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Report on the Japan's Petrochemical Industry

Trend of Japan's Petrochemical Industry in 2015

1. Current status and future prospects of Japan's economy
 - 1) Government statistics indicated that the GDP growth rate (seasonally-adjusted real growth rate) in 2015 increased 0.5% over the previous year. Private-sector consumption expenditure experienced negative growth; however, government consumption expenditure, private-sector capital investment, and increased exports resulting in increased external demand contributed to the increase in GDP. This resulted in positive GDP growth for the first time in two years.
 - 2) Although there is the risk of a downturn in China's economy as well as other overseas economies, improvements in employment and the income environment, and stimulation of the private-sector consumption against a backdrop of robust corporate performance in the private sector are expected to enable the economy to move in a virtuous cycle, so it is forecast that Japan's economy will continue to grow gradually in 2016. It is expected that the introduction of a negative interest rate by the Bank of Japan will have a positive effect on the economy, as the borrowing rate will fall for companies and the interest rate for housing loans will decline for households.

Major indicators of Japan's economy in 2015 (year-on-year changes)

	Unit	2014	2015	Q1	Q2	Q3	Q4
GDP growth 1)		0%	+0.5%	-1.0%	+0.7%	+1.7%	+0.7%
Industrial production index 2)	2010=100	99.0	98.1	99.2	96.3	98.3	98.7
		+2.0	-0.9	-2.1	-0.5	-0.4	-0.5
Car production 3)	Thousand	9,775	9,278	2,480	2,171	2,276	2,351
		+1.5%	-5.1%	-6.9%	-9.6%	-4.4%	+1.0%
Housing starts 4)	Thousand	892	909	205	235	236	232
		-9.0%	+1.9%	-5.4%	+7.6%	+6.2%	-0.7%
Exchange rate 5)	JP/US\$	105.8	121.1	119.2	121.4	122.3	121.5
		+7.1	+15.3	+16.4	+19.3	+18.5	+7.1
Crude oil processing 2)	Thousand KL	191,144	189,354	50,488	43,543	48,273	47,050
		-4.7%	-0.9%	-4.1%	+0.9%	+1.8%	-1.9%

- 1) Cabinet Office: seasonally-adjusted real GDP growth rate
- 2) Ministry of Economy, Trade and Industry (METI): seasonally adjusted
- 3) Japan Automobile Manufacturers Association

4) Ministry of Land, Infrastructure and Transportation

5) Bank of Tokyo-Mitsubishi UFJ

2. Current status of Japan's petrochemical industry

1) Ethylene production in 2015 increased 3.6% over the previous year to 6,883 thousand tons. Amidst tight supply-demand balance throughout Asia, the low prices of crude oil and naphtha, improvements in trading terms due to the weak yen caused an increase in exports including derivatives and the decrease in imports. As the cracker at Sumitomo Chemical's Chiba plant was closed down in May, remaining crackers in Japan were almost in full operation all year round.

Actual production of and demand for ethylene in Japan in 2015 (year-on-year changes)

	Unit	2014	2015	Q1	Q2	Q3	Q4
Production	KT	6,647	6,883	1,768	1,602	1,729	1,785
		-0.7%	+3.6%	-0.2%	-9.4%	+7.9%	+3.2%
Demand (Ethylene equivalent)	KT	5,191	4,891	1,220	1,070	1,276	1,325
		+4.5%	-5.8%	-7.5%	-12.2%	+19.2%	+3.9%
Export (Ethylene equivalent)	KT	2,193	2,586	717	677	577	615
		-8.6%	+17.9%	+18.2%	-5.6%	-14.8%	+6.7%
Import (Ethylene equivalent)	KT	737	594	169	146	123	156
		+9.7%	-19.4%	+9.6%	-13.7%	-15.3%	+26.3%

METI

Actual production of major petrochemical products in Japan in 2015

In KT

	LDPE	HDPE	PP	PS	PVC	(5 main polymers)	SM	EG	AN
2013	1,539	908	2,248	633	1,487	6,815	2,592	720	518
2014	1,599	825	2,349	616	1,477	6,866	2,458	664	472
2015	1,520	897	2,501	638	1,643	7,199	2,415	727	440

METI

2) In 2016 as well, the naphtha cracker at Asahi Kasei's Mizushima plant was closed down in February, and there are no major plans to build new or additional facilities in Asia. The supply-demand balance for ethylene is anticipated to be tight, particularly in Q2 and Q3, when regular maintenance work tends to be concentrated. If the trading terms continue to be favorable due to the low price of crude oil and naphtha, and the weak yen, the rate of operation of the crackers and

derivatives in Japan is expected to remain as high as the previous year.

3. Issues facing Japan's petrochemical industry

Earnings of Japan's petrochemical industry have been improving significantly recently owing to the improvement in trading terms due to the decline in crude oil prices, the decrease in energy costs, the decrease in imported goods because of the entrenched weak yen, and the recovery of the competitiveness of exports. In the medium- to long-term, however, the influx of products from large-scale petrochemical complexes in the Middle East, as well as the building of new and additional facilities for coal-based and shale gas-based petrochemical products in China and North America, respectively, remain threats to Japan's petrochemical industry, which must continuously carry out reforms if it is to survive.

1) Structural reform of the general-purpose products business

From 2014 to 2016, three naphtha crackers – at Mitsubishi Chemical's Kashima plant, Sumitomo Chemical's Chiba plant, and Asahi Kasei's Mizushima plant – were permanently closed, which resulted in the total domestic ethylene production capacity falling to 6,400 thousand tons per year. At the same time, we have been carrying out the streamlining of derivative products plants that manufacture general-purpose products that are dependent upon overseas demand in order to create a balance between a stable demand and supply from the crackers, with the aim of building a system capable of securing stable earnings. In addition, while the restructuring of the petroleum refining industry is moving forward, in order to shift to a more solid business structure, efforts are being promoted in collaboration with various companies to proceed with structural reforms toward improving the efficiency of the systems to deliver and receive upstream and downstream products, services, and logistic infrastructure in and outside the complex.

2) Expanding high-function products businesses.

Moreover, in order to gain a competitive advantage over overseas products manufactured with low-priced raw materials and to secure stable earning, Japan's petrochemical companies are concentrating their management resources toward expanding health care, medical, housing, new energy, and other high-function product businesses, as well as changing over their business portfolios, as a

foundation for new growth. As earnings are improving, we are carrying forward acquisitions of businesses in and outside of Japan through M&A, reinforcement of priority businesses through capital investment, improvement of the research and development structure, which facilitates steady business expansion, and bold reorganization, in order to expand and strengthen the high-function products business that is the forte of each company, with the aim of establishing a value chain that not only provides raw materials and resources but also can offer solutions to various problems.

3) Initiatives for the environment and safety

At present, the annual energy consumption by Japan's petrochemical industry accounts for approximately 4% of the country's total energy consumption. According to calculations by Japan Chemical Industry Association, which is made up of major companies in the industry, energy saving efforts carried out by each company have achieved a 15% improvement in the energy consumption rate compared with FY1990. Since FY2013, we have been taking part in Keidanren's "Commitment to a Low Carbon Society." Measures against the global warming are being carried out based on the four key pillars: (1) control CO₂ emissions from domestic business operations, (2) strengthen cooperation with all relevant bodies to control CO₂ emissions throughout the supply chain by means of the spread of low carbon products and technologies, (3) contribute on the international level by deploying Japanese chemical products and processes overseas, and (4) develop innovative technologies in the medium- to long-term with a view to putting them into practical use from 2020 onwards.

With regard to initiatives for safety, efforts are being made to foster a culture of safety, with "risk assessment," "utilization of information," and "handing down know-why" brought up as issues based on the results of analysis conducted on major accidents occurred in recent years. The members of top management at each company are exchanging ideas regarding security, and the managers at the manufacturing sites are carrying out such activities as holding study sessions and sharing information about accidents.

The performance of domestic petrochemical companies has been improving due to improvements in trading terms resulting from the low prices of crude oil and naphtha,

and the weak yen. However, in preparation for the full-fledged production of shale gas-based petrochemical products in North America and coal-based petrochemical products in China, Japan's petrochemical industry is pushing forward structural reforms in order to withstand the unstable market for general-purpose products. In November 2015, the Abe Administration announced "Measures to be urgently implemented to achieve a society where all 100 million people are active," with the aim of achieving a nominal GDP of 60 billion yen by around 2020. It is expected that the implementation of various measures stated in the Administration's policy, such as promoting investment, revolutionizing productivity, and stimulating consumption by raising wages and the minimum wage, will boost the structural reform of Japan's petrochemical companies.

1. General Matters & Raw Materials

Item: Naphtha, LPG, Heavy Condensate and Gas Oil

1. Supply and Demand Balance

(Unit: 1, KKL; 1,000 MT for LPG)

			2013	2014	2015	
Naphtha	Demand		For ethylene	29,366	29,722	31,788
			For BTX	18,924	17,770	18,321
			Total demand (1)	48,290	47,492	50,109
	Supply	Domestic	For petrochemicals	20,434	18,200	19,071
			For other products	29	101	135
			Total	20,463	18,300	19,206
		Import	For petrochemicals	24,942	25,858	27,799
			Total supply (2)	45,405	44,158	47,005
LPG Demand		For ethylene	928	819	626	
Heavy Condensate Demand		For ethylene	473	382	320	
Gas Oil Demand		For ethylene	94	58	127	

Sources: Chemical Industry Statistics by METI; Customs Clearance Statistics by MOF

Note: The differences between (1) and (2) are due to the use of different sources.

2. Naphtha Import Quantities by Exporting Countries

(Unit: 1, KKL)

Country	2013	2014	2015
Korea	4,483	4,089	4,541
Saudi Arabia	1,764	2,547	3,847
Qatar	2,224	2,757	3,686
India	4,035	4,071	3,169
United Arab Emirates	1,817	2,291	3,164
Russia	1,949	2,096	2,279
Kuwait	2,638	2,550	2,117
Algeria	455	971	938
Bahrain	522	809	709
USA	1,145	766	690
Norway	197	655	453
Indonesia	198	200	343
Others	3,287	1,886	1,863
Total	24,942	25,858	27,799

Source: Customs Clearance Statistics by MOF

3. Trend in 2015

1) Demand for Naphtha

31,788 KKL of Naphtha was consumed by Japanese ethylene producers in 2015. It was 7.0% increase from 2014 because of higher operation rate reflecting strong market demand despite there were closures of two crackers.

Naphtha demand for BTX production was increased by 3.1% to 18,321 KKL in 2015.

2) Domestic Naphtha Supply

Domestic Naphtha supply for the petrochemicals sector in 2015 was 19,071 KKL, which was 4.8% higher than the previous year. It was about 38% of total Naphtha supply to the Japanese petrochemical sector. The main reason for the increase of domestic Naphtha supply was higher crude throughput comparing to it in 2014.

3) Imported Naphtha

27,799 KKL of Naphtha was imported to Japan for petrochemical uses in 2015. It was 1,941 KKL, or 7.5% increase from the previous year.

Import from Korea which was the largest country of import in 2015 was increased by 452 KKL to 4,541 KKL. In the meantime import from Middle East was increased by 2,569 KKL to 13,523 KKL. On the other hand, India was decreased by 902 KKL to 3,169 KKL in 2015.

