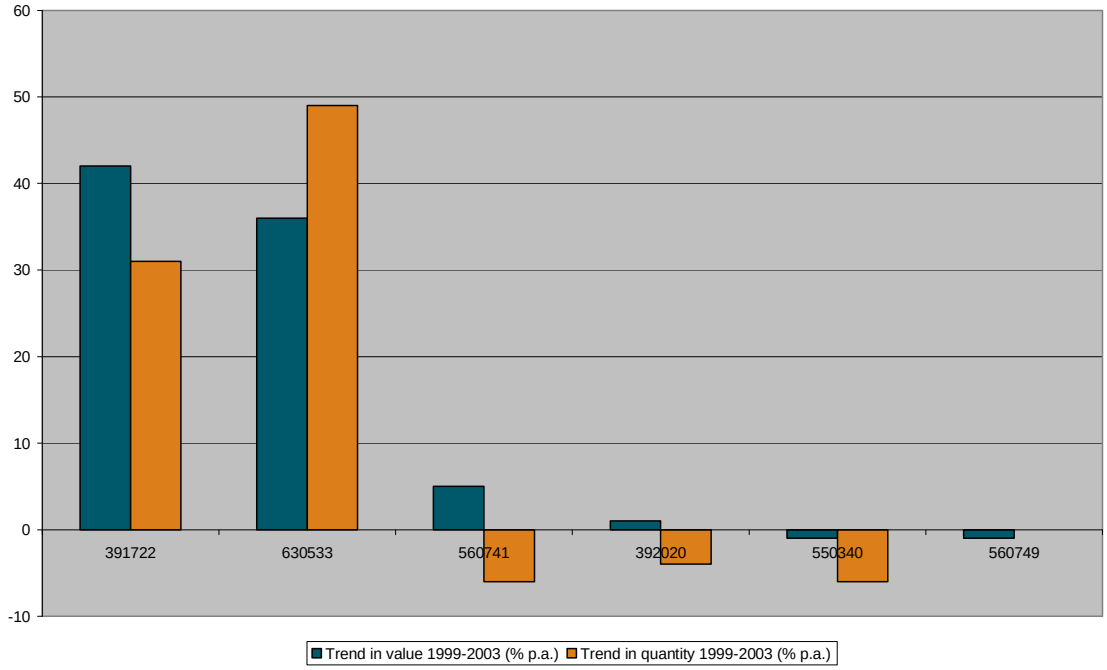

Figure 145: Export growth in value and volume from 1999 to 2003 for secondary PP products

Only HS 391722 and HS 630533 showed substantial growth in both export volume and value, while the rest of the exports either declined in volume but not in value, or declined in both.

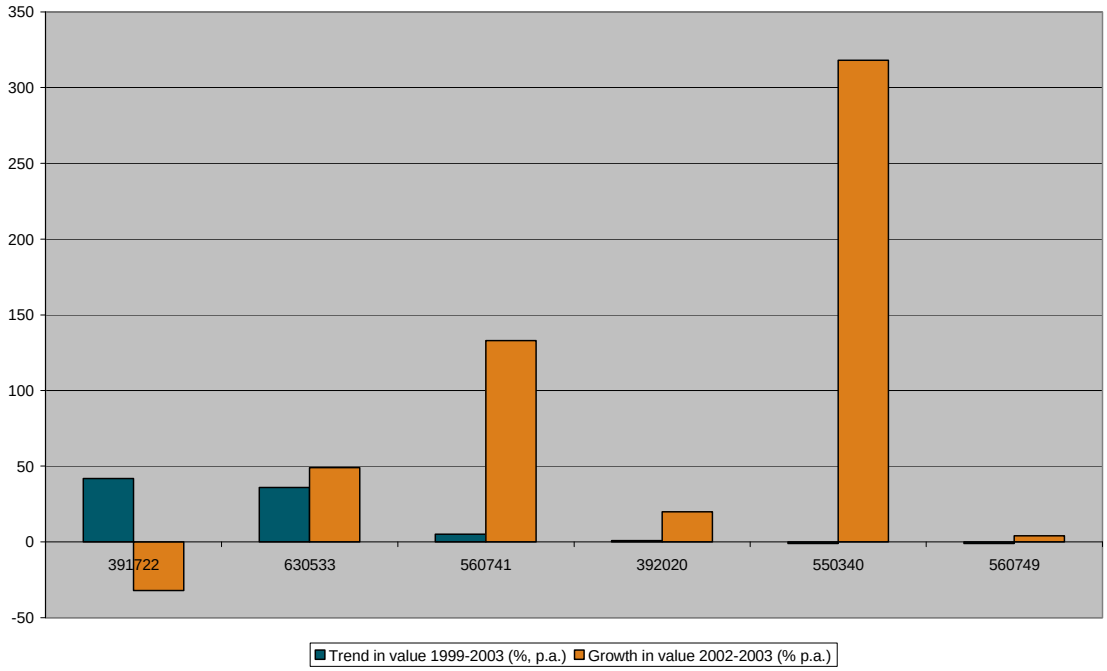

Figure 146: Long and short term growth in export value for secondary PP products

Short-term growth seems to be substantially higher than long term growth in exports of these products, with the exception of HS 391722.

8.4.1.1 HS 550340 Staple fibres of polypropylene, not carded or combed

South Africa exports US$1.6m of this product, representing 0.6% of the world's total exports. This is one of the few polypropylene products of which a large proportion is exported to non-African countries, with major markets being Germany, New Zealand, Australia, and Brazil, as can be seen in the graph below. African markets account for just over 5% of exports by value, however, this is skewed by the comparatively high price per unit paid by African countries; US$2,410 per ton versus US$1,097 paid by EU countries and US$1,307 paid by other countries. This may be due to the smaller units involved in export to African countries.

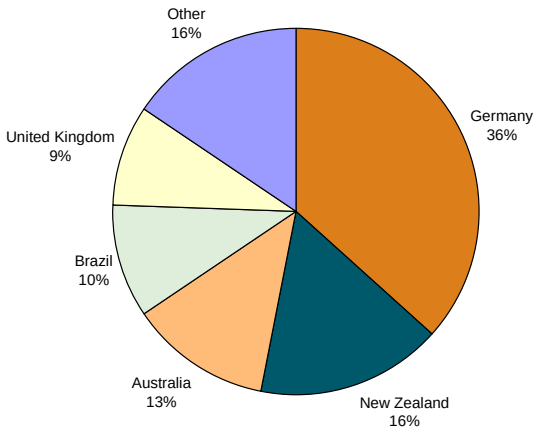

Figure 147: Top 5 export markets by value for HS 550340 in 2003

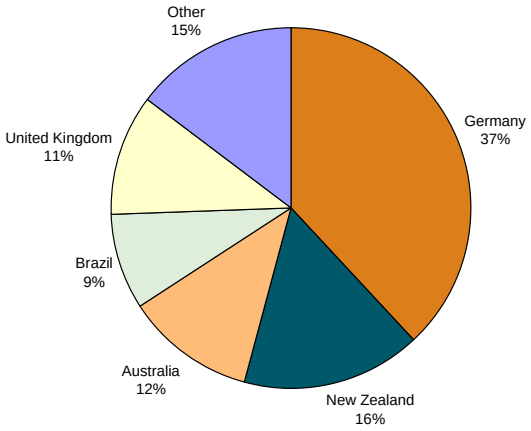

Figure 148: Top 5 export markets by volume for HS 550340 in 2003

Despite a long term negative growth trend in both value and volume exported, significant growth in exports to Germany, New Zealand, Australia and Belgium from 2002 to 2003 has been reported.

8.4.1.2 HS 560741 Binder or baler twine, of polyethylene or polypropylene

South Africa exported US$21,000 worth of HS 560741 in 2003[87]. This consisted of 14 tons at an average price of US$1,500 per ton. Exports have shown a moderate long term increase in value from 1999 to 2003 of 5% pa and a decrease in volume of -6% p.a., however there was strong growth at in the value of exports between 2002 and 2003.

8.4.1.3 HS 560749 Twine, cordage, ropes and cables, of polyethylene or polypropylene

South Africa exported US$227,000, or 97 tons, of this product in 2003. The average price per ton was US$2,340. There were no significant exports to non African countries, with the major markets being the Seychelles, Zambia and Mauritius, as shown below.

[87] Please note that a disaggregation of exports by country is not available for this tariff code.

