Global market forecast of technical textile and market analysis of niche products

Source from Taiwan Textile Research Institute

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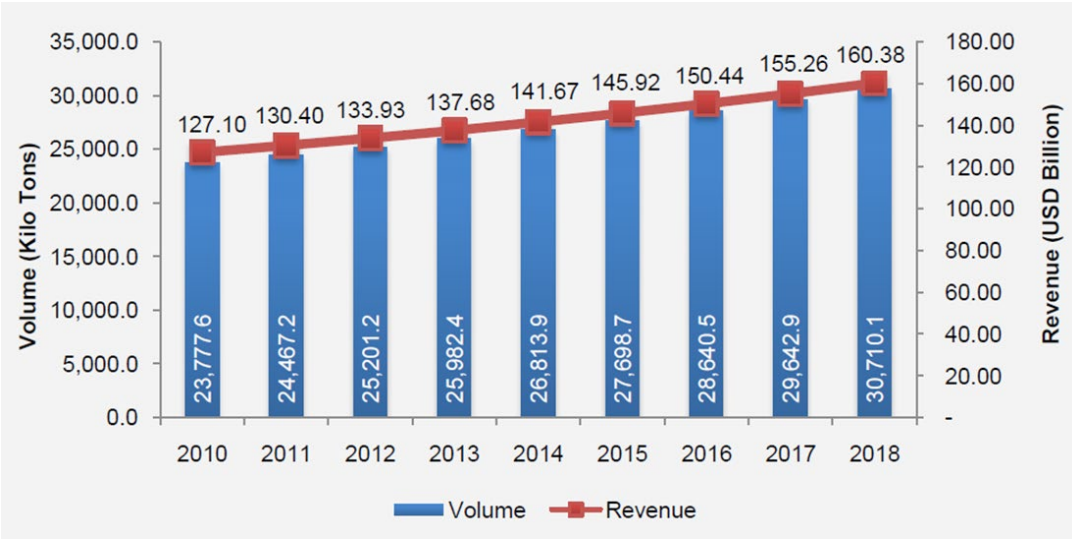
Technical textile is different from ordinary textile applications and functions. The demand comes from all kinds of industry like medical and healthcare, agriculture, architecture, apparel, packaging, sporting equipment, automobile and environmental field. In the past few years, these fields has been expanded continuously so technical textile is expectedly with great potential, particularly in the developing countries. In the meantime, the terminal market also is enlarging non-stop which bring the stable growth of technical textile. The future development of technology is expected to be highly added-valued, innovative and intensively-skilled. Besides, the investment which many countries have put into also motivates the market growth. This report is to introduce the global major markets and highly-growing, high-tech protective clothes and filter material and to analyze the market scale as well as their prospects.

Global Technical Textile market

In 2001, the total sales of the global technical textile market is 24,467.2 thousand tons, and the market trade value is 130.40 billion US dollars. Until 2018, the demand of the technical textile is estimated to reach up to 30,710.1 thousand tons. From 2012 to 2018, the annual compound growth rate is 3.3%. As to the market trading quantity, in 2018 it is estimated to increase up to 160.38 billion US dollars. From 2012 to 2018, the annual compound growth rate is expected to reach 3.0%. (See Figure 1).



Source: *Transparency Market Research*, provided by ITIS Project of TRRI (2014.06)

Figure 1: 2010-2018 Global Technical Textile market scale and growth tendency

1. Observations by products

Technical textile in all kinds of fields appeals growing until 2018. As expected, the growth of terminal market will be higher than the average rate; therefore it will increase the technical textile demand including car textile, industrial textile, sport textile, architecture textile and agriculture textile (See Figure 1). These markets will have great potential growths.

a. Mobil textile

This textile could be used for cars, airplanes, railways, boats and other transportation facilities like tire cord, chair cover, seat belt, AC filter, tufted carpet, mat and other car textile. The expected car textile demand until 2018 will reach 4,486 thousand tons. The annual compound growth rate from 2012 to 2018 is 3.4%.