4) LPG

LPG consumption for petrochemicals in 2015 was decreased by 23.6% from the previous year to 626 KMT due to lower economics of it as feedstock for petrochemicals.

5) Heavy Condensate

The consumption of heavy condensate was decreased by 16.2% from 2014 to 320 KKL in 2015.

6) Gas Oil

The consumption of gas oil in 2015 was 127 KKL, 119% increased from the previous year. The share of gas oil as petrochemical feedstock for naphtha was only 0.2%.

4. Outlook for 2016

- 1) The current demand of petrochemicals sector is firm and high operation rate of steam cracker will be maintained in 2016. Given the current macro-economic outlook, ethylene output in Japan is expected to continue at the same level of 2015.
- 2) Deficit of naphtha supply and demand in east of Suez will be continued as far as steady demand of petrochemicals sector is maintained, but it may be fluctuated by the supply of arbitrage Naphtha from Europe and America and other feedstock availabilities.

Item: Olefins

1. Supply and Demand Balance

(Unit: 1,000MT)

		2012	2013	2014	2015
Ethylene	Production	6,145	6,696	6,647	6,883
	Export	597	875	799	930
	Import	27	3	12	7
Propylene	Production	5,239	5,647	5,674	5,723
	(From Cracker)	(4,126)	(4,442)	(4,403)	(4,502)
	(From FCC)	(1,113)	(1,205)	(1,271)	(1,221)
	Export	823	1,457	1,333	1,327
	Import	43	0	10	12
Butadiene	Production	905	963	927	935
	Export	38	57	51	34
	Import	65	38	32	39

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

2. Trend in 2015

The operating rate of domestic naphtha crackers increased from an average of 92.8% in 2014 to 97.5% in 2015. The permanent shut down of cracker (Sumitomo Chemical, Chiba, 415KT) and increase of ethylene export with the highest margin took operating rate to high level.

1) Ethylene

The production volume of Ethylene in 2015 was 6,883KT increased approximately 4% from the previous year which was 6,647KT due to less turnaround of cracker than 2014. Although the domestic C2 equivalent demand decreased from 519KT to 489KT, ethylene monomer export with the strong margin caused by turnarounds and troubles of cracker supported the demand of ethylene.

2) Propylene

The production volume of Propylene in 2015 was 5,723KT which was almost same as 2014. While C3 production from cracker increased approximately 2% from previous year, C3 production from FCC decreased approximately 4% due to turnaround of facilities.

The export volume of Propylene in 2015 was 1,327KT which was almost same as 2014, and it was still high level. Therefore Japanese naphtha crackers and FCC facilities needed to keep operating rate high to meet Propylene's export demand.

3) Butadiene

The amount of Butadiene domestic demand increased from 908KT to 940KT. And the amount of Butadiene production increased from 927KT to 935KT. It is due to cycle of derivative plants' turnarounds and high operating rate of domestic crackers.

3. Outlook for 2016

In the first half of this year, the operating rate of domestic naphtha crackers will keep high operating rate due to the several crackers' annual maintenances on 1H of 2016 in Japan. The permanent shutdown of Asahi kasei cracker (Mizushima 443KT) will make some effects on the domestic supply demand balance. As some crackers' maintenances are also planned in Korea and Taiwan in northeast Asia and some crackers have mechanical issues in Southeast Asia, Japanese crackers are expected to keep high operating rate through 2016.

4. Issues in the future

Ethylene demand is expected to grow globally with world economy growth.

Ethylene monomer demand in Japan is showing stable in these years due to the depreciation of Japanese Yen, while 3 steam crackers have been shut from 2014 to 2016. The Ethylene balance in Japan is still surplus, but the spot availability is getting less because of strong demand in China.

From a mid-term view point, US PE is expected to flow into Asia 2018 onwards, so it will effect to crackers' operating ratio down temporarily in Asia.

Propylene demand is expected to grow globally with world economy growth too.

However, its supply & demand balance is likely to be dull in Asia, because of many on-purpose units such as OCU, PDH, & MTO have been expanded in Asia.

And those units will adjust production following demand, so propylene market price will be volatile.

Petrochemicals companies in Japan will continue to develop and expand high value-added derivatives of Olefins, and to strengthen cost competitiveness by regional alliances, vertical integrations and so on to increase and stabilize the profit.

Item: Benzene, Toluene, Xylene

1. Supply and Demand Balance

1) Benzene

(Unit: 1,000MT)

		2012	2013	2014	2015
Supply	Production	4,214	4,694	4,269	4,061
	Import	101	121	103	292
	Total	4,315	4,815	4,372	4,353
Demand	Domestic	3,878	4,065	3,710	3,720
	Export	429	767	674	618
	Total	4,307	4,832	4,384	4,338
Capacity		6,257	6,247	6,034	5,666

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

2) Toluene

(Unit: 1,000MT)

		2012	2013	2014	2015
Supply	Production	1,391	1,683	1,806	2,024
	Import	56	24	4	4
	Total	1,447	1,707	1,810	2,028
Demand	Domestic	1,299	1,337	1,232	1,286
	Export	134	365	563	751
	Total	1,433	1,703	1,795	2,037
Capacity		2,347.	2,347	2,667	2,606

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

3) Xylene

(Unit: 1,000MT)

		2012	2013	2014	2015
Supply	Production	5,975	6,662	5,921	6,413
	Import	56	53	0	3
	Total	6,031	6,715	5,921	6,416
Demand	Domestic	5,335	5,707	4,249	4,413
	Export	697	979	1,655	2,028
	Total	6,032	6,686	5,904	6,441
Capacity		8,040	8,119	8,507	8,487

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

2. Trend in 2015

1) BTX production in Japan

Benzene production volume decreased, and toluene and xylene increased.

Benzene production was 4,061KT, decreased by 5%, toluene production was 2,024KT, increased by 12%, and xylene production was 6,413KT, increased by 8% compared to the previous year.

Total BTX production was 12,498KT in 2015, increased by 4% compared to the previous year.

2) BTX domestic demand

- Benzene

Benzene domestic demand in 2015 was 3,720KT, almost remain unchanged from the previous year. The production of styrene monomer which occupy 51% portion of benzene's total demand decreased by 4% compared to the previous year. On the other hand, demand from phenol/cumene increased by 12% compared to the previous year.

- Toluene

Toluene domestic demand was 1,286KT, increased by 4% compared to the previous year. This is mainly because toluene demand from TDP increased by 20% compared to the previous year, which occupy 46% of toluene total demand, due to strong para-xylene demand.

- Xylene

Xylene domestic demand was 4,413KT, increased by 4% compared to the previous year. This is mainly because xylene demand from para-xylene production increased by 4% compared to the previous year, which occupy 92% portion of xylene's total demand,

Total BTX domestic demand was 9,419KT, increased by 2% compared to the previous year.

3) BTX export and import

- Export

Benzene export volume was 618KT, decreased by 8% compared to the previous year due to the start-up of benzene plant by co-production with para-xylene in Asia.

Toluene export volume was 751KT, increased dramatically for the past two years due to increase of demand from new TDP plants in Asia.

Xylene export volume was 2,028KT, increased by 23% compared to the previous year due to increase of demand from new para-xylene plants in Asia.

- Import

Benzene import volume increased about threefold compared to the previous year due to production volume by the light naphtha decreased.

3. Outlook for 2016

Benzene demand will decrease, on the other hand, Xylene demand will increase. As a whole, BTX demand in Japan is expected to be unchanged.

1) Benzene

Benzene demand from styrene monomer will decrease by 23% compared to the previous year, because one SM plant in Japan will close and large-scale spring styrene plant turnarounds are expected. Benzene demand from phenol/cumene will be the same level as 2015 and that from cyclohexane is expected to decrease by 4%. Accordingly benzene domestic demand will decrease by 13% compared to the previous year. Export volume will increase by 13%. So total benzene demand will be decrease compared to the previous year (91%).

2) Toluene

Toluene domestic demand is expected to be unchanged as last year.

3) Xylene

Xylene demand from para-xylene production will increase by 12% compared to the previous year. Export will increase by 4% compared to the previous year. Total xylene demand will increase by 9%.

2. Polyolefins

Item: Polyolefins

1. Supply and Demand Balance

Domestic demand: Including raw resins and finished products

Unit: 1,000MT, ()...% over previous year

		2013	2014	2015		
LDPE (including L-LDPE, EVA)	Supply	Production	1,723	1,814	1,713	(-6)
		Import of Raw Material Resins	324	359	269	(-25)
		Import of Finished Products	379	392	385	(-2)
		Import Total	703	750	655	(-13)
	Demand	Domestic	2,156	2,211	2,142	(-3)
		Export	246	219	246	(+12)
		Total	2,402	2,430	2,388	(-2)
Production Capacity		2,370	2,310	2,218	(-4)	
HDPE	Supply	Production	908	825	897	(+9)
		Import of Raw Material Resins	122	162	129	(-20)
		Import of Finished Products	370	378	367	(-3)
		Import Total	492	541	496	(-8)
	Demand	Domestic	1,222	1,238	1,224	(-1)
		Export	156	132	134	(+1)
		Total	1,378	1,370	1,358	(-1)
Production Capacity		1,193	1,143	1,142	(0)	
PP	Supply	Production	2,248	2,349	2,501	(+6)
		Import of Raw Material Resins	251	267	198	(-26)
		Import of Finished Products	300	333	327	(-2)
		Import Total	551	600	525	(-13)
	Demand	Domestic	2,571	2,660	2,699	(+1)
		Export	289	275	309	(+12)
		Total	2,860	2,935	3,008	(+2)
Production Capacity		2,972	2,883	2,874	(0)	

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

2. Actual shipments of products manufactured in Japan for supply to the home market in 2015

Unit: 1,000MT, ()··% over previous year

	LDPE	HDPE	PP
Film	659(+6)	191(+10)	485(+2)
Laminating	251(+1)	-	-
Oriented Tape (Flat Yarn)	-	23(+10)	21(-0)
Injection Molding	80(+2)	101(+4)	1,284(+6)
Blow Molding	42(+1)	173(+3)	15(+6)
Fiber	-	41(+14)	113(+11)
Pipe	17(-5)	62(-9)	-
Wire and Cable	57(-6)	-	-
Others	358(-1)	161(+0)	419(+3)
Total	1,466(+2)	752(+4)	2,337(+5)

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

3. Trend in 2015

1) Domestic demand

PE: Throughout the year 2015, total polyethylene(PE) domestic demand for resins and finished products decreased by 4% (169,000 ton) from the previous year. Total quantity was 3,761,000 ton. Domestic demand of LDPE decreased by 8% (196,000ton) (in total: 2,368,000 ton), but HDPE was increased by 2% (27,000 ton) (in total: 1,393,000 ton) compared to the previous year.

Total domestic production decreased by 1% (29,000 ton) from the previous year. Total quantity was 2,610,000 ton. LDPE decreased by 6% (101,000 ton) (in total: 1,713,000 ton) compared to the previous year because of permanent shut-down of one L-LDPE line, but HDPE is increased by 9% (72,000 ton) (in total: 897,000 ton).

Actual shipment of the domestic products of LDPE increase by 2% (in total: 1,466,000 ton) and HDPE also increased by 4% (in total: 752,000 ton), especially for the products of film (LDPE & HDPE) and oriented tape (HDPE) increased considerably. Pipe (HDPE & LDPE) decreased by 6% and wire & cables (LDPE) decreased by 8% from the previous year.