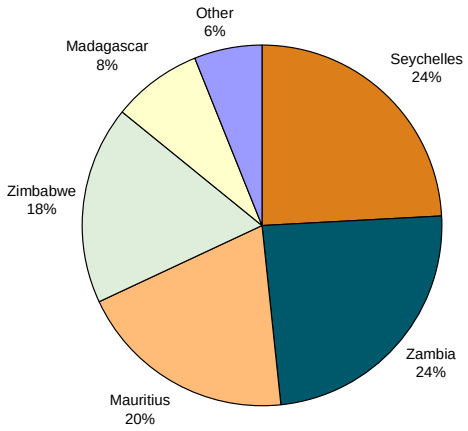

Figure 149: Top 5 export markets by value for HS 560749 in 2003

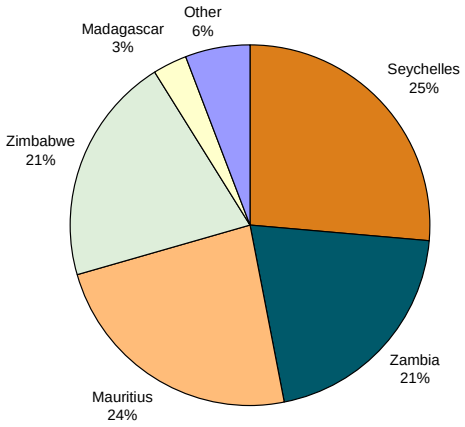

Figure 150: Top 5 export markets by volume for HS 560749 in 2003

Exports have displayed a long-term negative trend, decreasing in value by -1% from 1999 to 2003, however there was a turnaround in this trend with a moderate 4% increase in value exported in 2003.

8.4.1.4 HS 392020 Film and sheet, non-cellular, of polymers of propylene

South Africa exported US$4,090,000 of HS 392020 in 2003, supplying 0.1% of the world's imports of this product. The volume exported was 1,952 tons at US$2,095 a ton. Zimbabwe was the major export market, buying 32% of exports, followed by Mozambique and Kenya.

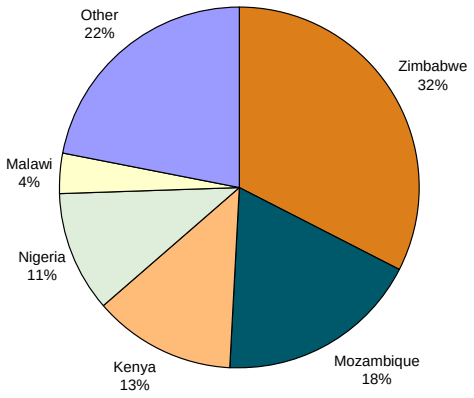

Figure 151: Top 5 export markets by value for HS 392020 in 2003

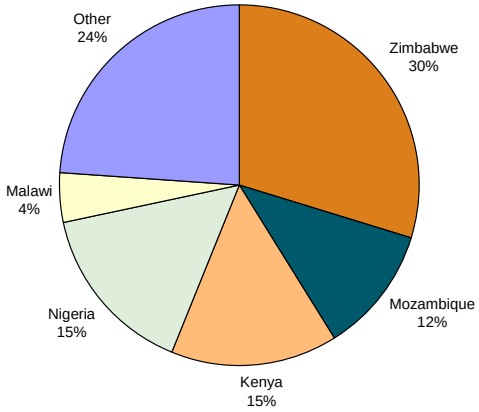

Figure 152: Top 5 export markets by volume for HS 392020 in 2003

Over the period from 1999 to 2003 the value exported grew on average 1% per year, while the volume exported decreased by 4%. From 2002 to 2003 there has, however, been an increase in value exported of 20%.

8.4.1.5 HS 630533 Sacks, bags, packing, of strip plastic material

South Africa supplied just 0.2% of the world's imports of HS 630533 in 2003. This was US$1,507,000, or 1,461 tons, at an average price per ton of US$1,461.

Major markets were Zimbabwe, Angola and Malawi, which have all followed a positive long-term growth trend. Zimbabwe, however, is supplied at the lowest cost per unit of US$461, in comparison with the average of US$1,031 per ton, while Chile, the only non African country reported to have imported this product from South Africa, was supplied at US$9,250 per ton.

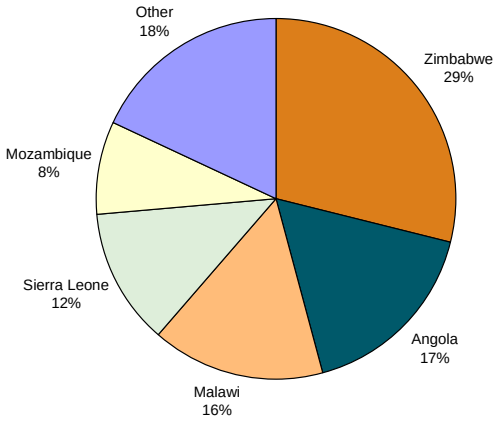

Figure 153: Top 5 export markets by value for HS 630533 in 2003

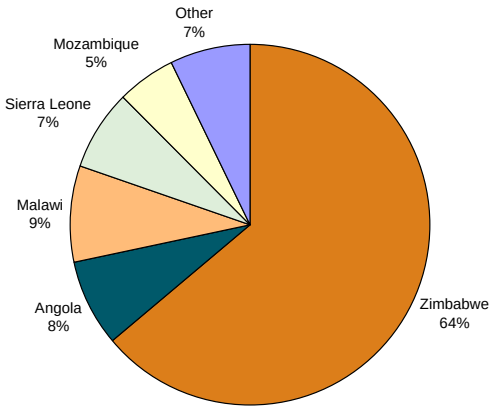

Figure 154: Top 5 export markets by volume for HS 630533 in 2003

Exports of this product have shown strong yearly growth of 36% by value and 49% by volume in the years 1999 to 2003, with growth by value from 2002 to 2003 strengthening to 49%.

8.4.1.6 HS 391722 Tubes, pipes and hoses, rigid, of polypropylene

South Africa supplies 0.1% of the world's imports of HS 391722 and is ranked as the 34th largest exporter of this product. There were only four significant markets which South Africa supplied in 2003; Mali, Mauritius, Mozambique and Angola.

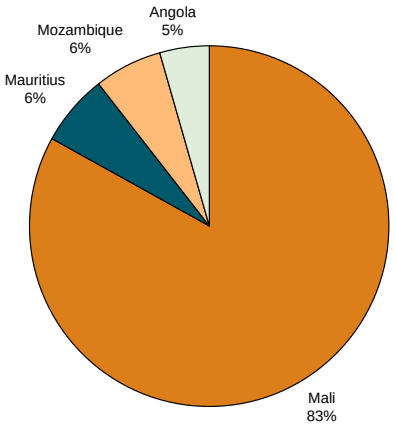

Figure 155: Top 5 export markets by value for HS 391722 in 2003

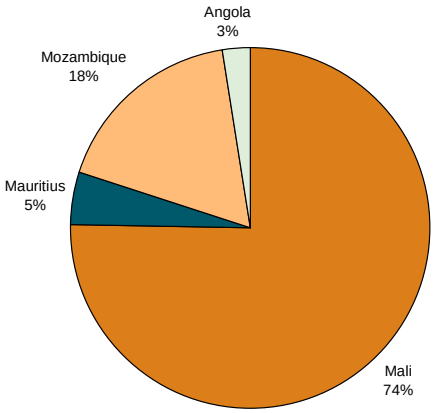

Figure 156: Top 5 export markets by volume for HS 391722 in 2003

Exports of this product have shown strong yearly average growth at a rate of 42% by value and 31% by volume between 1999 and 2003, however, from 2002 to 2003 there was a sharp drop in export value of 32%.

8.4.2 South African exports of secondary products to the US

None of the products included in this analysis were exported to the US in 2003.

8.4.3 South African exports of secondary products to the EU

The following table provides an overview of the export volumes and main trading relationships in the EU for the secondary PP products included in this analysis:

Product	Export value in 2003 (US$ 000)	Export volume in 2003 (tons)	Growth in value 1999-2003 (% p.a.)	Top 3 markets by value
HS 550340 Staple fibres of polypropylene, not carded or combed	905	811	-	Germany
				United Kingdom
				Belgium
HS 392020 Film and sheet etc, non-cellular etc, of polymers of propylene	63	41	-	France
				Belgium
				Germany

8.4.3.1 HS 550340 Staple fibres of polypropylene, not carded or combed

Exports to the EU of HS 550340 constituted 56% of South Africa's total exports of this product in 2003. Exports amounted to US$905,000 and 811 tons. The main markets were Germany, the United Kingdom, and Belgium, as shown below. Exports to Germany and Belgium exhibited substantial growth in value from 2002 to 2003.