b. Industrial textile

This textile covers from all the filter or cleaning industrial textile during the production process such as AC filter, dust removal filter, conveyor draper, flexible tube and abrasion resistant products, etc. The global industrial textile demand will reach 3,564 thousand tons. The annual compound growth rate from 2012 to 2018 is 3.8%

c. Sports textile

Sports textile compasses sports equipment including sports bag, artificial turf, all kinds of sports bag, canvas and so on. The global sport textile demand in 2018 will reach 2,288 thousand tons. The annual compound growth rate from 2012 to 2018 is 3.7%.

d. Architecture textile

Architecture textile refers to the textile used in the

buildings, houses, dams, tunnels or other types of buildings, for example, strengthening materials, water-proofing or insulation materials for wall, outlook, flexible tube cover and concrete cover, drains, and pipelining, etc. Architecture textile demand until 2018 is expected to reach 2,141 thousand tons. The annual compound growth rate from 2012 to 2018 is 4.0%.

e. Medical textile

Medical textile ranges from sanitary to medical treatment like medical dressing, bandages, operating coat, artificial implant and other textile products. The global medical textile demand till 2018 is estimated to reach up to 2,065 thousand tons. The annual compound growth rate is 4.1%.

f. Agriculture textile

The textile refers to the one applied in agriculture, gardening including flowers, fishing industry and forest industry such as sunshade net, crop shade net, hail resisting net, anti-bird net, etc. The global agriculture textile demands until 2018 will climb up to 1,373 thousand tons. The annual compound growth rate from 2012 to 2018 is 4.1%.

Table 1: 2012-2018 Output forecast of global technical textile by applications

Unite: 1000 tons, %

Consumption categories	2012 Output	Compared with 2012 Annual Output (%)	2018 Output	Compared with 2018 Annual Output (%)
Mobile textile	3,666.0	14.5%	4,485.5	14.6%
Industrial textile	2,842.3	11.3%	3,564.2	11.6%
Sports textile	1,841.8	7.3%	2,287.7	7.4%
Architecture textile	1,690.4	6.7%	2,141.3	7.0%
Home textile	4,344.9	17.2%	5,191.8	16.9%
Apparel textile	2,662.8	10.6%	3,109.0	10.1%
Medicare textile	1,619.6	6.4%	2,065.4	6.7%
Agricultural textile	1,077.6	4.3%	1,372.5	4.5%
Protective textile	807.6	3.2%	964.0	3.1%
Packaging textile	2,038.0	8.1%	2,404.6	7.8%
Others	2,610.2	10.4%	3,124.1	10.2%
Total	25,201.2	100.0%	30,710.1	99.9%

Source: *Transparency Market Research*, provided by ITIS Project of TTRRI (2014.06)

2. Observations by regions

Technical textile is mostly used as the middle materials such as tire filed fabric, basic material of conveyor draper and racket strings, etc. Asia-Pacific region is the global manufacturing base with high demand of middle materials. According to the estimated figures of Transparency Market Research, in 2012 the demand of the Asia Pacific region is 45.6% and the secondary demand comes from the northern American region, 29.4%; the European region, 22.1 and the other regions, 2.9%. In 2018, the demands of these regions will change slightly. The Asia-Pacific region is still the major market which will grow slightly to 46.8%.

Table 2: 2012-2018 Demands in major regions of global technical textile

Unite: %

Regions	2012	2018
Northern America	29.40%	28.20%
Europe	22.10%	22.40%
Asia-Pacific	45.60%	46.80%
Others	2.90%	2.60%

Source: *Transparency Market Research*, provided by ITIS Project of TTRRI (2014.06)

3. Analysis on the global protection clothing market

According to the survey of Markets and Markets, the data indicates that the global market scale of protection clothing will grow from 6 billion US dollars (2013) to 8 billion US dollars (2018). The average compound growth rate can reach up to 6%. The heat protection clothing has the maximum ratio, 27%. And anti-biochemical suit as well the market scale of radiation protective clothing is rather small but it grows quickly. The average compound growth rate would reach up to 14.9%.