PP: Domestic demand increased by 1% from the previous year. It is mainly due to the return from the imported products to the domestic ones (General goods & OPP film) or the shift from the imported PP resin to the domestic PP, caused by the weak Japanese yen. Particularly the 2nd half demand for General industrial products, General goods, OPP film, and Fibers was stronger compared to the previous year which was affected by the sharp naphtha price plunge.

2) Imports

PE: The imported resins of LDPE decreased considerably by 25% (90,000 ton) (in total: 269,000 ton) and HDPE also decreased by 20% (33,000 ton) (in total: 129,000 ton) from the previous year. The reason for decreasing the quantity of imported resin is thought of as switching over to domestic resins from imported resins because of weaker Yen and continuously high of Asian market price.

The imported finished products of LDPE decreased 2% (7,000 ton) (in total: 385,000 ton) and HDPE also decreased by 3% (11,000 ton) (in total: 367,000 ton).

PP: The imported resin decreased by 26% due to the weak Japanese yen. The imported price level was less competitive compared to the domestic PP so that customers couldn't get any benefit to purchase (especially the General goods segment) . But the Japanese yen was getting stronger in the 2nd half, and customers couldn't fulfill their demand by the domestic PP, so gradually the imported PP resin was increasing.

In addition, the imported PP products decreased by 2%. The imported non-woven products only increased +14% due to the strong demand by the Chinese tourists (what we call `Bulk buying`) and the other products decreased.

3) Exports

PE: The exported LDPE increased by 12% (27,000 ton) (in total: 246,000 ton) and HDPE also increased by 1% (2,000 ton) (in total: 134,000 ton) from the previous year.

PP: PP exports increased by 12% due to the weak Japanese yen which increased the price competitiveness. On the other hand, the export volume was less in the 2nd half due to the stronger Japanese yen, the sluggish Asian market and to fulfill the steady domestic market preferentially.

4. Outlook for 2016

PE: It is expected to be positive growth of economy in 2016 and then consumption of PE will be expected to increase.

PP: The domestic PP demand will stay steady and remain strong due to the surge demand prior to the consumption tax increase in April, 2017. Particularly the automobile and home appliances segment can enjoy the movement.

3. Styrenics

Item: PS (GP/HI)

1. Supply and Demand Balance

(Unit: MT)

		2013	2014	14/13 (%)	2015	15/14 (%)
Supply	Production	657,700	652,500	-1	674,600	+3
	Import	58,000	55,100	-5	40,600	-6
	Total	715,700	707,600	-1	715,200	+1
Demand	Domestic Demand	629,500	626,300	-1	635,900	+2
	Import	58,000	55,100	-5	40,600	-6
	Total	687,500	681,400	-1	676,500	-1
	Export	21,700	22,300	+3	22,500	+1
	Aggregate	709,200	703,700	-1	699,000	-1
Production Capacity		818,000	816,000	0	816,000	0

Source: Japan Styrene Industry Association, Trade Statistics by MOF

2. General Results of PS in 2015

Annual production for 2015 slightly increased to 674,600 tons, up 3% compared to the previous year, recovering to 2011 production levels (673,800 tons). Production was relatively strong even though prices fluctuated.

Domestic shipments were affected by price fluctuations, rising and falling compared to the previous year each quarter. However, annual shipment was 635,900 tons, up 2% from the previous year. Results by application show that the packaging application, including PSP, remained around the same level as the previous year with a 1% increase on a full-year basis compared to the previous year. The sundries and industrial application maintained steady growth, increasing by 4% on a full-year basis. The application for foamed styrene (styrene boards) maintained relatively steady growth in 2015 with a 3% increase compared to the previous year. Electric & electronic and industrial applications, while having a small volume, had a steady shipment, increasing 2% on a full-year basis compared to the previous year.

Exports, while having a small volume, maintained the same level as the previous year at 22,500 tons, up 1% from the previous year.

Looking at the demand structure of 2015, both production and domestic shipments slightly exceeded those of the previous year on a full-year basis. However, due to fluctuations in BZ prices, polystyrene prices were revised, causing both production and domestic shipments to

fluctuate in accompaniment. Imports fell to 40,600 tons due in part to the exchange rate, which was offset by an increase in domestic shipments. However, the aggregate demand including imports fell below 700,000 tons, showing a gradual decline.

3. Outlook for 2016

In a situation in which there are concerns about the exchange rate, raw fuel prices, impact of BZ prices, PS alternative trends, etc., the development of new usages, etc., is a critical issue for maintaining and improving domestic demand.

Item: Styrene monomer

1. Supply and Demand Balance

(Unit: MT)

		2013	2014	14/13 (%)	2015	15/14 (%)
Supply	Production	2,591,600	2,457,100	-5	2,412,600	-2
	Import	0	0	-	0	-
	Total	2,591,600	2,457,100	-5	2,412,600	-2
Demand	Domestic Demand	1,433,800	1,384,400	-3	1,411,900	+2
	Export	1,176,900	1,073,400	-9	1,009,600	-6
	Total	2,610,700	2,457,800	-6	2,421,500	-1
Production Capacity		2,667,000	2,667,000	0	2,255,000	-15

Source: Japan Styrene Industry Association, Trade Statistics by MOF

2. General Results of SM in 2015

Annual production for 2015 was 2,412,600 tons, remaining at around the level of the previous year with a 2% decrease. In May 2015, Nihon Oxirane (Sumitomo Chemical) ceased operations of 412,000 tons, making the production volume fall significantly. However, few regular maintenance and repair works took place in 2015, and as a result, the production volume remained unchanged from the previous year. Therefore, the operating rate was extremely high in 2015.

Domestic shipments increased slightly to 1,411,900 tons, up 2% from the previous year, maintaining a stable shipment volume at the same level as the previous year in spite of Nihon Oxirane's cessation of operations. Results by applications show that shipment for PS production, the main use of SM, grew steadily throughout the year, up 8% from the previous year. ABS fell slightly by 5% compared to the previous year, but synthetic rubber grew 5% compared to the previous year. EPS remained unchanged from the previous year, and overall, shipments for respective applications excluding ABS grew steadily.

Exports showed a 6% decline to 1,009,600 tons compared to the previous year. This decrease in exports can be attributed to the portion of decreased production due to the cessation of operations by Nihon Oxirane.

In 2015 overall, while there were few cases of regular maintenance and repair works at styrene manufacturers, due to the cessation of operations by Nihon Oxirane in May 2015, a high operating rate was maintained, securing a production volume around the same level of the previous year. Additionally, the impact of the cessation of operations by Nihon Oxirane resulted

in domestic shipments remaining around the same level, while exports fell.

3. Outlook for 2016

Many regular maintenance and repair works are expected in 2016. Moreover Asahi Kasei will cease operations at its 320,000 ton capacity plant in February 2016. Therefore, it is expected that production capacity will fall under 2,000,000 tons and the production and shipment structures will change even further going forward.

Item: ABS Resin

(Unit: MT, %)

		2014		2015	
			Growth Rate		Growth Rate
Supply	Production	355,982	+0	376,336	+6
	Import	40,424	-0	41,124	+2
	Total	396,406	+0	417,460	+5
Demand	Domestic(1)	227,239	-1	229,765	+1
	Import	40,424	-0	41,124	+2
	Total	267,663	-1	270,889	+1
	Export(2)	125,822	-0	127,868	+2
Grand Total		393,485	-1	398,757	+1
Japanese Product Total (1)+(2)		353,061	-1	357,633	+1
Nameplate Capacity		n.a.		n.a.	

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF,

Japan ABS polymer Industry Association

4. PVC & VCM

Item: Polyvinyl Chloride (PVC)

1. Supply and Demand Balance

(Unit: Qty.:1,000metric tons, GR:%)

	2011		2012		2013		2014		2015	
	Qty.	GR	Qty.	GR	Qty.	GR	Qty.	GR	Qty.	GR
Production	1,474	-13	1,268	-14	1,414	+12	1,399	-1	1,577	+13
Domestic Shipment	1,039	+1	1,027	-1	1,071	+4	1,056	-1	1,008	-4
Import	31	443	20	-35	8	-60	7	-13	5	-23
Domestic Demand	1,070	+3	1,047	-2	1,079	+3	1,063	-1	1,013	-5
Export	427	-35	245	-37	345	+41	323	-6	567	+76
Total Shipment	1,466	-13	1,272	-13	1,416	+11	1,379	-3	1,575	+14

Qty.: quantity GR: growth rate

Source: VEC (the Vinyl Environmental Council), Trade Statistics by MOF

2: Domestic Shipments by Application Segments

(Unit: Qty.:1,000 metric tons, Ratio: %)

	2011		2012		2013		2014		2015	
	Qty.	Ratio	Qty.	Ratio	Qty.	Ratio	Qty.	Ratio	Qty.	Ratio
Rigid	588	57	569	55	599	56	582	55	549	-6
Flexible	260	25	258	25	252	24	248	24	240	-3
Cables, others	192	18	201	20	219	20	226	21	219	-3
Total Domestic Shipments	1,039	100	1,027	100	1071	100	1,056	100	1,008	-4

Ratio: percentage of the application within all applications

Source: VEC

3: Production Capacity

(Unit: 1,000 metric tons per year)

2011	2,005
2012	1,997
2013	1,997
2014	2,009
2015	1,929

Source: METI

4. Trend in 2015

1) Production volume

The production volume for PVC in 2015 was 1,577 thousand tons, which was 112.7% on the previous year.

The enhancement of VCM domestic production capacity completed at the end of 2014, which raised the PVC production volume in 2015. PVC exports grew considerably from a year earlier.

2) Shipments

Domestic shipments was 1,008 thousand tons, which was 95.5% over the previous year. In terms of applications, 549 thousand tons were used for rigid PVC (94.3% y/y), 240 thousand tons for flexible PVC (96.8% y/y), and 219 thousand tons for cable insulation, etc. (97.0% y/y).

In 2015, the recovery from the slackened growth due to the last-minute demand ahead of the introduction of consumption hike in April 2014 and another recovery of demand in housing and public work-related fields had been expected. However, they, other than a part of housing-related applications, resulted in weak growth.

The number of new housing starts in 2015 was 909,000, which was up to 101.9% over the previous year. However, the auto production volume was 9,278 thousand cars, which reduced to 94.9% from a year earlier.

3) Exports

The exports from Japan was 567 thousand tons, which was 175.5% from a year earlier.

The shipments to India and Vietnam rose significantly. In addition, the shipping volume to China was up from a year earlier and gained steadily.

5. Outlook for 2016

Partially because Domestic demand of PVC is associated with housing starts and public works, the 2016 demand is expected to hover at the same level as a real GDP growth rate again.

In the medium term, a slow growth in domestic demand is expected due to a demand towards 2020 Tokyo Games, a demand for reconstruction from the Great East Japan Earthquake and a demand for renovation of deteriorated infrastructure.

Also, the export volume in 2016 is projected to remain the year-earlier levels, although it depends on the trends of overseas markets or currency markets.