Country	Import Value 2003 (US$ 000)	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Value
Germany	592	508	-
United Kingdom	143	143	-
Belgium	102	106	-

8.4.3.2 HS 392020 Film and sheet etc, non-cellular etc, of polymers of propylene

South Africa exported US$63,000, or 41 tons, of HS 392020 to France in 2003. This was 2% of South Africa's total exports of this product. Growth from 2002 to 2003 was 31%.

Country	Import Value 2003 (US$ 000)	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Value
France	63	41	-

8.5 Nonwoven products

8.5.1 South African exports of nonwoven products to world

The following table provides an overview of the export volumes and main trading relationships for the nonwoven products included in this analysis:

Product	Export value in 2003 (US$ 000)	Growth in value 1999-2003 (% p.a.)	Export volume in 2003 (tons)	Growth in volume 1999-2003 (% p.a.)	Top 3 markets by value	SA Market share (%)[88]
560311 Nonwovens, man-made filaments weighing <25g/m2	179	-10	24	-52	Germany	<0.5
					Zimbabwe	17
					Australia	<0.5
560312 Nonwovens, man-made filaments weighing 25-70g/m2	3,323	147	405	126	Spain	1
					Mauritius	13
					Portugal	3
560313 Nonwovens, man-made filaments weighing 70-150g/m2	13,072	38	8,053	46	Belgium	12
					United Kingdom	7
					Ghana	124
560314 Nonwovens, man-made filaments weighing >150g/m2	857	46	293	38	United Kingdom	1
					Zimbabwe	100
					Mozambique	100
392190 Film and sheet etc, nes of plastics	12,301	18	5,124	12	Netherlands	2
					Nigeria	17
					US	<0.5

The growth in export value and volume of these products is shown below:

[88] Percentages arise from differences in recording import and export amounts

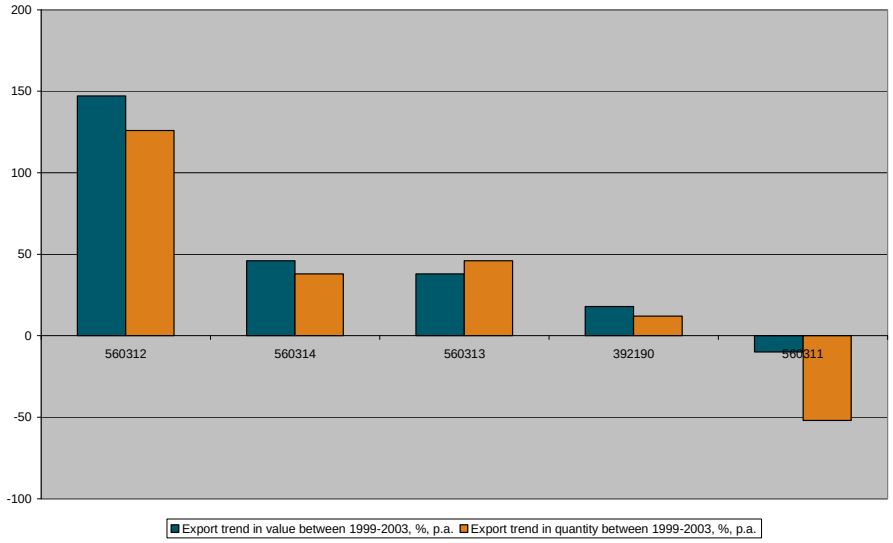

Figure 157: Export growth in value and volume from 1999 to 2003 for nonwoven products

Exports of HS 560312 Nonwovens displayed the greatest growth at a yearly average of 147% by value and 126% by volume over the period 1999 to 2003. Growth was also strong for all other products analysed, except for exports of HS 560311 which experienced an average decrease per year of 10% ad 52% by value and volume respectively.

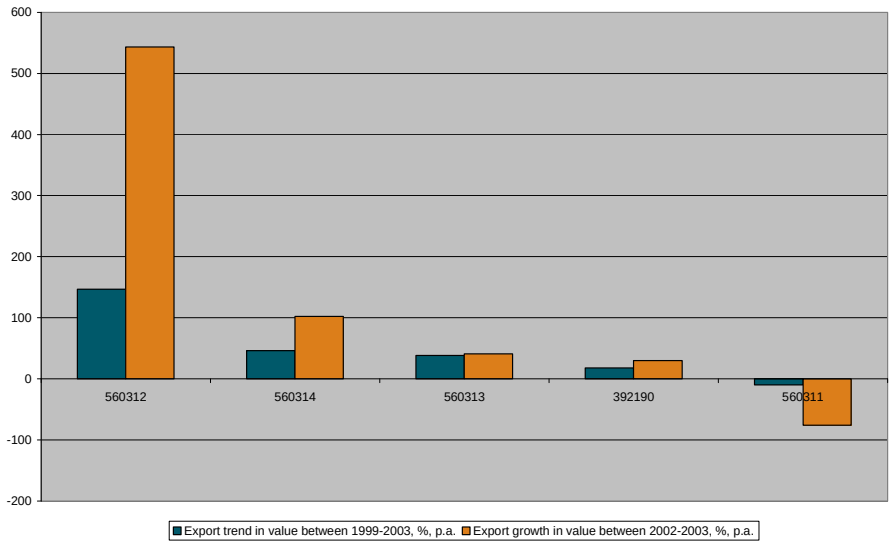

Figure 158: Long and short term growth in export value for secondary PP products

Short-term growth seems to be higher than long-term growth in exports of these products, especially for HS 560312. In the short-term exports of HS 560311 declined sharply.

8.5.1.1 HS 560311 Nonwovens, man-made filaments weighing <25g/m2

South Africa exported US$179,000 of this product, representing 0.02% of the world's total exports. A large proportion by value is exported to Germany, with the other two main export markets being Zimbabwe and Australia, as can be seen in the graph below. By volume, the majority of exports are supplied to Zimbabwe

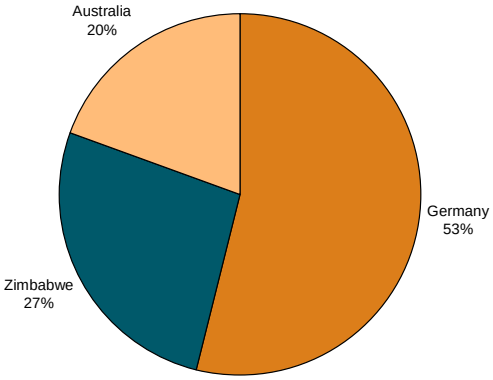

Figure 159: Top 5 export markets by value for HS 560311 in 2003

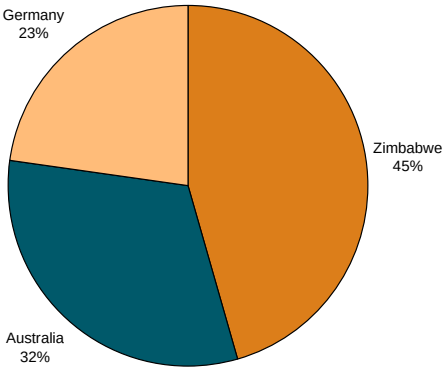

Figure 160: Top 5 export markets by volume for HS 560311 in 2003

There has been a long term negative growth trend in both value and volume exported, with a sharp decline in exported value of 76% from 2002 to 2003.

8.5.1.2 HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

South Africa exported US$3.23m worth of HS 560312 in 2003, and was the world's 34th largest exporter, exporting less than 0.5% of the world's total. These exports consisted of 405 tons at an average price of US$8,205 per ton. Spain, Mauritius and Portugal were the main export destinations as shown below:

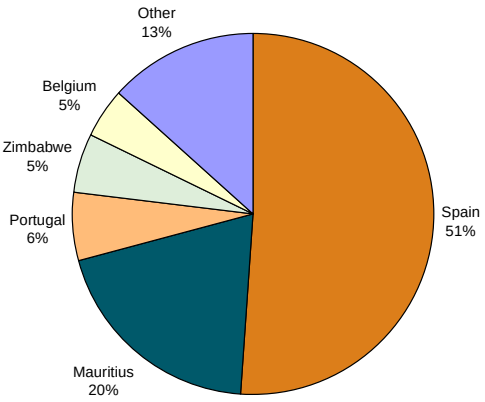

Figure 161: Top 5 export markets by value for HS 560312 in 2003

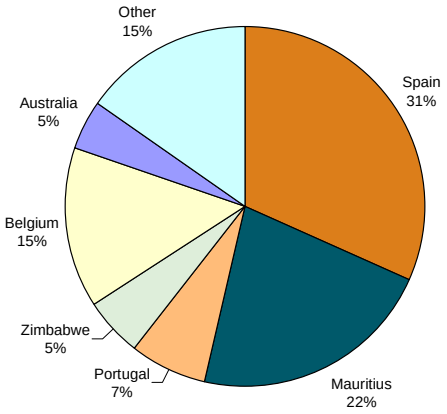

Figure 162: Top 5 export markets by volume for HS 560312 in 2003

Exports have shown a very high long-term increase in value from 1999 to 2003 of 147% p.a. and an increase in volume of 126% p.a., with exceptionally strong growth in the value of exports between 2002 and 2003 of 543%.