Till 2018, benefited from the global oil drill construction project, the market demand of thermally protective clothing will also grow to a certain level. The global manufacturers of thermally protective clothing include DuPont (USA), PBI Performance Product Inc. (USA), Teijin Limited (Japan), Bulwark Protective Apparel (USA) and Waxman Fibers Ltd. (UK), etc.

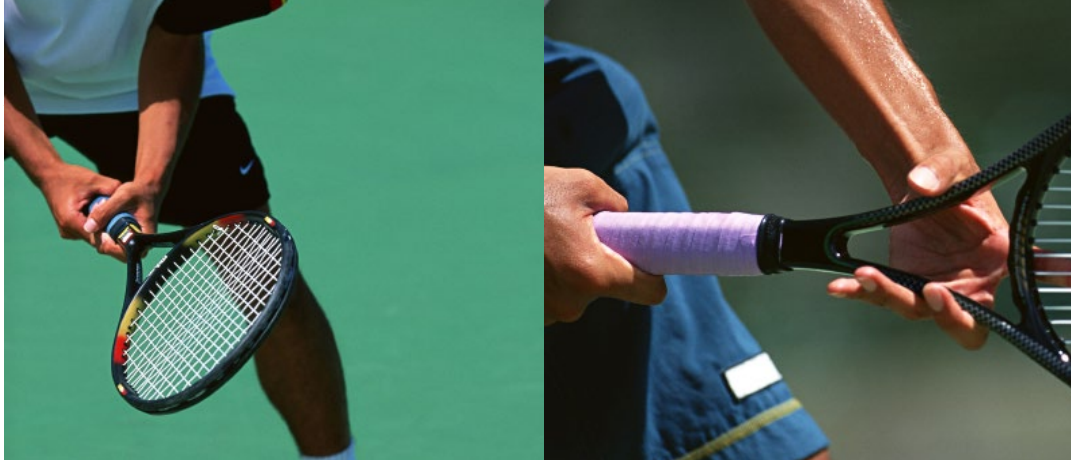


Table 3: Market scale of global thermally protective clothing by applications

Application Market	2011	2012	2013	2018	Annual compound growth rate (2013~2018)
Thermally protective clothing	1,378	1,479	1,589	2,191	6.6
Chemical protective clothing	761	805	854	1,119	5.6
Mechanical protective clothing	789	850	914	1,253	6.5
Anti-biochemical suit and radiation protective clothing	63	78	108	216	14.9
High level of light warning protective clothing	873	935	1,004	1,393	6.8
Other protective clothing	1,385	1,452	1,511	1,827	3.9
Total	5,250	5,600	5,980	8,000	6.0

End-Use Industry & Material- Global Trends & Forecast to 2018

Source: MarketandMarket (2013), Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

Viewing the market scale of protective market based on regions, we see that the northern American market has the maximum ratio. In 2013, its market scale reached up to 1.9 billion US dollars, 31% of the global market. According to the forecast, in 2018, the market will grow up to 2.5 billion US dollars, 30.8% of the global market. Its average annual compound growth rate is 5.8%.

Due to the booming development of energy and chemical industries as well the promotion of industrialization policy, the Asia-Pacific region would be benefited and

Because European region is a mature market and its basis period is rather higher. As predicted there average annual compound growth rate would be only 5%.

Table 4: Market scale of global protective clothing by market regions

Regions	2011	2012	2013	2018	Annual compound growth rate (2013~2018)
Northern American	1,628	1,735	1,853	2,460	5.8
European	1,323	1,400	1,483	1,892	5.0
Asia Pacific	1,050	1,131	1,220	1,692	6.8
Middle East and African	683	729	779	1,050	6.2
Latin American	567	605	646	906	7.0
Total	5,250	5,600	5,980	8,000	6.0

