Polyvinyl Chloride (PVC)

SECTOR UPDATE

August, 2018

Polyvinyl chloride (PVC) is the third-most commonly produced polymer, after polyethylene and polypropylene. PVC is one the most widely used plastics and is produced by polymerization of the monomer vinyl chloride. In terms of end-users, the PVC market is also segmented on the basis of automotive, electrical, construction, packaging and other industries.

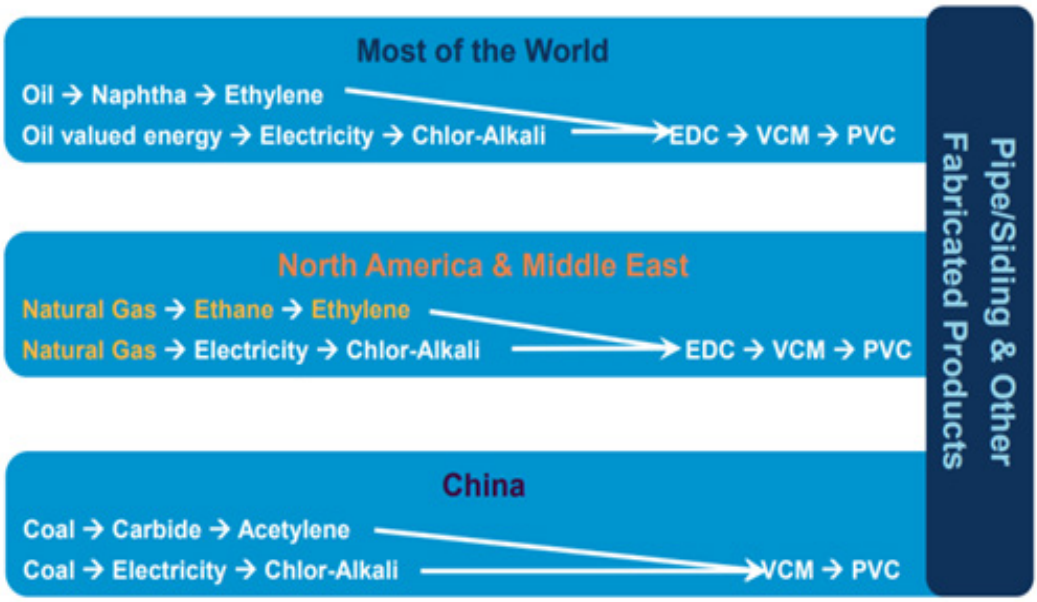
PVC Applications

PVC is used in varying industries which has been elaborated below:

1. PVC is largely utilized in the construction industry due to its characteristics of being strong, light weight, durable, and versatile. Examples include window and door profiles, pipes and fittings, wiring and cables, roofing and ceiling system membranes, flowing and wall coverings.
2. **Healthcare Industry-** Blister packaging of pharmaceutical products, blood and plasma transfusion sets, catheters, blood bags, surgical gloves, and protective sheeting etc.
3. **Electronics Industry-** Cable insulation.
4. **Automotive Industry-** Instrument panels and associated moldings, interior door panels and pockets, sun visors, seat coverings, headlining, seals, mud flaps, underbody coating, floor coverings, exterior side molding and protective strips, and anti-stone damage protection.
5. **Sports Industry**- Used in construction of sports arena and in clothes, shoes and equipment used by athletes.

Production Process

Around the globe, PVC is manufactured in two ways- either using ethylene or acetylene (carbide based). Due to environmental concerns, the latter has been disregarded by most countries with a number of shut down of such plants in China over the past three to four years.



For PVC manufactured using ethylene, the main raw materials are derived from salt and oil. The electrolysis of brine (salt water) produces chlorine which is utilized in the PVC manufacturing process as mentioned below:

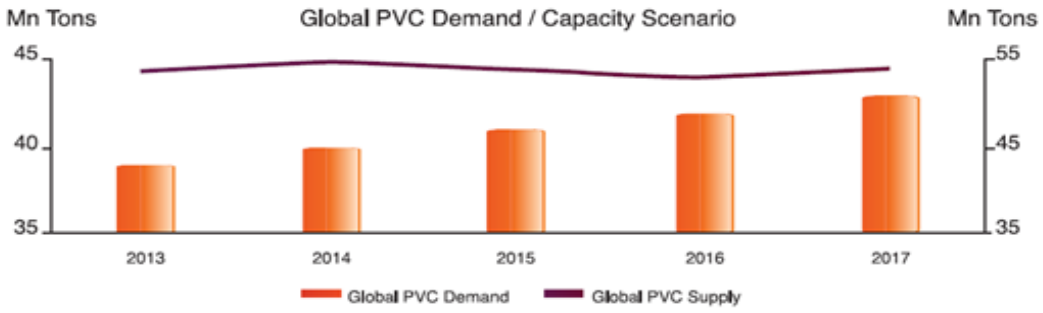
Ethylene is imported from UAE, Italy, USA and Singapore which is reacted with Chlorine to form **Ethylene Dichloride (EDC).**