Item: Vinyl Chloride Monomer (VCM)

1: Supply and Demand Balance

(Unit: Qty.: 1,000 metric tons, GR: %)

	2011		2012		2013		2014		2015	
	Qty.	GR	Qty.	GR	Qty.	GR	Qty.	GR	Qty.	GR
Production	2,504	-15	1,879	-25	2,295	+22	2,271	-1	2,550	+12
Domestic Shipment	1,580	-11	1,382	-13	1,522	+10	1,515	-0	1,689	+11
Import	0	-	0	-	0	-	0	-	0	-
Domestic Demand	1,580	-11	1,382	-13	1,522	+10	1,515	-0	1,689	+11
Export	792	-15	318	-60	534	+68	728	+36	874	+20
Total Shipment	2,372	-12	1,700	-28	2,056	+21	2,244	+9	2,563	+14

Qty.: quantity GR: growth rate

Source: VEC, Trade Statistics by the MOF

2: Production Capacity

(Unit: 1,000 metric tons per year)

2011	2,574
2012	2,574
2013	2,574
2014	2,774
2015	2,774

Source: METI

3. Trends in 2015

1) Production Volume

The production volume of VCM in 2015 was 2,550 thousand tons, which was 112.3% on the previous year.

2) Shipments

Along with an increase in exports of PVC, VCM domestic shipments was up to 1,689 thousand tons, which was 111.5% over the previous year. The export volume of VCM was also up to 874 thousand tons, which was 119.9% over the previous year. The total amount of VCM shipments was 2,563 thousand tons, which was 114.2% over the previous year.

4. Outlook for 2016

VCM domestic shipments in 2016 are expected to increase compared with a year earlier, because domestic demand of PVC will hover at the same level as a real GDP growth rate.

The exports are also expected to be at the same level of 2015, but it is affected by the crude oil market or foreign exchange market.

5. Synthetic Rubber

Item: Synthetic Rubber

1. Supply and Demand Balance

(Unit: MT, %)

		2014		2015		
		Actual	Annual Change%	Actual	Annual Change%	
SBR (Solid)	Production	497,800	-4.9	494,000	-0.8	
	Import	55,400	8.7	63,500	+14.8	
	Shipment	Domestic	333,000	-1.0	307,000	-7.8
		Export	226,000	-6.8	213,000	-5.8
		Total	559,100	-3.3	520,000	-6.9
	Capacity	608,000	-4.1	611,000	+0.5	
BR (Solid)	Production	270,300	-4.1	310,600	+14.9	
	Import	34,300	12.5	29,900	-12.9	
	Shipment	Domestic	209,200	7.7	231,800	+10.8
		Export	122,600	-2.5	135,500	+10.5
		Total	331,800	-0.5	367,300	+10.7
	Capacity	296,000	4.2	296,000	0	
Others	Production	831,100	-4.3	878,200	+4.1	
	Import	78,800	3.0	72,600	-7.8	
	Shipment	Domestic	395,800	1.7	349,200	-11.8
		Export	464,000	-2.3	445,400	-4.0
		Total	859,800	-1.1	794,600	-7.6
	Capacity					
Total	Production	1,599,200	-4.4	1,668,300	4.3	
	Import	168,500	6.7	166,100	-1.4	
	Shipment	Domestic	938,000	-0.0	888,000	-5.3
		Export	812,700	-3.6	793,900	-2.3
		Total	1,750,700	-1.7	1,681,900	-3.9
	Capacity					

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF,
The Japan Rubber Manufacturers Association (JRMA)

2. Trend in 2015

In steady employment and income conditions and favorable terms of trade reflecting a decline in crude oil prices, the Japanese economy is on a moderately recovery trend, but the growth remains weak. The slowdown of economic growth in emerging economies led to weakness of exports. The recovery of private consumption and private fixed investment was delayed.

Consequently, the growth rate of Japanese real GDP for 2015 is expected approximately 0.6%.⁽¹⁾

The number of the domestic car production was 9.3 million units, a 5% down from the previous year.⁽²⁾ Although the car exports slightly increased from the previous year, due to weak recovery in consumer demand following 2014's consumption tax hike, the domestic car production was dropped

Domestic tire production resulted in 152 million units, down by 5% from the previous year.⁽³⁾ Because the domestic sales environment was dull and many Japanese carmakers have increasingly tended to shift their production overseas

The domestic production of SR was 1.7 million MT, a 4% rise from the previous year. Because the end of 2014's inventory level was low and SR makers planned to recover the level of it, although the demand conditions were not good as described above.

3. Outlook for 2016

The Japanese economy is expected to moderately recover, with an expected 1.0% growth rate of the Japanese real GDP in 2016.⁽¹⁾

In steady conditions of employment and income, we expect an increasing demand prior to 2017's consumption tax hike of 8% to 10% and the moderately recover of private fixed investment supported by profit improvement of companies.

The number of the domestic car production is expected 9.3 million units, a 0.7% rise from the previous year.⁽³⁾ Since the rush demand by the 2017's consumption tax hike and increasing car exports.

Domestic tire production is expected to increase 1.0% since the domestic and overseas demands will slightly exceed the previous year.

The domestic production of SR is expected to fall below the previous year. It is expected that 2016's consumption will be as same level as the previous year, but a correction phase will start because of the end of 2015's inventory level is high.

(1) International Monetary Fund (IMF)

(2) Japan Automobile Manufacturers Association, Inc. (JAMA)

(3) Japan Automobile Tire Manufacturers Association, Inc. (JATMA)

6. Synthetic Fiber Raw Materials

Item: Ethylene Oxide(EO), Ethylene Glycol(EG)

1. Supply and Demand Balance

EO

(Unit:MT)

		2013	2014	2015
Supply	Production	908,800	887,314	933,014
	Import	-	-	-
	Total	908,800	887,314	933,014
Demand	Domestic	389,834	407,098	411,380
	Direct Export	-	-	-
	Total	389,834	407,098	411,380
Year-end Capacity		921,000	921,000	921,000

Excluding the demand for EG

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

EG

(Unit:MT)

		2013	2014	2015
Supply	Production	717,053	664,166	726,643
	Import	5,410	6,743	3,909
	Total	722,463	670,909	730,552
Demand	Domestic	437,291	411,177	392,369
	Direct Export	274,749	246,967	338,011
	Total	712,040	658,144	730,380

Source: Chemical Industry Statistics by METI, Trade Statistics by MOF

2. Trend in 2015

The Japanese EO demand of 2015 became an increase by 1% compared with the previous year.

The Japanese demand increased because some EO derivatives shifted back from imported goods to domestic goods by depreciation of the yen and naphtha.

The demand of surfactant was fastened like the last year.

As for the demand of EG of 2015 in Japan, it became a decrease by 5% both for polyester and for anti-freezing compared with the previous year.

In particular, it was decreased by the overseas relocation of polyester fiber production and the withdrawal from PET resin in 2014.

About export of EG from Japan in 2015, it became an increase by 37% compared with the previous year.

There was a room to supply for export due to the decrease of the domestic demand.

3. Outlook for 2016

EO demand for 2016 is expected to be a slight increase.

Surfactant demand will increase due to continuing expansion of the liquid detergent market.

Demand of EO derivative products direction is assumed to the same level as the previous year.

On the other hand, it is expected the reduction of EO production due to a longer shutdown maintenance of each company compared with the previous year.

On EG domestic demand in 2016, it will be expected to continue to fall below the previous year.

The demand of anti-freezing is expected to be the same level, but the demand of polyester is expected to be a decrease in the same level as the previous year.

It is expected to be a decrease in exporting due to a long shutdown maintenance schedule on 1st half of 2016. There will be no room for export.

Item : Acrylonitrile

(Unit: 1,000MT)

		2011	2012	2013	2014	2015	'15/'14 (%)
Supply	Production	733	554	518	472	440	-7%
	Import	7	4	8	9	19	+102%
	Total	742	558	526	481	459	-5%
Demand	Domestic	464	423	427	435	446	+3%
	Export	288	129	101	52	5	-90%
	Total	752	552	528	487	451	-7%
Year –end Capacity		723	724	724	496	496	0%

Note: Capacity excludes turn-around capacity investigated by Ministry of Economy, Trade and Industry Domestic demand includes import demand.

1. Acrylonitrile Market Trend in Japan in 2015

(a) The amount of Acrylonitrile ("AN") production in Japan in 2015 has decreased by 7% from 2014 to 440 thousand metric tons. The decline is mainly attributed to the decrease in exports to Northeast Asia, in particular, Korea, Taiwan and China. Domestic demand for both ABS resin and acrylic fiber ("AF") has increased from 2014. Also, domestic demand for other AN derivatives has increased.

(b) The amount of AN import to Japan in 2015 has increased by 102% from 2014 to 19 thousand metric tons.

<Import amount by countries> (unit: 1,000MT)

	2015	(2014)
Korea	10	7
USA	9	2
Total	19	9

(c) The amount of AN export from Japan in 2015 has decreased by 90% from 2014 to 5 thousand metric tons.

<Export amount by countries> (unit: 1,000MT)

	2015	(2014)
China	1	28
Taiwan	3	26
Korea	1	8
Total	5	52

(d) The supply/demand situations of AN derivatives in Japan in 2015 were as follows:

① The amount of AF production in 2015 has increased by 1% from 2014 to 142 thousand metric tons.

- Domestic demand for AF has increased by 24% to 33 thousand metric tons. The shipping volume in the clothing sector has increased by 37%. Also, the shipping volume in the non-clothing sector has decreased by 11%.

- Export demand has decreased by 2% to 111 thousand metric tons.

- ② The amount of ABS resin production in 2015 has increased by 3% from 2014 to 367 thousand metric tons.
- Domestic demand for ABS resin has increased by 1% to 230 thousand metric tons. The shipping volume in the automobiles sector and general merchandise sector has increased from 2014.
 - Export demand has increased by 2% to 128 thousand metric tons.
- ③ The amount of other AN derivatives production in 2015 has increased by 2% from 2014. The amount of carbon fiber, adiponitrile, and nitrile-butadiene rubber production has increased from 2014, while the amount of acrylamide production has slightly decreased from 2014.
- To summarize the above figures, the domestic demand for AN has increased by 3% in 2015. The total AN demand, which includes export amount from Japan, was 451 thousand metric tons, decreased by 7% from 2014.

2. Global AN Market Outlook for 2016

- The demand for AN in 2016 is expected to grow.
- The demand for AF is considered to slightly increase from 2015.
- The demand for ABS resin is considered to increase from 2015, reflecting continuous increase in Asian demand, notably in China.
- The demand for other AN derivatives, including acrylamide, nitrile-butadiene rubber and carbon fiber, is also expected to grow continuously.

Item: Caprolactam

1. Supply and Demand Balance

(Unit:MT)

		2011	2012	2013	2014	2015
Supply	Production	397,202	375,662	338,985	289,777	257,345
	Import	2	4	2	2	1
	Total	397,204	375,666	338,987	289,779	257,346
Demand	Domestic	178,880	165,829	160,772	147,230	127,433
	Export	220,657	211,037	177,654	146,208	131,138
	Total	399,537	376,866	338,426	293,438	258,571

Source: Chemical Industry Stats. by METI Trade Stats. by MOF

2. Trend in 2015

Both of supply and demand has kept decreasing under a tough market situation. These quantities in CY2015 were 11% less than CY2014's respectively. Sumitomo Chemical Co., Ltd. closed down its old Caprolactam (CPL) line at capacity of 95KMT/Y in October, 2015. A total Japanese CPL name plate capacity was reduced by 58% to 275KMT/Y from the largest one at 650KMT/Y on the early CY2000's. A domestic demand in CY2015 dropped by 13% from a previous year's which was the highest rate in the last 5 years. In addition to that, business opportunity in overseas merchant market, China and Taiwan also decreased. CPL expansion projects in China had been materialized and 320KMT/Y new capacity entered into CPL market. Taiwan which lost a PA6 chip business in China by her self-efficiency was unable to absorb the same quantity of imported CPL as CY2014's anymore. Export business at the aforesaid two countries lost 24KMT/Y.