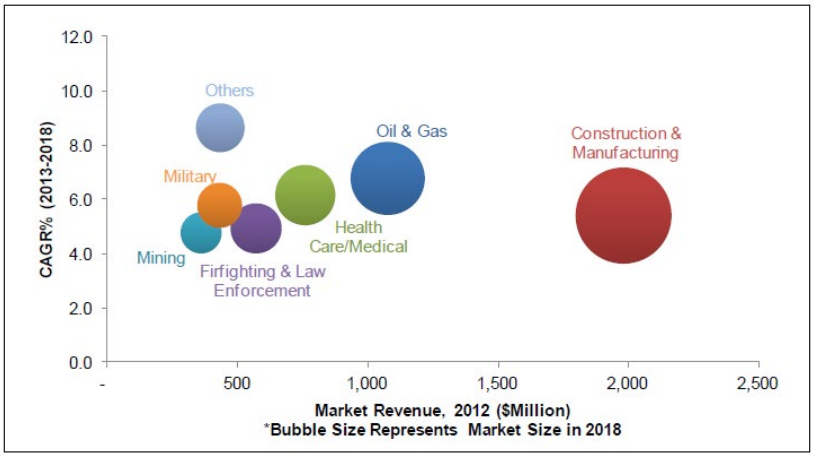
End-Use Industry & Material- Global Trends & Forecast to 2018

Source: Markets and Markets (2013), Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

By various industries of protective clothing market scales, the construction and manufacturing industries have the largest market scale of protective clothing; the next are oil and natural gas industry, healthcare and medical industries. Their growth rates fall between 5% and 7%.

Indexmundi, Materials Journals & Magazines, Factiva, Company Websites & Presentations, Press Releases, Expert Interviews, and Markets and Markets (2013), *Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018*

Source: :International Labor Organization (ILO), CCOHS.Org, ESPC, OSHA, Indexmundi, Materials Journals & Magazines, Factiva, Company Websites & Presentations, Press Releases, Expert Interviews, and Markets and Markets (2013),



Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

Figure 2: The growing trend matrix of protective clothing market by industries

Protective clothing could be divided into thermal protection, chemical protection, mechanical protection, biological and radiation protection, warning protection and others. Among these categories, thermal protection has the largest scale. In 2013, the market scale is 1.59 billion US dollars. As predicted, in 2018 the market value would reach 2.19 billion US dollars. The annual compound growth rate is 6.64%.

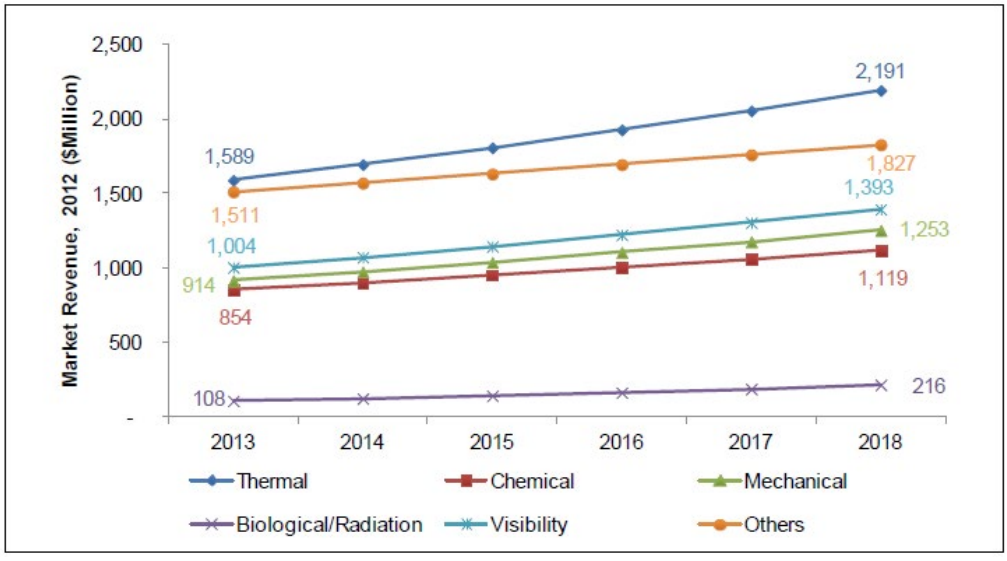


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Figure 3: 2013-2018 Market scale of protective clothing by applications