8.5.1.3 HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

South Africa exported US$13.072m, or 8053 tons, of this product in 2003. The average price per ton was US$1,623. The majority of South Africa's exports went to the EU countries Belgium and the United Kingdom, with a greater volume exported to the United Kingdom:

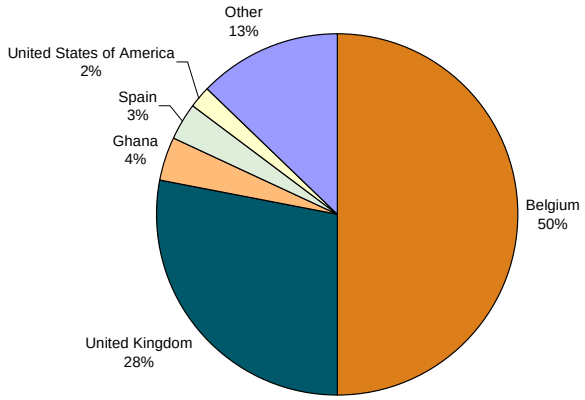

Figure 163: Top 5 export markets by value for HS 560313 in 2003

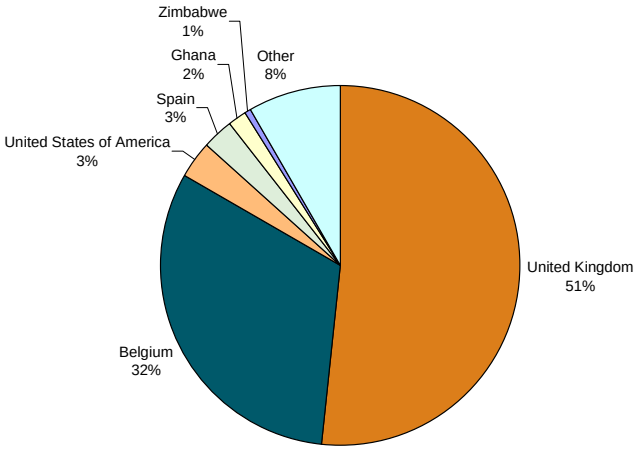

Figure 164: Top 5 export markets by volume for HS 560313 in 2003

Exports have displayed very strong growth in the long-term negative trend and the short term, growing at an average of 38% pa by value and 46% pa by volume.

8.5.1.4 HS 560314 Nonwovens, man-made filaments weighing >150g/m2

South Africa exported US$857of HS 392020 in 2003, supplying just 0.09% of the world's exports of this product. The volume exported was 293 tons at US$2,925 a ton. The United Kingdom and Zimbabwe were the major export markets, although the Zimbabwean market has been declining at an average of 4% pa from 1999 to 2003.

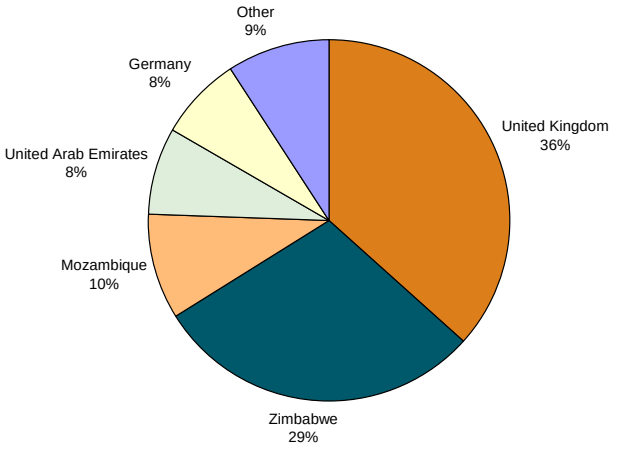

Figure 165: Top 5 export markets by value for HS 560314 in 2003

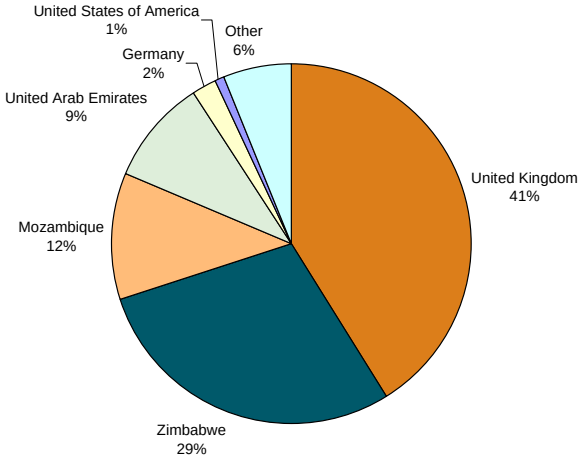

Figure 166: Top 5 export markets by volume for HS 560314 in 2003

Over the period from 1999 to 2003 the value exported grew strongly at an average 46% per year, while the volume increased at 38%. From 2002 to 2003 there has been a significant increase in value exported of 102%.

8.5.1.5 HS 392190 Film and sheet etc, nes of plastics

South Africa supplied just 0.2% of the world's imports of HS 392190 in 2003. This was US$12.301m, or 5,124 tons, at an average price per ton of US$2,401. Major markets included EU countries, the US and African countries, with the Netherlands and Nigeria the most important markets.

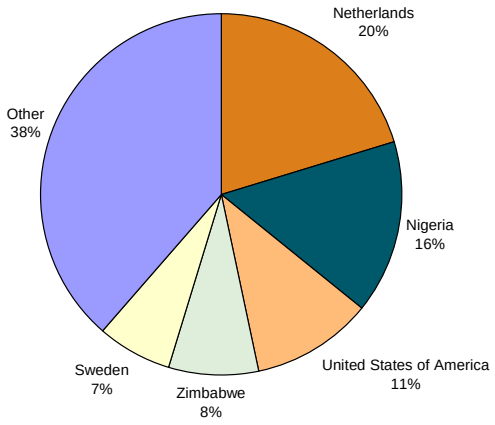

Figure 167: Top 5 export markets by value for HS 392190 in 2003

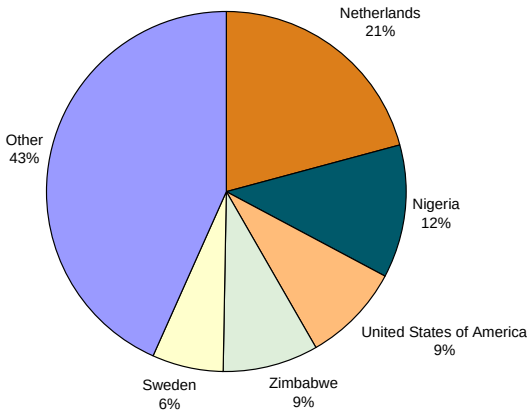

Figure 168: Top 5 export markets by volume for HS 392190 in 2003

Exports of this product have shown strong yearly growth of 18% by value and 12% by volume in the years 1999 to 2003, with growth by value from 2002 to 2003 strengthening to 30%.

8.5.2 South African exports of nonwoven products to the US

The following table provides an overview of the export values and volumes of the nonwoven products included in this analysis to the United States. Please note that there were no exports of HS 560311 and HS 560312 during the period covered by this analysis.

Product	Export value in 2003 (US$ 000)	Export volume in 2003 (tons)	Growth in value 1999-2003 (% p.a.)
560313 Nonwovens, man-made filaments weighing 70-150g/m2	273	259	-
560314 Nonwovens, man-made filaments weighing >150g/m2	28	2	-
392190 Film and sheet etc, nes of plastics	1,324	458	65

8.5.2.1 HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

Exports to the US of HS 560313 constituted 2% of South Africa's total exports of this product in 2003. Exports amounted to US$273,000. In the short term the value exported declined by 40% from 2002 to 2003.