CPL spread over Benzene (ACP) had two faces in CY2015. Although 1st half gained its spread at US\$1,024/MT in average, 2nd half sharply went down to US\$770/MT. CPL price decreased more than a fall in Benzene's. CPL price factor shifted from up-stream to down-stream, namely, from Benzene to PA6.

3. Outlook for 2016

CPL business environment still remains severe and in a stagnant under an over-supply situation at domestic and overseas markets. Japanese domestic market has been already mature and difficulty in enlarging market scale. Imported PA6 chip has increased year by year. If a tendency like that strengthens, CPL domestic demand itself would be reduced more. Export in CY2016 does not have any factors to increase. CPL expansion projects in China are ongoing. 700KMT/Y in total of CPL has announced. The said quantity is more than an imported CPL in CY2015. PA6 plant also will be expanded by 650KMT/Y.

CPL manufactures need to accelerate to trim off fat and pay more attentions to CPL-PA6 chain comprehensively.

7. Chemicals

Item: Acetaldehyde

1. Supply and Demand Balance

(Unit: MT)

		2011	2012	2013	2014	2015
Supply	Production	176,433	133,418	127,538	111,474	90,625
	Import	-	-	-	-	-
	Total	176,433	133,418	127,538	111,474	90,625
Demand	Domestic	177,553	134,882	129,244	111,053	92,211
	Export	-	-	-	-	-
	Total	177,553	134,882	129,244	111,053	92,211
Production capacity (at year-end)		289,000	289,000	289,000	289,000	289,000

Source: Chemical Industry Statistics by METI;
Trade Statistics by MOF, etc.

2. Trend in 2015

Demand in acetaldehyde decreased mainly because production of ethyl acetate dropped.
Production decreased in accordance with demand.

3. Outlook for 2016

Demand is expected to be unchanged with previous year.

Item: Acetic Acid

1. Supply and Demand Balance

(Unit: MT)

		2011	2012	2013	2014	2015
Supply	Production	418,485	416,736	424,823	n.a.	n.a.
	Import	88,250	46,634	44,594	60,274	130,762
	Total	506,735	463,370	469,417	n.a.	n.a.
Demand	Domestic	n.a.	n.a.	n.a.	n.a.	n.a.
	Export	32,093	23,230	29,978	41,724	27,876
	Total	n.a.	n.a.	n.a.	n.a.	n.a.
Production capacity (at year-end)		n.a.	n.a.	n.a.	n.a.	n.a.

Source: Chemical Industry Statistics by METI
Trade Statistics by MOF

2. Trend in 2015

1) Domestic demand

Production rate for VAM still kept high level because demand for deliberates were also high level and depreciation of Japanese Yen supported their export business. Production volume for PTA was shrunk because a plant shut in 1st quarter 2015. Acetic Anhydride kept same level because LCP and cellulose acetate which are main application of AAH was not growing during 2015. Esters production volume increased because of new plant started at Oita.

2) Import volume increased because technical shut down year at Daicel in 2nd quarter 2015 and new Ester plant started at Oita and recovered of VAM production.

3) Export volume decreased by 34% especially in first half of the year because of Daicel's SD. From send half the volume was slightly decrease as same period of previous year.

3. Outlook for 2016

1) Domestic demand expect to keep same level. VAM production is expecting keep high production rate during whole year. Demand for PTA expect to keep same level. Acetic Anhydride expect to keep same level mainly in cellulose acetate and LCP application.

2) Import volume is expect to decrease slightly mainly for Oita. Because of non-technical shut down year at Daicel.

3) Export volume of Acetic acid is expecting same level or slightly decrease. International VAM supply/demand balance is expecting keep well balance especially ethylene based process. PTA demand is also expecting increase slightly but still there is big supply & demand gap in Chinese market. And Indian PTA supplier also will increase capacity in 2016. Therefore PTA suppliers will still be in the serious business situation for next few years.

Item: Phthalic Anhydride (PA)

1. Supply and Demand Balance

(Unit : MT)

		2011	2012	2013	2014	2015
Supply	Production	146,211	159,537	160,153	155,671	155,844
	Import	1,345	222	76	59	76
	Total	147,556	159,759	160,229	155,730	155,920
Demand	Domestic	107,891	112,368	106,788	106,450	106,057
	Export	34,920	47,604	54,267	46,028	48,878
	Total	142,811	159,972	161,055	152,478	154,935

(Data Source)

Production: Chemical Industry, Statistics (METI)

Import/Export: Import Export Statistics (MOF)

Domestic Demand: Japan Dyestuff and Industrial Chemicals Association(JDICA)

2. Trend in 2015

- 1) Production of the phthalic anhydride was 155,844MT almost same as the previous year.
- 2) The domestic demand was 106,057MT almost same as the previous year.
Demand for main use's plasticizer was 101% compared with the previous year, 103% for paints, 95% for unsaturated polyester resins.
- 3) Export was 48,878 tons and 109% compared with the previous year.
- 4) Import was 76MT.

3. Outlook for 2016

Domestic demand in 2016 is expected to be almost same as the previous year.

Item: Phenol

1. Supply and Demand Balance

(Unit: MT, %)

		2013		2014		2015	
Supply	Production	740,760	-5.9	589,623	-20.4	645,702	+10
	Import	13,655	-19.4	38,009	+178.4	34,871	-8
	Total	754,415	-6.2	627,632	-16.8	680,573	+8
Demand	Domestic	628,922	-4.8	602,655	-4.2	595,509	-1.2
	Export	190,329	-2.3	86,508	-54.5	78,802	-9
	Total	819,251	-4.2	689,163	-15.9	674,311	-2.2

Source: Industrial and Chemical Statistics by METI, Customs Clearance Statistics by MOF

2. Trend in 2015

- 1) In 2015, the situation of the Japanese economy has improved from 2014.
- 2) The domestic demand in 2015 was 596KT, which was 1.2% decrease from 2014. Demand consists of BPA use(341KT : -0.3% from 2014), Phenolic resin use(128KT : -1.5% from 2014) and other uses(31KT : -3.0% from 2014). Demand for BPA became negative growth regardless of the economy recovery. The number of housing starts recovered to 910,000 cases from 890,000 cases of 2014 in 2015. However demand for Phenolic resin sector was also negative growth, due to the slowdown in electric usage. Demand for other uses was some decrease.
Export to China and ASEAN was 80KT, which was 15KT decrease from 2014. Import was 35KT, which was 3KT decrease from 2014.
- 3) For Chiba phenol (25KT) has stopped in September 2014, the capacity was reduced to 640KT. Operation rate was 87%, even though domestic demand for BPA and Phenolic uses shrunk (87% is 16 points higher than 2014).

3. Outlook for 2016

The weak yen (110~120 YEN/USD) is expected to continue sequentially. Therefore, to improve the export profitability of product to relocate production bases abroad, will continue in Japan.

Item : Methanol

(Unit : 1,000 tons)

		2013	2014	2015
Supply	Production	0	0	0
	Import	1,699	1,742	1,697
	Total	1,699	1,742	1,697
Demand	Domestic	1,699	1,742	1,697
	Export	15	0	0
	Total	1,714	1,742	1,697

Source: Chemical Industry Statistics by METI
Trade Statistics by MOF

Petrochemical Industry of Japan

2016

Japan Petrochemical Industry Association

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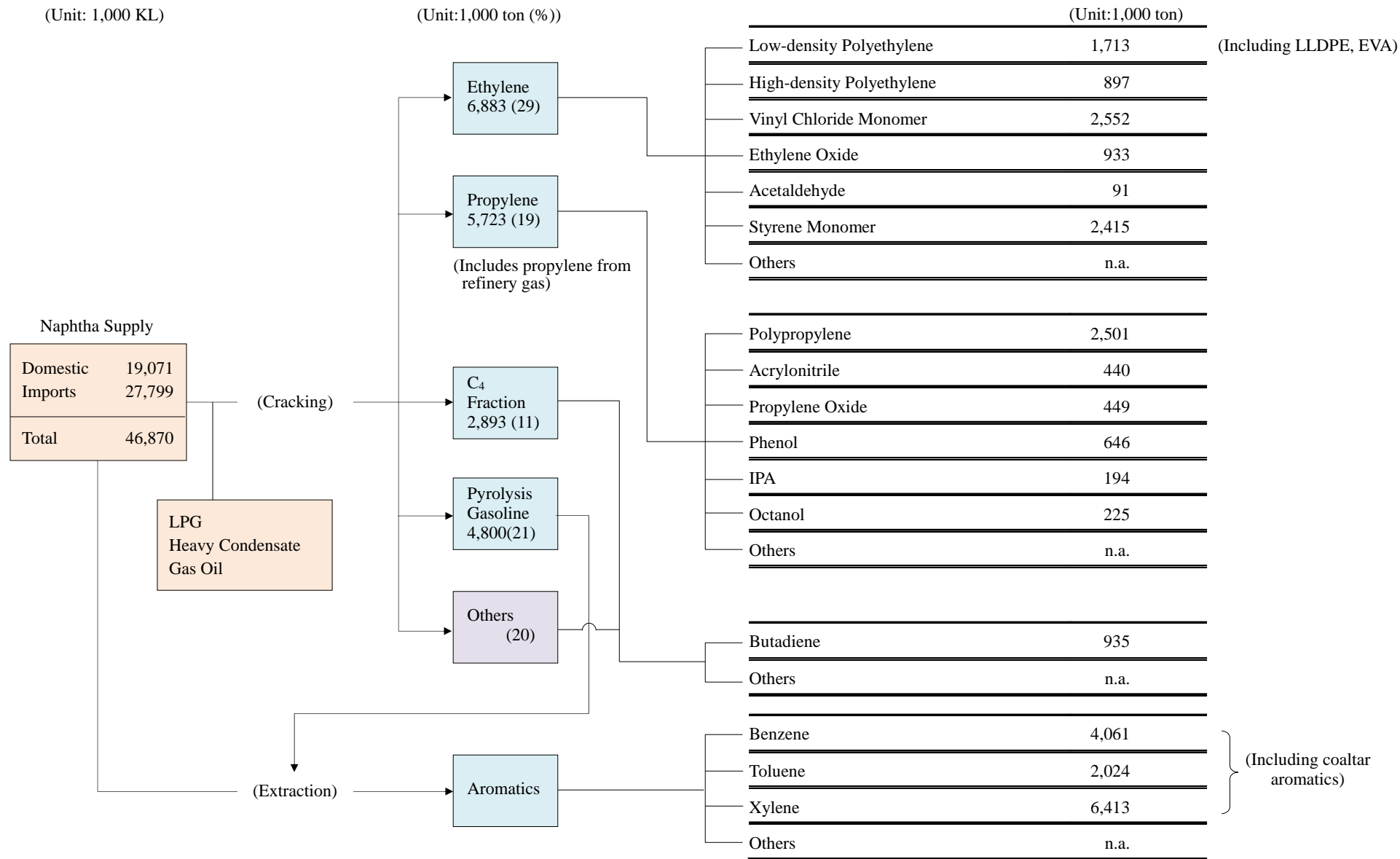
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Material Flow (2015)