It is particularly important for protection clothing to get a hold of the public's trust and of key materials. Therefore, the top-3 manufacturers: DuPont, Teijin Limited and 3M, own more than 50% of the global market share which generate an oligopoly market. On the competitive strategies, they have continued developing new products and strengthen functions and lightweight usage. Under the insufficient information about the key materials in Taiwan, the development strategies are mainly in pursuit of integral product functions and design, increasing the users' reliability and look for agreement on niche market.

Top 4-8 manufacturers are Ansell Limited (Australia), Honeywell International (USA), Kimberly Clark (USA), PBI Performance Product (USA) and Royal TenCate (the Netherlands)

(2013), *Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018*

Source: Expert Interviews, Company Annual Reports, and Markets and Markets (2013), Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

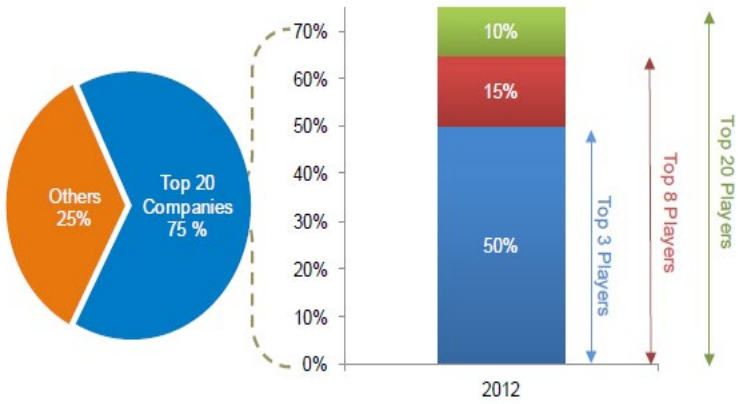

Figure 4: The global top 20 protective manufacturers' market sharing in 2012

Table 5: 2012 Market shares of the global major protective clothing manufacturers

Company Name	Headquarter	<2%	3~10%	10~25%
3M Company	U.S.	-	-	Y
Ansell Limited	Australia	-	Y	-
Asatex AG	Germany	Y	-	-
Australian Defence Apparel	Australia	Y	-	-
Bennett Safetywear Ltd.	U.K.	Y	-	-
Bullwark Protective Apparel	U.S.	Y	-	-
DuPont	U.S.	-	-	Y
Globe Manufacturing Co. LLC	U.S.	Y	-	-
Honeywell International Inc.	U.S.	-	Y	-
Kimberly Clark Corp.	U.S.	-	Y	-
Lakeland Industries Inc.	U.S.	Y	-	-
Lion Apparel Inc.	U.S.	Y	-	-
PBI Performance Product Inc.	U.S.	-	Y	-
Royal TenCate NV	The Netherlands	-	Y	-
Sioen Industries	Belgium	Y	-	-
Teijin Limited	Japan	-	-	Y
W. L. Gore & Associates	U.S.	Y	-	-
Waxman Fibers Ltd.	U.K.	Y	-	-
Westex Inc.	U.S.	Y	-	-
Workrite Uniform Company	U.S.	Y	-	-

(2013), P*rotective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018*

Source: Expert Interviews, Company Annual Reports, and Markets and Markets (2013), Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

Protective market is divided into driving force and market restriction. Driving force is further divided into market and skill driving force. Market driving force includes the requests of Labor Safety Laws and Regulations, the safety awareness of employers and employees as well as the industrializing development of emerging economics and the

increasing employment rate under the growing economics. With time's passing, the driving force would increase year by ear in the future. The skill driving force compasses the application of phase-change materials (PCM) and the development multiple functional protective clothing. After 3 or 5 years, when skill driving force becomes more mature, the market will be motivated without much difficulty.

In all, the protective clothing market in the short terms will grow at a rather steady way. But, when the restrictions on market are eased, there will be considerable growth in the long run.