8.5.2.2 HS 560314 Nonwovens, man-made filaments weighing >150g/m2

Exports to the US of HS 560314 constituted 3% of South Africa's total exports of this product in 2003.

8.5.2.3 HS 392190 Film and sheet etc, nes of plastics

Exports to the US of HS 392190 constituted 11% of South Africa's total exports of this product in 2003. Exports amounted to US$1,324,000, following growth of 65% pa on average in value exported between 1999 and 2003, however this slowed to 6% from 2002 to 2003

8.5.3 South African exports of nonwoven products to the EU

The following table provides an overview of the export values and main trading relationships in the EU for the nonwoven products included in this analysis[89]:

Product	Export value in 2003 (US$ 000)	Export volume in 2003 (tons)	Growth in value 1999-2003 (% p.a.)	Top 3 EU markets by value
560311 Nonwovens, man-made filaments weighing <25g/m2	91	-	72	Germany
				Belgium
				France
560312 Nonwovens, man-made filaments weighing 25-70g/m2	2,042	-	-	Spain
				Portugal
				Belgium
560313 Nonwovens, man-made filaments weighing 70-150g/m2	11,283	-	43	Belgium
				United Kingdom
				Spain
560314 Nonwovens, man-made filaments weighing >150g/m2	369	-	329	United Kingdom
				Germany

[89] Please note that export volumes were not available in the trade statistics.

Product	Export value in 2003 (US$ 000)	Export volume in 2003 (tons)	Growth in value 1999-2003 (% p.a.)	Top 3 EU markets by value
				Austria
392190 Film and sheet etc, nes of plastics	4,516	-	12	Netherlands
				Sweden
				United Kingdom

8.5.3.1 HS 560311 Nonwovens, man-made filaments weighing <25g/m2

Exports to the EU of HS 560311 constituted 51% of South Africa's total exports of this product in 2003. Exports amounted to US$91,000.

Country	Import Value 2003 (US$ 000)	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Value
Germany	91	51	-

8.5.3.2 HS 560312 Nonwovens, man-made filaments weighing 25-70g/m2

Exports to the EU of HS 560312 constituted 61% of South Africa's total exports of this product in 2003. Exports amounted to US$2,042,000. The main markets were Spain, Portugal and Belgium, as shown below:

Country	Import Value 2003 (US$ 000)	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Value
Spain	1,686	133	-
Portugal	206	29	-
Belgium	149	61	-

8.5.3.3 HS 560313 Nonwovens, man-made filaments weighing 70-150g/m2

Exports to the EU of HS 560313 constituted 86% of South Africa's total exports of this product in 2003. Exports amounted to US$11,283,000 or 811 tons. The main markets were Belgium, the United Kingdom, and Spain.

Country	Import Value 2003 (US$ 000)	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Value
Belgium	6,548	2,576	-
United Kingdom	3,638	4,183	70
Spain	420	233	-

8.5.3.4 HS 560314 Nonwovens, man-made filaments weighing >150g/m2

Exports to the EU of HS 560314 constituted 43% of South Africa's total exports of this product in 2003. Exports amounted to US$369,000. The main markets were the United Kingdom and Germany.

Country	Import Value 2003 (US$ 000)	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Value
United Kingdom	306	120	-
Germany	63	7	-

8.5.3.5 HS 392190 Film and sheet etc, nes of plastics

Exports to the EU of HS 392190 constituted 37% of South Africa's total exports of this product in 2003. Exports amounted to US$4,516,000. The main markets were the Netherlands, Sweden, and the United Kingdom.

Country	Import Value 2003 (US$ 000)	Import Volume 2003 (tons)	Growth % p.a. 1999-2003 Value
Netherlands	2,482	1,063	18
Sweden	823	316	-
United Kingdom	612	198	23

C. RECOMMENDATIONS

9 High potential product-to-market opportunities based on trade flow analysis

In order to identify high-potential product-to-market combinations a multiple ranking analysis of the following demand side factors was conducted:

- **Import market size - Imported value 2003 in US$ thousand**
- **Import market size adjusted for intra-EU/intra-NAFTA trade - Ex EU / NAFTA Imported value 2003 in US$ thousand**
- **Import market growth - Import trend in value 1999-2003, %, p.a.**

An additional ranking criterion that was considered for ranking product-to-market combinations was the **relative labour intensity** of the various PP product categories. The labour intensity of PP production is affected by various factors including:

- Process used in production, e.g. extrusion as opposed to injection moulding
- Product type - within each product category there may be large differences in the degree of labour intensity
- Size of plant
- Capital intensity of plant – this is dependent on whether old or new equipment is in use, where most new equipment is fully automated

As the brief was to conduct trade flow analysis and not a detailed analysis of the current and future structure or the South African PP industry, it has not been possible to collect the necessary information on the above drivers of labour intensity that would be required to estimate the labour intensities of the product groupings. However, based on input from socio-economic impact specialists[90] and industry players[91], PP products can be ranked on a rough indicative basis in terms of labour intensity, as follows, from least-dependent to most-dependant on labour:

1. Polypropylene in primary form
2. PP Copolymers
3. Staple fibres of PP
4. Tubes, Pipes and Hoses
5. Binder or Baler twine
6. Plates, sheet or film
7. Sacks and Bags
8. Twine, cordage, ropes and cable

It is evident that the production of primary PP products is, in general, less labour intensive than the production of secondary PP products, although both primary and secondary polypropylene products are relatively capital intensive compared to many other sectors. Employment growth is

[90] Global Insight
[91] In particular, Sasol Polymers and Sasol polypropylene division

therefore likely to be generated by creating new downstream activity and selecting sufficiently large-scale opportunities that can absorb labour. Therefore, labour intensity has not been added as an additional ranking criterion; it is rather recommended that it is considered during the design phase of new plants that might be developed to realise these market opportunities, in order to address the joint objectives of competitiveness, growth, employment and equity.

The ranking tables based on single and then combined criteria are presented below.

9.1 Top 30 PP product-to-market combinations based on import market size (US$ '000 – 2003)

Rank	Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
1	390210 Polypropylene	Italy	643,218	35,233	4	152	0.02%	0%
2	390210 Polypropylene	Belgium	549,516	40,763	17	69	0.01%	0%
3	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	US	511,148	288,760	6	0	0.00%	0%
4	390210 Polypropylene	Germany	491,495	27,245	6	2,201	0.45%	3%
5	390230 Propylene copolymers	Germany	479,712	11,726	9	0	0.00%	0%
6	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	UK	430,790	22,186	16	0	0.00%	0%
7	390210 Polypropylene	France	337,696	1,513	10	37	0.01%	0%
8	390230 Propylene copolymers	France	313,154	25,501	9	97	0.03%	0%
9	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Germany	309,807	37,028	10	0	0.00%	0%
10	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Belgium	284,900	45,586	10	0	0.00%	0%
11	392020 Film and sheet etc, non-	France	280,460	25,220	9	63	0.02%	2%

Rank	Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
	cellular etc, of polymers of propylene							
12	390230 Propylene copolymers	UK	263,344	5,225	9	16	0.01%	0%
13	390210 Polypropylene	UK	258,261	39,504	16	453	0.18%	1%
14	390230 Propylene copolymers	Italy	237,593	1,649	1	0	0.00%	0%
15	390210 Polypropylene	Spain	221,756	18,153	27	100	0.05%	0%
16	390230 Propylene copolymers	Belgium	215,983	17,946	6	137	0.06%	1%
17	390230 Propylene copolymers	Spain	203,096	4,331	23	81	0.04%	0%
18	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Italy	193,999	22,313	6	0	0.00%	0%
19	390210 Polypropylene	Denmark	177,396	10,306	16		0.00%	
20	390210 Polypropylene	US	170,779	33,290	4		0.00%	
21	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Spain	170,166	9,823	10	0	0.00%	0%
22	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Netherlands	162,650	23,558	11	0	0.00%	0%
23	390210 Polypropylene	Netherlands	161,581	18,768	12		0.00%	
24	390230 Propylene copolymers	US	142,133	64,140	7	0	0.00%	0%
25	630533 Sacks, bags, packing, of strip plastic material	US	107,556	69,313	6	0	0.00%	0%
26	390230 Propylene copolymers	Netherlands	86,615	4,886	26		0.00%	
27	390210 Polypropylene	Sweden	80,221	16,497	14		0.00%	
28	390210 Polypropylene	Portugal	79,586	6,344	7	17	0.02%	0%
29	550340 Staple fibres of polypropylene, not carded or	Germany	77,585	3,221	1	592	0.76%	37%

Rank	Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
	combed							
30	390210 Polypropylene	Austria	75,166	991	9	16	0.02%	0%