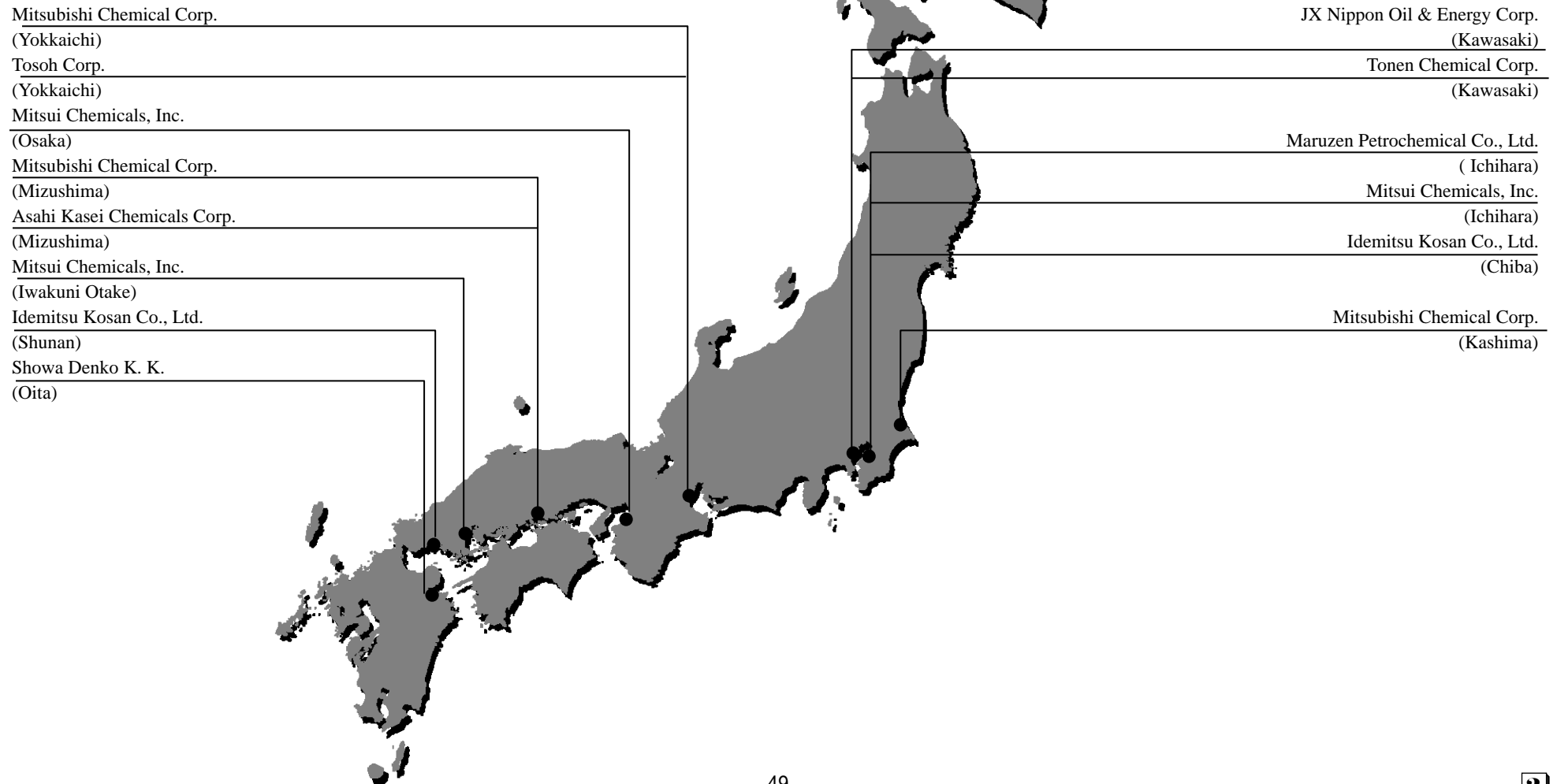
(Unit: 1,000 KL)

(Unit: 1,000 ton (%))

(Unit: 1,000 ton)



Geographical Locations of Petrochemical Complexes



Production Capacity (as of December, 2015)

(in 1,000 metric tons) temporary data

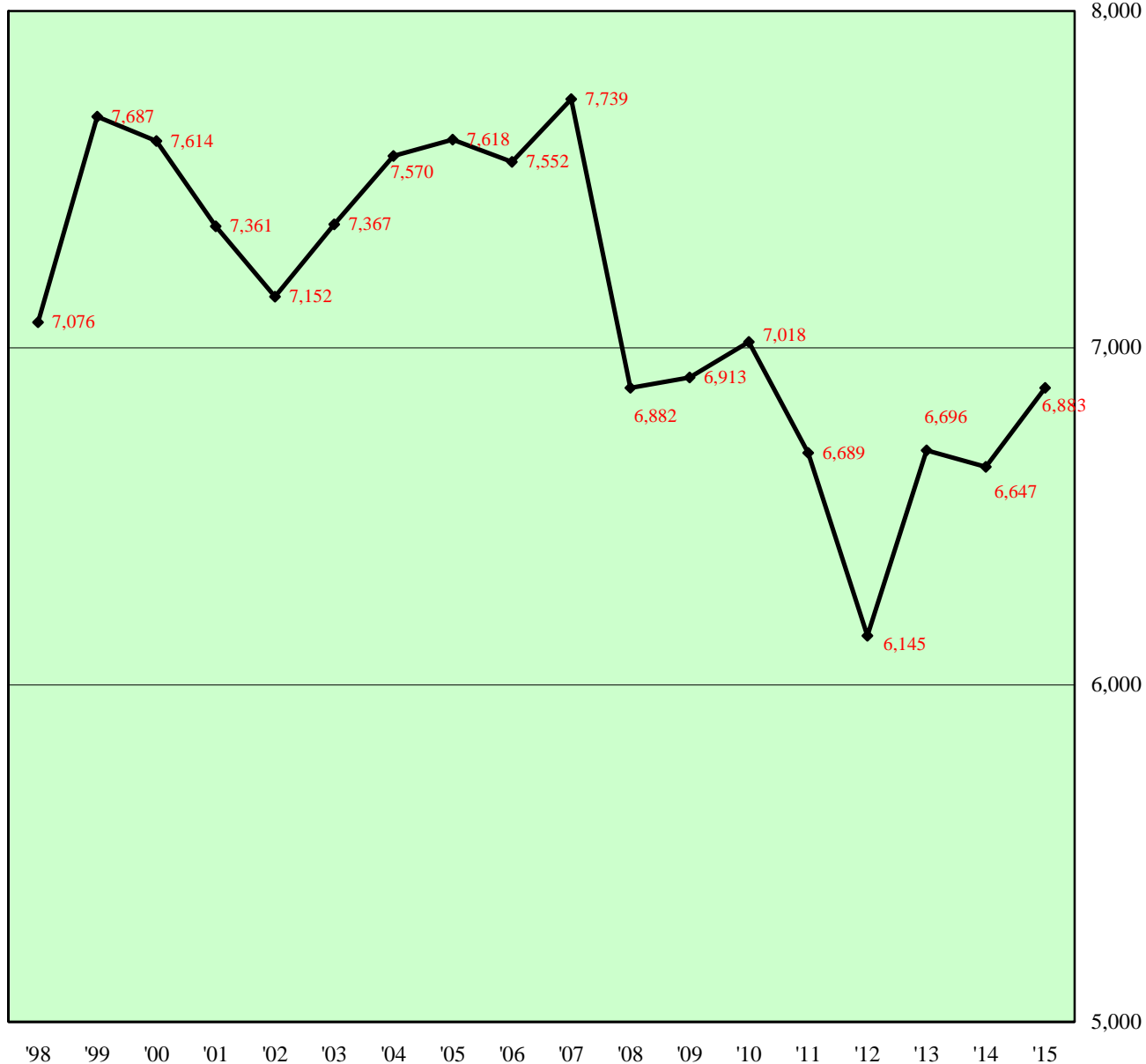
Product		Capacity	Note
Ethylene		6,588	
Benzene		5,666	
Toluene		2,606	
Xylene		8,487	
Para-xylene		3,682	
Low-density Polyethylene		2,218	Including LLDPE, EVA
High-density Polyethylene		1,142	
Polypropylene		2,874	
Polystyrene		816	GP · HI
Polyvinyl Chloride		1,929	
Ethylene Oxide		921	
Acrylonitrile		496	
Synthetic Rubbers	SBR	611	
	BR	296	
Styrene Monomer		2,255	
Vinyl Chloride Monomer		2,774	
Acetaldehyde		289	

Ethylene Production

(in 1,000 metric tons)

Year	Production	Annual Growth (%)
'98	7,076	▲ 5
'99	7,687	9
'00	7,614	▲ 1
'01	7,361	▲ 3
'02	7,152	▲ 3
'03	7,367	3
'04	7,570	3
'05	7,618	1
'06	7,552	▲ 1
'07	7,739	3
'08	6,882	▲ 11
'09	6,913	0
'10	7,018	2
'11	6,689	▲ 5
'12	6,145	▲ 8
'13	6,696	9
'14	6,647	▲ 1
'15	6,883	4

(in 1,000 metric tons)



Production of Petrochemicals

(in 1,000 metric tons)