Table 6: The driving force of protective clothing market and its restriction factors

	Factors	1-2 years	3-4 years	Above 5 years
Market driving force	The requests of Labor Safety Laws and Regulations	High	High	High
	The safety awareness of employers and employees	Fair	Fair	Fair
	The industrializing development of emerging economics and the increasing employment rate under the growing economics	Fair	High	High
Skill driving force	The application of phase-change materials (PCM)	Fair	High	High
	The development of the multiple functional protective clothing: the driving force of the future potential market	Fair	Fair	High
Market restriction factors	High price limits of unique protective clothing	High	Fair	Low
	Strikes and industrial automation bring in decreasing number of employees	High	Fair	Fair

Indexmundi, Materials Journals & Magazines, Factiva, Company Websites & Presentations, Press Releases, Expert Interviews, and Markets and Markets (2013), Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

Source: International Labor Organization (ILO), CCOHS.Org, ESPC, OSHA, Indexmundi, Materials Journals & Magazines, Factiva, Company Websites & Presentations, Press Releases, Expert Interviews, and Markets and Markets (2013), Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

Competitiveness analysis on the five capabilities of protective clothing (See Figure 5)

Source: Materials Journals & Magazines, Company Websites & Presentations, Expert Interviews, and Markets and Markets (2013), Protective Clothing Market by Application, End-Use Industry & Material- Global Trends & Forecast to 2018

Figure 5: Market competitiveness of protective clothing- Porter's analysis on 5 capabilities

4. Market analysis of global filter materials

In 2015, the global filter market scale reach up 65.9 billion US dollars. Estimated, in 2020 it will grow 37.9%, 90.9 billion US dollars. From 2000 to 2005, the northern American region is the largest market; its global proportion is around 30%. From 2010 onwards, the Asia-Pacific region becomes the largest market in the world; the global ratio, 35%. More importantly, the market share is increasing annually. It is predicted that market share will grow up to 36% and in 2020, the ratio is expected to be 40%.

China's filter market is growing quickly. In 2000, China's market value in the Asia-Pacific region is 14.6%; in 2005, 22.3%. In 2010, it grew up to 35.2%. And in 2015, it will break the record up to 40% and its global market share ratio is 42%. In 2020, it will continue the growth up to 46.8 and own 50% of the filter market share in the Asia-Pacific region.

Table 7: Global filter market share by regions

Unit: million US dollars

Regions	2000	2005	2010	2015	2020
The northern American	8,620	10,940	10,800	15,410	18,800
USA	7,220	9,260	8,905	12,550	15,100
Canada	1,400	1,680	1,895	2,860	3,700
The West European region	8,190	10,190	10,740	15,350	19,850
The Asia-Pacific region	7,535	10,320	16,190	24,050	36,350
Mainland China	1,100	2,300	5,700	10,100	17,000
Japan	3,300	3,600	4,000	4,450	5,500
Other Asia-Pacific	3,135	4,420	6,490	9,500	13,850
The middle and southern American	1,250	1,650	2,400	3,350	4,700
The Eastern European	1,530	2,270	3,220	4,320	6,150
African and Middle East Region	950	1,410	2,280	3,420	5,050
Total (global)	28,075	36,780	45,630	65,900	90,900

Source: The Freedonia Group, Inc. (2012), World Filters

According to the survey of The Freedonia Group, Inc., it indicates that the filter market classified into 3 types of products: 1) internal combustion engine and the relevant filter; 2) liquid filter; 3) gas filter. Among, internal combustion engine and the relevant filter have the highest proportion, above 40%. In 2000, its ratio is 47%; from 2010 to 2015, 45% and in 2020, it, as predicted, can still maintain 44.5%.

The next is liquid filter, about 29%. In 2000, the proportion is 29.5%. It is estimated in 2015 it will be 29%. In 2020, it will drop slightly to 28%. As to the gas filter market, its ratio is increasing. It is obvious of its significant development. In 2000, its annual market share is 23.5% and grows to 26% in 2015. As seen, it would grow up to 27% in 2020.