9.2 *Top 30 PP product-to-market combinations based on import market size Ex-EU / NAFTA (US$ '000 – 2003)*

Rank	Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
1	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	US	288,760	511,148	6	0	0.00%	0%
2	630533 Sacks, bags, packing, of strip plastic material	US	69,313	107,556	6	0	0.00%	0%
3	390230 Propylene copolymers	US	64,140	142,133	7	0	0.00%	0%
4	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Belgium	45,586	284,900	10	0	0.00%	0%
5	390210 Polypropylene	Belgium	40,763	549,516	17	69	0.01%	0%
6	390210 Polypropylene	UK	39,504	258,261	16	453	0.18%	1%
7	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Germany	37,028	309,807	10	0	0.00%	0%
8	390210 Polypropylene	Italy	35,233	643,218	4	152	0.02%	0%
9	390210 Polypropylene	US	33,290	170,779	4		0.00%	
10	390210 Polypropylene	Germany	27,245	491,495	6	2,201	0.45%	3%
11	390230 Propylene copolymers	France	25,501	313,154	9	97	0.03%	0%
12	392020 Film and sheet etc, non-	France	25,220	280,460	9	63	0.02%	2%

Rank	Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
	cellular etc, of polymers of propylene							
13	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Netherlands	23,558	162,650	11	0	0.00%	0%
14	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Italy	22,313	193,999	6	0	0.00%	0%
15	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	UK	22,186	430,790	16	0	0.00%	0%
16	630533 Sacks, bags, packing, of strip plastic material	Germany	20,551	29,077	19	0	0.00%	0%
17	560749 Twine nes, cordage, ropes and cables, of polyethylene or polypropylene	US	19,360	41,180	13	0	0.00%	0%
18	390210 Polypropylene	Netherlands	18,768	161,581	12		0.00%	
19	390210 Polypropylene	Spain	18,153	221,756	27	100	0.05%	0%
20	390230 Propylene copolymers	Belgium	17,946	215,983	6	137	0.06%	1%
21	390210 Polypropylene	Sweden	16,497	80,221	14		0.00%	
22	630533 Sacks, bags, packing, of strip plastic material	Italy	14,648	18,264	7	0	0.00%	0%
23	560741 Binder or baler twine, of polyethylene or polypropylene	US	14,465	18,975	7	0	0.00%	0%
24	390230 Propylene copolymers	Germany	11,726	479,712	9	0	0.00%	0%
25	630533 Sacks, bags, packing, of strip plastic material	Belgium	11,418	15,183	10	0	0.00%	0%
26	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Ireland	10,321	46,641	11		0.00%	
27	390210 Polypropylene	Denmark	10,306	177,396	16		0.00%	
28	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Spain	9,823	170,166	10	0	0.00%	0%

Rank	Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
29	630533 Sacks, bags, packing, of strip plastic material	UK	9,676	12,935	-9		0.00%	
30	630533 Sacks, bags, packing, of strip plastic material	Netherlands	8,727	18,756	4	0	0.00%	0%

9.3 *Top 30 PP product-to-market combinations based on import market growth (1999 – 2003)*

Rank	Product	Market	Import trend in value between 1999-2003, %, p.a.	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
1	630533 Sacks, bags, packing, of strip plastic material	Luxembourg	100	2,914	2,518		0.00%	
2	560741 Binder or baler twine, of polyethylene or polypropylene	Greece	59	608	336		0.00%	
3	391722 Tubes, pipes and hoses, rigid; of polypropylene	Finland	44	5,049	170		0.00%	
4	560741 Binder or baler twine, of polyethylene or polypropylene	Portugal	41	115	0		0.00%	
5	391722 Tubes, pipes and hoses, rigid; of polypropylene	Ireland	40	3,653	2,369		0.00%	
6	630533 Sacks, bags, packing, of strip plastic material	Austria	37	3,766	229		0.00%	
7	391722 Tubes, pipes and hoses, rigid; of polypropylene	UK	34	11,627	4,652	0	0.00%	0%

Rank	Product	Market	Import trend in value between 1999-2003, %, p.a.	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
8	630533 Sacks, bags, packing, of strip plastic material	Portugal	32	4,223	397		0.00%	
9	390230 Propylene copolymers	Austria	31	47,350	267		0.00%	
10	390230 Propylene copolymers	Finland	28	16,635	657		0.00%	
11	390210 Polypropylene	Luxembourg	27	35,905	0		0.00%	
12	390210 Polypropylene	Spain	27	221,756	18,153	100	0.05%	0%
13	391722 Tubes, pipes and hoses, rigid; of polypropylene	Belgium	27	9,236	4,887	0	0.00%	0%
14	390230 Propylene copolymers	Netherlands	26	86,615	4,886		0.00%	
15	550340 Staple fibres of polypropylene, not carded or combed	Ireland	26	190	51		0.00%	
16	390230 Propylene copolymers	Spain	23	203,096	4,331	81	0.04%	0%
17	391722 Tubes, pipes and hoses, rigid; of polypropylene	Spain	22	27,267	755	0	0.00%	0%
18	390230 Propylene copolymers	Denmark	21	34,960	1,124		0.00%	
19	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Luxembourg	20	31,271	0		0.00%	
20	390230 Propylene copolymers	Luxembourg	19	4,974	0		0.00%	
21	550340 Staple fibres of polypropylene, not carded or combed	Greece	19	1,360	0		0.00%	
22	560749 Twine nes, cordage, ropes and cables, of polyethylene or polypropylene	Belgium	19	6,693	45		0.00%	
23	630533 Sacks, bags, packing, of strip plastic material	Germany	19	29,077	20,551	0	0.00%	0%
24	550340 Staple fibres of polypropylene, not carded or combed	Spain	18	21,053	366	0	0.00%	0%
25	390210 Polypropylene	Belgium	17	549,516	40,763	69	0.01%	0%

Rank	Product	Market	Import trend in value between 1999-2003, %, p.a.	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
26	560749 Twine nes, cordage, ropes and cables, of polyethylene or polypropylene	Portugal	17	1,616	62		0.00%	
27	392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Denmark	17	3,901	3,090		0.00%	
28	630533 Sacks, bags, packing, of strip plastic material	Denmark	17	3,901	2,013		0.00%	
29	390210 Polypropylene	Denmark	16	177,396	10,306		0.00%	
30	390210 Polypropylene	UK	16	258,261	39,504	453	0.18%	1%

9.4 Top 30 product-to-market opportunities for PP based on trade flow analysis

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
390210 Polypropylene	Spain	221,756	18,153	27	100	0.05%	0%
390210 Polypropylene	Denmark	177,396	10,306	16		0.00%	
390210 Polypropylene	Belgium	549,516	40,763	17	69	0.01%	0%
390210 Polypropylene	UK	258,261	39,504	16	453	0.18%	1%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	US	511,148	288,760	6	0	0.00%	0%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	Belgium	284,900	45,586	10	0	0.00%	0%
392020 Film and sheet	Germany	309,807	37,028	10	0	0.00%	0%

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
etc, non-cellular etc, of polymers of propylene							
390210 Polypropylene	Italy	643,218	35,233	4	152	0.02%	0%
390210 Polypropylene	Germany	491,495	27,245	6	2,201	0.45%	3%
390230 Propylene copolymers	France	313,154	25,501	9	97	0.03%	0%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	France	280,460	25,220	9	63	0.02%	2%
392020 Film and sheet etc, non-cellular etc, of polymers of propylene	UK	430,790	22,186	16	0	0.00%	0%

Please note that the product-to-market opportunities in the darker cells represent the highest potential opportunities based on the three selected demand side ranking criteria. These combinations score highly on all three criteria.

The product-to-market combinations in the paler cells represent high potential opportunities – they score highly on two of the three ranking criteria (i.e. within the top 15 in terms of total import market size, within the top 15 in terms of total import market size adjusted for intra-EU/intra-NAFTA trade, and/or top 30 in import market growth terms).