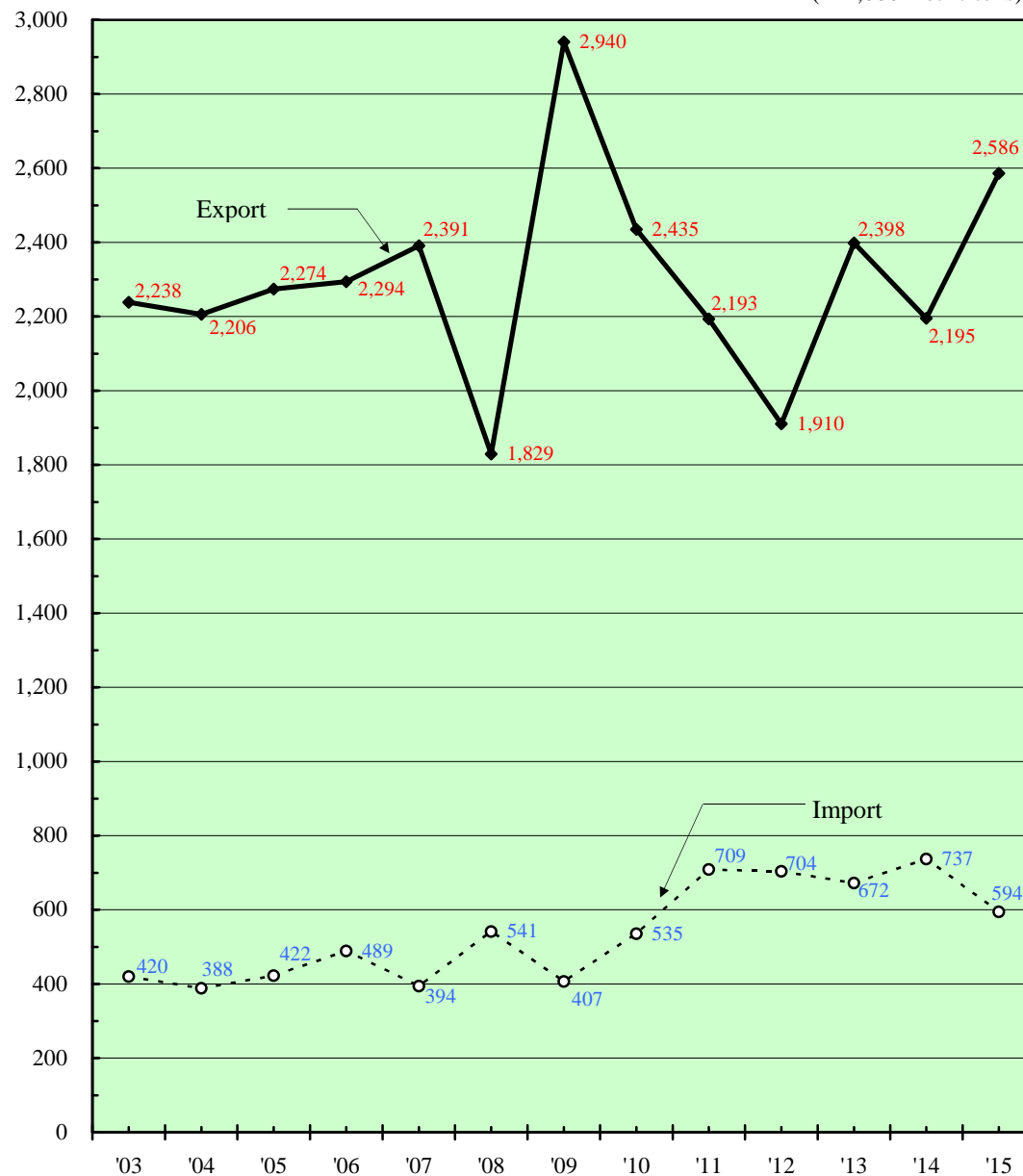
		2008	2009	2010	2011	2012	2013	2014	2015	
Basic Products	Ethylene	6,882	6,913	7,018	6,690	6,146	6,696	6,647	6,883	
	Propylene	5,674	5,590	5,986	5,625	5,239	5,647	5,674	5,723	
	Butadiene	953	871	977	934	905	963	927	935	
	Benzene	4,581	4,259	4,764	4,413	4,214	4,694	4,270	4,061	
	Toluene	1,437	1,415	1,393	1,340	1,391	1,683	1,806	2,024	
	Xylene	5,698	5,628	5,935	5,754	5,975	6,662	5,914	6,413	
Plastics	Low-density Polyethylene	1,818	1,605	1,704	1,664	1,477	1,539	1,599	1,520	
	EVA	218	215	244	235	200	184	215	193	
	High-density Polyethylene	1,052	986	1,015	935	928	908	825	897	
	Polypropylene	2,869	2,411	2,709	2,448	2,390	2,248	2,349	2,501	
	Polystyrene	GP·HI	829	690	698	654	589	633	616	638
		FS	143	114	124	125	112	111	115	115
		AS	126	92	109	78	85	90	75	81
		ABS	495	348	454	418	382	356	356	376
Polyvinyl Chloride	1,797	1,668	1,749	1,529	1,331	1,487	1,477	1,643		
Synthetic Fiber Feedstocks	Ethylene Oxide	865	759	845	820	847	909	887	933	
	Ethylene Glycol	629	581	596	581	639	720	664	727	
	Acrylonitrile	600	602	663	733	554	518	472	440	
	Caprolactam	432	342	422	397	376	339	290	257	
	Para-xylene	3,039	3,218	3,177	3,202	3,597	3,871	2,829	3,093	
	Pure Terephthalic Acid	1,015	893	1,131	885	715	757	721	n.a.	
Synthetic Rubbers	Styrene-butadiene Rubber	706	527	670	665	652	685	640	649	
	Butadiene Rubber	290	254	294	275	290	303	286	311	
	Others	655	519	631	671	685	685	674	709	
Others	Styrene Monomer	2,847	2,996	2,939	2,739	2,392	2,592	2,458	2,415	
	Vinyl Chloride Monomer	2,763	2,996	2,935	2,504	1,879	2,294	2,271	2,552	
	Acetaldehyde	281	232	197	176	133	128	111	91	
	Acetic Acid	500	384	450	418	417	425	n.a.	n.a.	
	Octanol	259	267	286	259	249	224	220	225	
	Acetone	491	477	521	471	470	452	418	441	
	Phenol	772	786	853	796	787	741	590	646	
	Propylene Oxide	489	469	501	508	474	509	502	449	
Polypropylene Glycol	308	240	284	265	258	252	265	271		

Export/Import Balance as Ethylene Equivalent

(in 1,000 metric tons)

Year	Export (A)	Import (B)	Net Export (A-B)	Export Ratio (%)	Import Ratio (%)
'03	2,238	420	1,818	30.4	7.6
'04	2,206	388	1,818	29.1	6.7
'05	2,270	422	1,848	29.8	7.3
'06	2,294	489	1,805	30.5	8.6
'07	2,391	394	1,996	30.9	6.9
'08	1,829	541	1,287	26.6	9.7
'09	2,940	407	2,533	42.5	9.3
'10	2,435	535	1,901	34.7	10.4
'11	2,193	709	1,484	32.8	13.6
'12	1,910	704	1,205	31.1	14.3
'13	2,398	672	1,726	35.8	13.5
'14	2,195	737	1,459	33.0	14.2
'15	2,586	594	1,992	37.6	12.1

(in 1,000 metric tons)



Exports

(in metric tons)

	2008	2009	2010	2011	2012	2013	2014	2015
Low-density Polyethylene	188,581	302,885	241,688	175,753	151,859	161,284	135,467	153,070
High-density Polyethylene	139,077	275,157	237,597	179,830	197,653	156,403	131,850	133,739
Polypropylene	387,845	486,274	453,833	386,191	302,133	289,046	275,351	309,154
Polystyrene	84,054	63,740	55,918	52,147	51,893	53,218	45,369	35,019
ABS Resin	191,738	124,800	157,925	135,182	112,922	97,466	97,986	90,886
Polyvinyl Chloride	594,486	728,418	682,772	454,468	268,663	367,881	344,250	597,476
Styrene Monomer	1,132,468	1,593,313	1,398,480	1,275,641	1,003,246	1,165,267	1,062,799	1,001,137
Vinyl Chloride Monomer	898,844	1,270,632	1,110,526	925,823	471,064	742,137	719,736	829,817
Ethylene Glycol	44,420	175,586	75,177	147,304	216,880	274,749	246,967	338,011
Acetic Acid	45,973	35,423	28,235	32,093	23,230	29,978	41,724	27,876
Ethyl Acetate	9,637	14,560	1,600	879	2,076	25	27	47
Acrylonitrile	116,977	262,168	212,336	288,087	128,966	100,741	51,850	4,928
Acetone	74,316	124,030	90,771	52,672	75,404	48,053	22,257	27,617
Methylethyl Ketone	112,869	133,604	129,590	69,406	70,832	113,664	100,341	136,398
Octanol	71,718	118,621	121,280	95,975	98,752	89,154	61,072	71,583
Ethylene	196,496	587,897	459,333	542,981	596,637	875,393	799,406	929,463
Propylene	510,126	832,568	743,002	710,177	822,843	1,456,792	1,333,653	1,326,277
Benzene	411,619	224,687	325,400	240,059	428,804	766,543	673,556	617,786
Toluene	232,843	396,878	309,341	187,051	133,670	364,820	563,093	751,196
Mixed Xylene	293,581	343,937	373,529	312,288	210,984	346,412	493,484	715,363
Para-xylene	2,284,503	2,535,043	2,332,603	2,551,234	3,038,950	3,318,071	2,400,889	2,737,553
Phenol	153,260	255,978	216,820	188,791	194,711	190,329	86,508	78,802
Terephthalic Acid	171,359	296,478	331,583	156,260	108,700	119,087	99,938	65,508
Dimethyl Terephthalate	2,091	7,936	10,721	15,255	7,848	15,146	12,285	9,041
Phthalic Anhydride	28,742	39,744	41,584	34,920	47,604	54,267	46,028	48,878
Caprolactam	195,213	192,162	239,295	220,657	211,037	177,654	146,208	131,138
Synthetic Rubbers	574,357	625,474	753,439	699,712	749,019	843,007	812,741	793,915

Imports

(in metric tons)

	2008	2009	2010	2011	2012	2013	2014	2015
Low-density Polyethylene	261,037	177,237	245,565	339,338	330,130	315,391	352,744	266,695
High-density Polyethylene	27,467	30,423	47,825	97,909	129,180	121,823	162,127	129,304
Polypropylene	194,211	115,225	145,892	197,213	308,229	250,742	267,455	198,255
Polystyrene	7,193	12,938	20,770	33,686	52,524	26,339	20,409	15,338
Polyvinyl Chloride	8,872	10,760	5,659	30,707	20,225	7,540	6,528	5,050
Styrene Monomer	2,995	2,815	54	219	0	30	49	66
Ethylene Dichloride	43,461	232,873	215,895	140,182	127,299	258,019	229,233	283,853
Ethylene Glycol	19,809	2,083	9,277	47,139	26,080	5,410	6,743	3,909
Acrylonitrile	37,428	4,762	6,754	6,753	4,028	8,464	9,280	18,706
Propylene Glycol	19,690	21,442	18,517	14,806	13,129	17,135	20,479	23,863
Acetone	31,953	8,253	6,647	22,437	9,628	18,377	31,633	14,302
Butanol	3,374	4,153	1,030	10,959	4,684	2,468	1,061	5,393
Benzene	162,254	271,461	90,029	133,501	149,240	173,036	178,203	358,886
Toluene	76,941	105,084	32,422	67,873	58,599	25,577	24,763	15,627
Mixed Xylene*	0	0	1	40,543	56,036	53,515	0	1
Para-xylene	-	-	9,925	14,844	-	-	48,598	63,881
Phenol	101,955	25,960	42,282	32,444	16,933	13,655	38,009	34,871
Ethylene	142,445	41,756	60,344	41,942	26,872	3,204	11,803	6,902
Propylene	85,462	21,067	21,508	5,119	43,441	16	10,363	12,267
Butadiene	55,263	9,432	30,212	22,667	65,482	37,700	32,146	39,253
Synthetic Rubbers	211,256	138,369	172,289	200,925	180,548	157,902	168,466	166,057

* Including Crude Xylene

Plastics Production

(in 1,000 metric tons)