Table 8: Global filter market scale by filter products

Product categories	2000	2005	2010	2015	2020
Internal combustion engine and the relevant filter	13,220	16,880	20,610	29,500	40,450
Liquid filter	8,295	10,820	13,125	18,850	25,750
Gas filter	6,560	9,080	11,895	17,550	24,700
Total	28,075	36,780	45,630	65,900	90,900

Source: The Freedonia Group, Inc. (2012), World Filters

By filter's end application, it ranges from transportation, manufacturing, civil enterprises, daily use, and other purposes. Currently, transportation filter is the main end application; the ratio is around 44-45%; the next is manufacturing filter with a proportion of 18-19%. As to civil enterprises filter, its proportion is 14-15% and daily-use filter, 12%.

As predicted, in the period of 2015 to 2020, among all kinds of filter end application market growth, manufacturing filter would have a highest growth rate of 40%; the next, transportation and civil enterprises filter with a 38% growth rate; the daily-use filter would grow 36%.

Table 9: Global filter market scale by end application

Unit: Million US dollars

End application	2000	2005	2010	2015	2020
Transportation	12,981	16,630	20,390	29,200	40,370
Manufacturing	4,961	6,671	8,365	12,525	17,525
Civil enterprises	4,040	5,285	6,713	9,680	13,390
Daily use	3,351	4,555	5,806	8,245	11,185
Others	2,742	3,639	4,356	6,250	8,430
Total	28,075	36,780	45,630	65,900	90,900

Source: The Freedonia Group, Inc. (2012), World Filters

As to the filter market of mainland China, according to the survey of The Freedonia Group, Inc., it indicates that in the long terms, China's filter end application focuses

As predicted, in the period of 2015 to 2020, all sorts of filter end application in the mainland China will grow at a high level. Among, the market growth rate of civil enterprises would be 74%; next is transportation filter market with a 67% growth rate. And manufacturing market is predicted to reach a 66% growth rate. So is the daily-use filter market with a high level of growth rate, 62%. (See Table 10).

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5. Chu-Feng Da. 2014. "Characteristics and Development of Thermostable Filter Textile," Textile Trends 238: 40.

Table 10: China filter market scale by end application

Unit: Million US dollars

End application	2000	2005	2010	2015	2020
Transportation	580	1,245	2,925	5,115	8,565
Manufacturing	220	485	1,165	2,065	3,420
Civil enterprise	95	195	640	1,175	2,050
Daily use	35	90	325	625	1,010
Others	170	285	645	1,120	1,955
Total	1,100	2,300	5,700	10,100	17,000

Source: The Freedonia Group, Inc. (2012), World Filters

5. Conclusion and Suggestion

In 2014, the global technical textile market is 141.6 billion US dollars. In 2018, as forecasted, will grow up to 160.4 billion US dollars. At the present, technical textile is on a highly-competitive status. The market driving force includes innovation, product development, enhancing product functions such as strength and endurance, global automobile's growth and development and building high threshold at the major products.

As to the restriction of industrial textile, they cover from high costs keeping up high prices, the current market in need of specific multiple functions and no chance to develop more demands, etc.

Technical textile in all fields will continue growing until 2018. Due to the feature of high added values, in the countries with highly-developed textile industry, technical textile has a high proportion in the whole textile industry. In the Chinese documentary film, Under the Dome, by Ms. Chai Jing, it is clear that technical textile has an immense potential market. Currently global environmental awareness is even growing stronger. It is clear to know that technical textile in the application of environmental issues has a great potential market. Now around the globe, due to the fierce environmental awareness, all countries have been pulling strength to promote environmentalism from textile material, middle products, product application and the after-sales service, there are full of opportunities to innovate and create values. Here is the suggestion for the textile enterprises: For those plan to expand markets, there shall be simultaneous investment in both research and development and innovation. Meanwhile, in combination with self-advantages and resource, they could move towards the futuristic products and fields, finding niche products and market so as to grab the growing business of technical textile.