9.5 Top 30 nonwovens product-to-market combinations based on import market size (US$ '000 – 2003)

Rank	Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
1	392190 Film and sheet etc, nes of plastics	US	578,250	403,441	5	1324	0%	11
2	392190 Film and sheet etc, nes of plastics	France	432,542	68,210	4	264	0%	2
3	392190 Film and sheet etc, nes of plastics	Germany	405,597	138,430	0	40	0%	0
4	392190 Film and sheet etc, nes of plastics	UK	363,163	74,639	3	612	0%	5
5	392190 Film and sheet etc, nes of plastics	Spain	208,831	16,341	11	0	0%	0
6	392190 Film and sheet etc, nes of plastics	Italy	203,180	33,979	0	0	0%	0
7	392190 Film and sheet etc, nes of plastics	Belgium	193,910	23,364	5	68	0%	1
8	560312 Nonwovens, man-made filaments weighing 25-70g/m2	UK	177,389	47,755	12	0	0%	0
9	392190 Film and sheet etc, nes of plastics	Netherlands	175,662	22,898	1	2482	1%	20
10	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Germany	134,661	26,457	10	0	0%	0
11	560312 Nonwovens, man-made filaments weighing 25-70g/m2	US	120,126	100,291	17	0	0%	0
12	560311 Nonwovens, man-made filaments weighing <25g/m2	US	119,902	104,755	17	0	0%	0
13	392190 Film and sheet etc, nes of plastics	Austria	117,151	28,953	7	0	0%	0

Rank	Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
14	560314 Nonwovens, man-made filaments weighing >150g/m2	Germany	113,654	21,105	0	63	0%	7
15	560311 Nonwovens, man-made filaments weighing <25g/m2	Germany	95,333	7,968	12	91	0%	51
16	392190 Film and sheet etc, nes of plastics	Sweden	82,599	10,652	3	823	1%	7
17	392190 Film and sheet etc, nes of plastics	Denmark	78,336	6,931	5	0	0%	0
18	560313 Nonwovens, man-made filaments weighing 70-150g/m2	US	74,456	61,504	25	273	0%	2
19	560311 Nonwovens, man-made filaments weighing <25g/m2	France	73,015	9,975	4	0	0%	0
20	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Belgium	72,971	39,866	1	149	0%	4
21	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Spain	69,419	2,883	37	1686	2%	51
22	560314 Nonwovens, man-made filaments weighing >150g/m2	France	69,161	6,054	7	0	0%	0
23	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Germany	67,814	12,857	-5	245	0%	2
24	560312 Nonwovens, man-made filaments weighing 25-70g/m2	France	60,741	8,855	-1	0	0%	0
25	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Italy	57,705	14,664	9	0	0%	0
26	560314 Nonwovens, man-made filaments weighing >150g/m2	US	54,087	47,348	3	28	0%	3
27	560311 Nonwovens, man-made filaments weighing <25g/m2	Spain	54,018	1,777	8	0	0%	0
28	560311 Nonwovens, man-made	Netherlands	51,917	3,715	10	0	0%	0

Rank	Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
	filaments weighing <25g/m2							
29	560314 Nonwovens, man-made filaments weighing >150g/m2	Italy	49,046	15,235	-1	0	0%	0
30	560313 Nonwovens, man-made filaments weighing 70-150g/m2	UK	47,457	47,444	-2	3638	8%	28

9.6 Top 30 nonwovens product-to-market combinations based on import market size Ex-EU / NAFTA (US$ '000 – 2003)

Rank	Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
1	392190 Film and sheet etc, nes of plastics	US	403,441	578,250	5	1324	0%	11
2	392190 Film and sheet etc, nes of plastics	Germany	138,430	405,597	0	40	0%	0
3	560311 Nonwovens, man-made filaments weighing <25g/m2	US	104,755	119,902	17	0	0%	0
4	560312 Nonwovens, man-made filaments weighing 25-70g/m2	US	100,291	120,126	17	0	0%	0
5	392190 Film and sheet etc, nes of plastics	UK	74,639	363,163	3	612	0%	5
6	392190 Film and sheet etc, nes of plastics	France	68,210	432,542	4	264	0%	2

Rank	Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
7	560313 Nonwovens, man-made filaments weighing 70-150g/m2	US	61,504	74,456	25	273	0%	2
8	560312 Nonwovens, man-made filaments weighing 25-70g/m2	UK	47,755	177,389	12	0	0%	0
9	560313 Nonwovens, man-made filaments weighing 70-150g/m2	UK	47,444	47,457	-2	3638	8%	28
10	560314 Nonwovens, man-made filaments weighing >150g/m2	US	47,348	54,087	3	28	0%	3
11	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Belgium	39,866	72,971	1	149	0%	4
12	392190 Film and sheet etc, nes of plastics	Italy	33,979	203,180	0	0	0%	0
13	392190 Film and sheet etc, nes of plastics	Austria	28,953	117,151	7	0	0%	0
14	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Germany	26,457	134,661	10	0	0%	0
15	392190 Film and sheet etc, nes of plastics	Belgium	23,364	193,910	5	68	0%	1
16	392190 Film and sheet etc, nes of plastics	Netherlands	22,898	175,662	1	2482	1%	20
17	560314 Nonwovens, man-made filaments weighing >150g/m2	Germany	21,105	113,654	0	63	0%	7
18	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Belgium	19,797	33,217	-6	6584	20%	50
19	560314 Nonwovens, man-made filaments weighing >150g/m2	Belgium	19,679	42,311	7	0	0%	0
20	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Netherlands	17,061	30,735	10	0	0%	0
21	392190 Film and sheet etc, nes of	Spain	16,341	208,831	11	0	0%	0

Rank	Product	Market	Ex EU / NAFTA Imported value 2003 in US$ thousand	Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
	plastics							
22	560314 Nonwovens, man-made filaments weighing >150g/m2	Italy	15,235	49,046	-1	0	0%	0
23	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Italy	14,664	57,705	9	0	0%	0
24	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Germany	12,857	67,814	-5	245	0%	2
25	560311 Nonwovens, man-made filaments weighing <25g/m2	UK	11,696	36,259	-3	0	0%	0
26	392190 Film and sheet etc, nes of plastics	Sweden	10,652	82,599	3	823	1%	7
27	560311 Nonwovens, man-made filaments weighing <25g/m2	France	9,975	73,015	4	0	0%	
28	392190 Film and sheet etc, nes of plastics	Greece	9,546	36,764	7	92	0%	1
29	560312 Nonwovens, man-made filaments weighing 25-70g/m2	France	8,855	60,741	-1	0	0%	0
30	560314 Nonwovens, man-made filaments weighing >150g/m2	Denmark	8,533	20,436	10	0	0%	0

9.7 Top 30 nonwovens product-to-market combinations based on import market growth (1999 – 2003)

Rank	Product	Market	Import trend in value between 1999-2003, %, p.a.	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
1	560314 Nonwovens, man-made filaments weighing >150g/m2	Luxembourg	50	851	302	0	0%	0
2	560314 Nonwovens, man-made filaments weighing >150g/m2	Ireland	49	2,457	40	0	0%	0
3	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Greece	45	12,490	2	0	0%	0
4	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Luxembourg	40	7,555	4,388	0	0%	0
5	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Spain	37	69,419	2,883	1686	2%	51
6	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Denmark	34	8,736	1,593	0	0%	0
7	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Sweden	31	10,381	357	0	0%	0
8	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Finland	26	9,969	2,317	0	0%	0
9	560313 Nonwovens, man-made filaments weighing 70-150g/m2	US	25	74,456	61,504	273	0%	2
10	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Ireland	23	3,262	158	0	0%	0
11	560311 Nonwovens, man-made filaments weighing <25g/m2	Belgium	20	33,356	5,723	0	0%	0
12	560314 Nonwovens, man-made filaments weighing >150g/m2	Austria	19	35,294	3,910	0	0%	0
13	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Austria	18	20,017	2,451	0	0%	0

Rank	Product	Market	Import trend in value between 1999-2003, %, p.a.	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
14	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Denmark	18	11,157	192	0	0%	0
15	560311 Nonwovens, man-made filaments weighing <25g/m2	US	17	119,902	104,755	0	0%	0
16	560312 Nonwovens, man-made filaments weighing 25-70g/m2	US	17	120,126	100,291	0	0%	0
17	560311 Nonwovens, man-made filaments weighing <25g/m2	Germany	12	95,333	7,968	91	0%	51
18	560312 Nonwovens, man-made filaments weighing 25-70g/m2	UK	12	177,389	47,755	0	0%	0
19	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Spain	12	19,201	1,315	420	2%	3
20	392190 Film and sheet etc, nes of plastics	Ireland	11	43,850	4,048	135	0%	1
21	392190 Film and sheet etc, nes of plastics	Spain	11	208,831	16,341	0	0%	0
22	560311 Nonwovens, man-made filaments weighing <25g/m2	Netherlands	10	51,917	3,715	0	0%	0
23	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Germany	10	134,661	26,457	0	0%	0
24	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Netherlands	10	30,735	17,061	0	0%	0
25	560314 Nonwovens, man-made filaments weighing >150g/m2	Denmark	10	20,436	8,533	0	0%	0
26	560311 Nonwovens, man-made filaments weighing <25g/m2	Luxembourg	9	374	21	0	0%	0
27	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Greece	9	2,633	232	0	0%	0
28	560312 Nonwovens, man-made	Ireland	9	3,127	880	0	0%	0