	2008	2009	2010	2011	2012	2013	2014	2015	
Low-density Polyethylene	1,818	1,605	1,704	1,664	1,477	1,539	1,599	1,520	
EVA	218	215	244	235	200	184	215	193	
High-density Polyethylene	1,052	986	1,015	935	928	908	825	897	
Polypropylene	2,869	2,411	2,709	2,448	2,390	2,248	2,349	2,501	
Polystyrene	GP • HI	829	690	698	654	589	633	616	638
	FS	143	114	124	125	112	111	115	115
	AS	126	92	109	78	85	90	75	81
	ABS	495	348	454	418	382	356	356	376
Polyvinyl Chloride	1,797	1,668	1,749	1,529	1,331	1,487	1,477	1,643	
Polyvinyl Alcohol	215	192	241	233	207	233	225	227	
Vinyliden Chloride Resin	74	68	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Methacrylate Resin	219	166	216	203	172	163	150	153	
Polyamide Resin	277	189	230	234	223	225	228	217	
Others	1,490	1,072	1,517	1,334	1,230	1,246	1,227	1,193	
Thermoplastic Resin Total	11,696	9,884	11,010	10,089	9,326	9,423	9,457	9,754	
Phenol Resin	288	227	284	276	275	287	284	278	
Urea Resin	94	73	68	71	70	70	65	64	
Melamine Resin	111	90	91	77	75	81	81	79	
Unsaturated Polyester Resin	149	117	120	115	114	113	103	97	
Urethane Foam	222	163	180	173	193	193	198	174	
Others	296	214	262	231	216	202	185	175	
Thermosetting Resin Total	1,159	884	1,005	943	943	946	916	867	
Others	186	147	228	179	272	210	234	214	
Grand Total	12,967	10,915	12,242	11,212	10,540	10,579	10,607	10,834	

Major Plastics Domestic Demand Breakdowns (2015)

(in 1,000 metric tons)

Market	L. D. Polyethylene		H. D. Polyethylene		Polypropylene	
	Volume	Percentage	Volume	Percentage	Volume	Percentage
Film	659	49.4	191	25.4	485	20.8
Laminating	252	18.9				
Oriented Tape (Flat Yarn)			23	3.1	21	0.9
Injection Molding	80	6.0	101	13.4	1,284	54.9
Blow Molding	42	3.1	173	23.0	15	0.6
Fiber			41	5.5	113	4.8
Pipe	17	1.3	62	8.2		
Wire and Cable	57	4.3				
Others	228	17.1	161	21.4	418	17.9
Domestic Total	1,335	100.0	752	100.0	2,337	100.0

Market	Polystyrene (GP • HI)	
	Volume	Percentage
Electric and Industrial Equipment	89	14.0
Packaging	291	45.8
Miscellaneous, Others	82	12.9
FS	174	27.4
Domestic Total	636	100.0

Market	Polyvinyl Chloride	
	Volume	Percentage
Rigid PVC	549	54.5
Plasticized PVC	240	23.8
Wire and Others	219	21.7
Domestic Total	1,008	100.0

Production of Spun Yarns

(in metric tons)

	2008	2009	2010	2011	2012	2013	2014	2015
Nylon Yarn	765	512	534	n.a.	n.a.	n.a.	n.a.	n.a.
Vinylon Yarn	5,453	3,918	4,459	n.a.	n.a.	n.a.	n.a.	n.a.
Acrylic Yarn	14,088	10,297	10,847	10,643	9,538	7,995	7,790	8,180
Polyester Yarn	31,382	19,372	18,289	18,161	17,498	15,515	15,240	13,277
Others	1,011	800	795	6,604	5,721	5,842	6,375	5,879
Synthetic Fiber Yarn Total	52,699	34,899	34,924	35,408	32,757	29,352	29,405	27,336
Natural Yarn Total	88,849	62,376	62,112	61,189	55,267	53,453	52,325	51,166
Grand Total	141,548	97,275	97,036	96,597	88,024	82,805	81,730	78,502

Production of Synthetic Rubbers

(in 1,000 metric tons)

	2008	2009	2010	2011	2012	2013	2014	2015
Styrene-butadiene Rubber	706	527	670	665	652	685	640	649
Butadiene Rubber	290	254	294	275	290	303	286	311
Nitrile-butadiene Rubber	109	86	115	109	107	115	101	109
Chloroprene Rubber	115	89	130	135	122	126	129	124
Ethylene Propylene Rubber	224	149	193	197	218	202	235	222
Others	207	195	193	230	238	242	209	253
Total	1,651	1,300	1,595	1,611	1,627	1,673	1,599	1,668

The Members of the Association (As of May, 2016)

Company	Address	Phone	URL
Sumitomo Chemical Co., Ltd.	Tokyo Sumitomo Twin Bldg (East), 2-27-1, Shinkawa, Chuo-ku, Tokyo 104-8260, Japan	+81-3-5543-5500	http://www.sumitomo-chem.co.jp/english/
JX Nippon Oil & Energy Corporation	1-2 Otemachi 1-chome, Chiyoda-ku, Tokyo 100-8162, Japan	+81-3-6257-7292	http://www.no.ejx-group.co.jp/english/
Maruzen Petrochemical Co., Ltd.	1-1, Irifune 2-chome, Chuo-ku, Tokyo 104-8502, Japan	+81-3-3552-9361	http://www.chemiway.co.jp/en/index.html
Mitsui Chemicals, Inc.	Shiodome City Center, 1-5-2, Higashi-shimbashi, Minato-ku, Tokyo 105-7117, Japan	+81-3-6253-2225	http://www.mitsuichem.com/index.htm
JSR Corporation	Shiodome Sumitomo Bldg., 1-9-2, Higashi-Shinbashi, Minato-ku, Tokyo 105-8640, Japan	+81-3-6218-3500	http://www.jsr.co.jp/jsr_e/
Nippon Shokubai Co., Ltd.	Kogin Bldg., 4-1-1, Koraihashi, Chuo-ku, Osaka 541-0043, Japan	+81-6-6223-9111	http://www.shokubai.co.jp/en/
	Hibiya Dai Bldg., 1-2-2, Uchisaiwai-cho, Chiyoda-ku, Tokyo 100-0011, Japan	+81-3-3506-7475	
ZEON CORPORATION	Shin Marunouchi Center Bldg., 1-6-2, Marunouchi, Chiyoda-ku, Tokyo 100-8246, Japan	+81-3-3216-1772	http://www.zeon.co.jp/index_e.html
Mitsubishi Chemical Corporation	1-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-8251, Japan	+81-3-6748-7300	http://www.m-kagaku.co.jp/index_en.htm
Tonen Chemical Corporation	W Bldg., 1-8-15, Konan, Minato-ku, Tokyo 108-8005, Japan	+81-3-5495-6000	http://www.tonengeneral.co.jp/english/index.html
JNC Corporation	Shin Otemachi Bldg., 2-2-1 Otemachi, Chiyoda-ku, Tokyo 100-8105, Japan	+81-3-3243-6760	http://www.jnc-corp.co.jp/english/index.html

Company	Address	Phone	URL
Showa Denko K.K.	1-13-9, Shiba Daimon, Minato-ku, Tokyo 105-8518, Japan	+81-3-5470-3111	http://www.sdk.co.jp/english/
Mitsubishi Rayon Co., Ltd.	1-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-8253, Japan	+81-3-6748-7500	http://www.mrc.co.jp/english/index.html
Du Pont-Mitsui Polychemicals Co., Ltd.	Shiodome City Center, 1-5-2, Higashi-shimbashi, Minato-ku, Tokyo 105-7122, Japan	+81-3-6253-4000	http://www.mdp.jp
Idemitsu Kosan Co., Ltd.	3-1-1, Marunouchi, Chiyoda-ku, Tokyo 100-8321, Japan	+81-3-3213-3115	http://www.idemitsu.co.jp
	28Fl., JP Tower, 7-2, Marunouchi 2-Chome, Chiyoda-ku, Tokyo 100-7028, Japan	+81-3-3213-3605	
Asahi Kasei Corporation	1-105 Kanda Jinbocho, Chiyoda-ku, Tokyo 101-8101, Japan	+81-3-3296-3000	http://www.asahi-kasei.co.jp/asahi/en/index.html
Daicel Corporation	Grand Front Osaka Tower-B, 3-1, Ofuka-cho, Kita-ku, Osaka, 530-0011, Japan	+81-6-7639-7171	http://www.daicel.com/en/
	JR Shinagawa East Bldg., 2-18-1, Konan, Minato-ku, Tokyo 108-8230, Japan	+81-3-6711-8111	
Denka Co., Ltd.	Nihonbashi Mitsui Tower, 2-1-1, Nihonbashi-Muromachi, Chuo-ku, Tokyo 103-8338, Japan	+81-3-5290-5055	http://www.denka.co.jp/eng/top.htm
Ube Industries, Ltd.	Seavans North Bldg., 1-2-1, Shibaura, Minato-ku, Tokyo 105-8449, Japan	+81-3-5419-6112	http://www.ube-ind.co.jp/english/index.htm
	1978-96, Kogushi, Ube-shi, Yamaguchi 755-8633, Japan	+81-836-31-2111	
Tosoh Corporation	Shiba-koen First Bldg., 3-8-2, Shiba, Minato-ku, Tokyo 105-8623, Japan	+81-3-5427-5100	http://www.tosoh.co.jp/
NIPPON STEEL & SUMIKIN CHEMICAL CO., LTD.	Akihabara UDX 13F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan	+81-3-5207-7600	http://www.nsc.nssmc.com

Company	Address	Phone	URL
Tokuyama Corporation	Front Place Akihabara, 1-7-5, Sotokanda, Chiyoda-ku, Tokyo 101-8618, Japan	+81-3-5207-2500	http://www.tokuyama.co.jp/eng/index.html
	1-1, Mikage-cho, Shunan city, Yamaguchi 745-8648, Japan	+81-834-34-2000	
Kuraray Co., Ltd.	Ote Center Bldg., 1-1-3, Otemachi, Chiyoda-ku, Tokyo 100-8115, Japan	+81-3-6701-1000	http://www.kuraray.co.jp/en/
	Umeda Hankyu Building Office Tower, 8-1, Kakudacho, Kita-ku, Osaka 530-8611, Japan	+81-6-7635-1000	
Mitsubishi Gas Chemical Co., Inc.	Mitsubishi Bldg., 2-5-2, Marunouchi, Chiyoda-ku, Tokyo 100-8324, Japan	+81-3-3283-5000	http://www.mgc.co.jp/eng/index.html
KH Neochem Co., Ltd	Tsukamoto Bldg.4F, 1-6-5, Nihonbashi-Honcho, Chuo-ku, Tokyo 103-0023, Japan	+81-3-3501-3550	http://www.khneochem.co.jp/en/
SunAllomer Ltd.	Tennoz Central Tower 27F, 2-2-24, Higashi-shinagawa, Shinagawa-ku, Tokyo 140-0002, Japan	+81-3-5781-5608	http://www.sunallomer.co.jp/eng/index2.html
Japan Polyethylene Corporation	Palace Bldg. 1-1-1, Marunouchi, Chiyoda-ku, Tokyo 100-8251, Japan	+81-3-6748-7189	http://www.pochem.co.jp/jpe/index.html
Japan Polypropylene Corporation	Palace Bldg. 1-1-1, Marunouchi, Chiyoda-ku, Tokyo 100-8251, Japan	+81-3-6748-7190	http://www.pochem.co.jp/jpp/index2.html

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Prime Polymer Co., Ltd.	Shiodome City Center, 1-5-2, Higashi-Shimbashi, Minato-ku, Tokyo 105-7122, Japan	+81-3-6253-4500	http://www.primepolymer.co.jp/english/index.html
Taiyo Oil Co., Ltd.	Hibiya kokusai Bldg. 15F, 2-2-3, Uchisaiwai-cho, Chiyoda-ku, Tokyo 100-0011, Japan	+81-3-3502-1601	http://www.taiyooil.net/english/

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