Rank	Product	Market	Import trend in value between 1999-2003, %, p.a.	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
	filaments weighing 25-70g/m2							
29	560312 Nonwovens, man-made filaments weighing 25-70g/m2	Italy	9	57,705	14,664	0	0%	0
30	560313 Nonwovens, man-made filaments weighing 70-150g/m2	Finland	9	9,701	191	14	0%	0

9.8 Top 30 nonwovens product-to-market opportunities based on trade flow analysis

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
560311 Nonwovens, man-made filaments weighing <25g/m2	US	119,902	104,755	17	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	US	120,126	100,291	17	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	UK	177,389	47,755	12	0	0%	0
560313 Nonwovens, man-made filaments weighing 70-150g/m2	US	74,456	61,504	25	273	0%	2
392190 Film and sheet etc, nes of plastics	US	578,250	403,441	5	1324	0%	11
392190 Film and sheet etc, nes of plastics	Germany	405,597	138,430	0	40	0%	0

Product	Market	Imported value 2003 in US$ thousand	Ex EU / NAFTA Imported value 2003 in US$ thousand	Import trend in value between 1999-2003, %, p.a.	SA Exported value 2003 in US$ thousand	SA % share of market value	% of South Africa's exports of the product
392190 Film and sheet etc, nes of plastics	France	432,542	68,210	4	264	0%	2
392190 Film and sheet etc, nes of plastics	UK	363,163	74,639	3	612	0%	5
392190 Film and sheet etc, nes of plastics	Italy	203,180	33,979	0	0	0%	0
392190 Film and sheet etc, nes of plastics	Belgium	193,910	23,364	5	68	0%	1
392190 Film and sheet etc, nes of plastics	Austria	117,151	28,953	7	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	Germany	134,661	26,457	10	0	0%	0
392190 Film and sheet etc, nes of plastics	Spain	208,831	16,341	11	0	0%	0
560312 Nonwovens, man-made filaments weighing 25-70g/m2	Spain	69,419	2,883	37	1686	2%	51
560311 Nonwovens, man-made filaments weighing <25g/m2	Germany	95,333	7,968	12	91	0%	51
560312 Nonwovens, man-made filaments weighing 25-70g/m2	Italy	57,705	14,664	9	0	0%	0

Please note that the product-to-market opportunities in the darker cells represent the highest potential opportunities based on the three selected demand side ranking criteria. These combinations score highly on all three criteria.

The product-to-market combinations in the paler cells represent high potential opportunities – they score highly on two of the three ranking criteria (i.e. within the top 15 in terms of total import market size, within the top 15 in terms of total import market size adjusted for intra-EU/intra-NAFTA trade, and/or top 30 in import market growth terms).

10 Opportunities based on market trends analysis and stakeholder interviews

Market research additional to trade flow analysis was conducted to investigate the opportunities in the downstream segment of the market and areas that could not be addressed by trade flow analysis. Due to its increasing performance characteristics PP can be used in a vast array of applications. Further, its lower cost is driving increasing substitution of other plastics. In particular, PP is replacing high-density polyethylene (PE), engineering plastics, and polystyrene in many applications. A review of market research literature has shown that there are potential areas for growth in PP demand in packaging, building and construction, and automotive applications. Although this review is not exhaustive, it gives an additional indication of where attractive market opportunities may be.

Packaging

In the US and many of the European markets the packaging industry is the largest end-user of PP resins and plastic materials. In particular, PP film is used in a wide range of packaging applications, including food and cigarettes packaging. However, there are also opportunities for PP foams in this market.

Potential opportunities include:

- Flexible packaging
  - Oriented PP films for snack and confectionary packaging; and non-oriented PP films which are used for textile products, confectionery, and fish and meat product packaging.
  - PP is substituting PE and foil use and there is a trend away from rigid packaging materials. PP is showing strong growth rates in the target markets.
  - Best potential opportunities are in the food packaging markets – especially snack foods and baked goods.
- Caps and closures
  - PP is increasingly used for threaded plastic pressurised caps due to its competitive price and performance characteristics (i.e. it moulds well to the threaded bottle neck)
- Plastic containers
  - PP is one of the fastest growing resins for plastic containers substituting high-density polyethylene. However, PP use is still low volume in comparison to high-density polyethylene and polyethylene terephthalate (PET).
  - Growth opportunities are driven by demand for bottled water and for single-serving containers for beverage and food items.
- Protective packaging
  - There are growth opportunities for polyolefin foams in this market due to their scratch protection and cushioning capabilities.
- Sterile medical packaging
  - Plastics dominate sterile medical packaging; however paper/paperboard, glass, metal and other materials will continue to be important. Packaging products are often made from a combination of materials such as plastics, nonwovens, foils and paper to provide a cost-effective solution to packaging problems.
  - Growing demand is driven by an increase in surgical procedures and diagnostic testing.

Personal hygiene and medical

Market research has shown that 36% of nonwovens are made from PP, and that PP and PET have increasingly substituted in the nonwoven industry[92]. Disposable personal hygiene

[92] http://www.agr.gc.ca/misb/spcrops/sc-cs_e.php?page=textiles

and medical fabrics are key applications for non-wovens accounting for around 33% of demand in Europe and 24% in the US. Potential opportunities for PP products in this sector include:

- Disposable nonwovens
  - There is strong growth in nonwoven personal protection goods, especially adult diapers and shields.
- Spunbonded nonwoven fabrics
  - Applications include hygiene cover stock and medical fabrics, disposable protective apparel, and fabric softener dryer sheets (as well as a range of industrial and automotive applications).
  - Polypropylene is the most widely used polymer for the production of spunbonded nonwovens because it provides the highest amount of fibre per unit of weight and the highest level of opacity, as well as the lowest cost due to its low density.
- Carded nonwovens
  - Historically, polyester was the material most commonly used to produce carded nonwovens.
  - However, there is an increasing use of carded webs for hygiene coverstock and wipes. For these products, polypropylene has become the raw material most often used.
- Surgical drapes

Automotive

Market research conducted indicates that this sector has strong growth potential for PP products including foam and fibres. Growth in PP demand has been identified for the following applications:

- Step/running boards have been identified as a growth area for long glass PP
- Headliner energy absorbers are identified as a growth area for EPP bead foams due to in-mould skin/foam lamination technology
- Sun visors are another growth area for EPP application due to multidensity-part integration
- PP is being used increasingly in the production of automotive exteriors such as bumper facia,[93] fender liners, trim and front wings
- European End of Life Vehicle (ELV) legislation is driving mono-materials constructions and this will encourage the use of polyolefin nonwovens (PO-NWs) in constructions with PO-foams and PP substrates[94]
- Nonwovens are gaining momentum in the automotive marketplace either as a direct substitute for wovens and knits currently used in face fabrics or as layers in the construction of most interior modules. For example, spunbonded nonwoven fabrics are used for motor vehicle headliners, trunk liners and carpet backing. New nonwoven applications are emerging in headliners, luxury fabrics and floor/acoustic modules.

However, the barriers to entry into this market are very high. Supply contracts are managed by the vehicle OEM's preferred suppliers - Tier 1 and Tier 2 suppliers in particular – who provide the OEMs with finished automotive components and automotive parts. They in turn contract out the manufacture to a network of suppliers. The market is highly competitive and contracts are awarded to suppliers who can meet delivery at a competitive price and quality. In order to be competitive significant economies of scale are typically required.

Countries who compete in this market are Brazil, Slovakia, Slovenia and Korea. And while South Africa might have the capacity to take advantage of demand in terms of technology

[93] http://www.riotinto.com/media/downloads/speeches/IM%20Forum%20presentation%20Nov04.pdf
[94] http://www.robertellerassoc.com/articles/techtex04.pdf

and market contacts, a key inhibiting factor to local industry is import parity pricing where local downstream producers cannot compete with cheap imports. Also, while the domestic vehicle manufacturing output is increasing as major automotive producers such as Toyota and Mercedes Benz in South Africa raise their production goals, the production runs tend to be too short to warrant a major Tier 1 or Tier 2 supplier to set up in South Africa and source plastics locally.

Appendix A: US and EU demand statistics 2003

Appendix B: South African supply statistics 2003

Appendix C: World demand and supply statistics 2003

(Excel Data books)