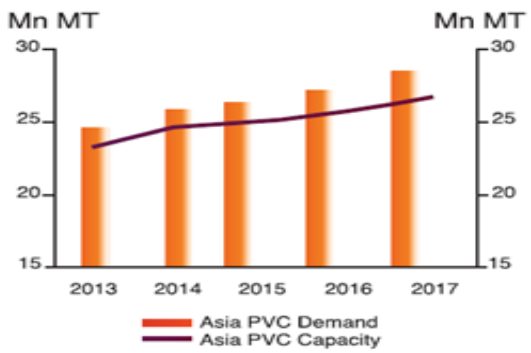
EDC is further purified and decomposed by heating in a high temperature furnace or reactor to produce **Vinyl Chloride Monomer (VCM) and Hydrochloric Acid (HCL).**

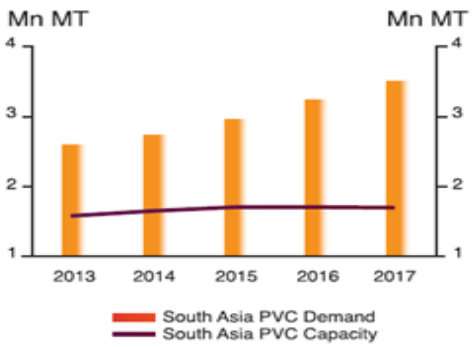
PVC is made through a process called polymerisation. This reaction opens the double bonds in the VCM allowing neighboring molecules to join together creating long chain molecules. Initial form of PVC is water based slurry, which is further dried and converted into granules of PVC resin and sold in the local and international market.

Global PVC Sector Dynamics

International PVC market has remained strong in 2017 posting a growth of 4.1% as compared to corresponding period last year. Growth has been driven by the building & construction, automobile and healthcare sector. Historically, the global PVC market has been characterized by a sizable over supply situation. While oversupply situation persists, demand supply dynamics have improved over the past few years owing to rising demand in Asia. Total demand of the world stood at around 43m MT in 2017 (2016: 42m MT), around two-third of which emanates from Asia. A supply deficit situation prevails in the South Asian region with demand clocking in at 3.5m MT vis-à-vis capacity of 1.8m MT making it a net importer of PVC. Demand from Asia is considered buoyant on the back of ongoing infrastructure developments, growing population, low per capita consumption and booming housing sector. Major challenges to growth in PVC demand may include increasing competition from steel and concrete pipes and prohibited use of PVC in the construction of green building.

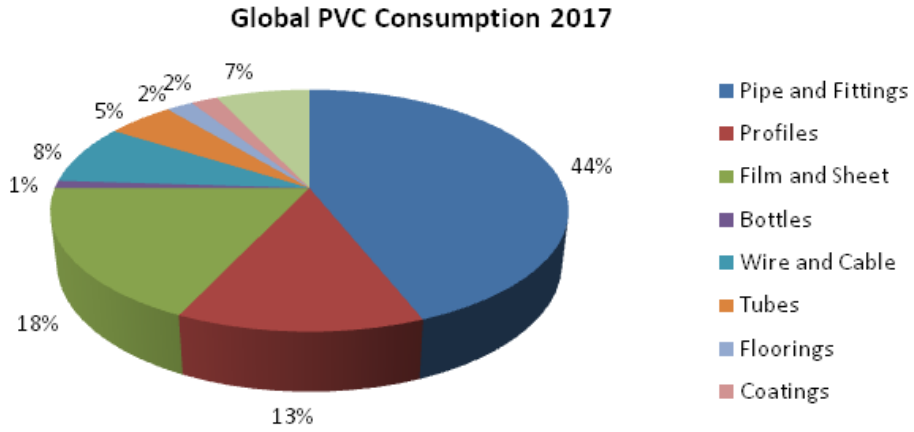






Source: Annual Report- Engro Polymer and Chemicals Limited

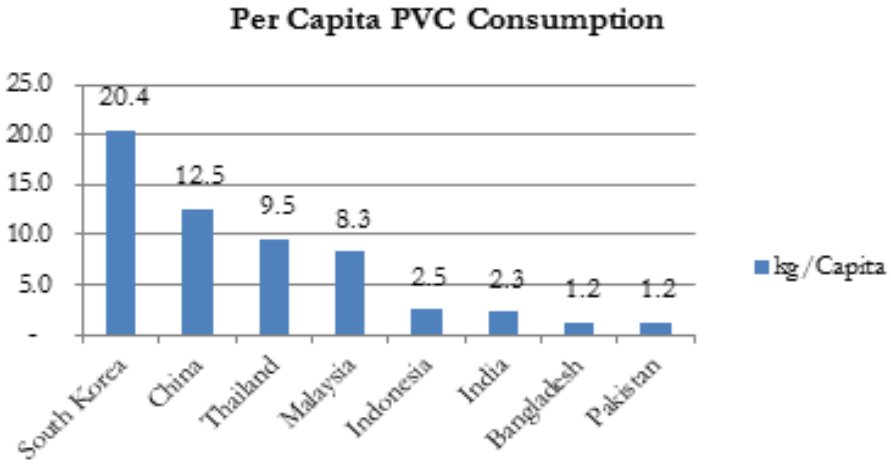
With variation in production processes and accessibility to raw materials, international PVC prices depict variability across different regions. During 2017, international PVC South Asian Prices hovered in the range of $900-$1,020/MT (2016: $720-$970/MT) which compare favorably vis-à-vis preceding year. Prices of the primary raw material for PVC production- Ethylene also witnessed significant volatility in 2017 averaging around $1,092/MT (2016: $1,039/MT). Given that limited international capacities of PVC are projected to come online relative to ethylene capacities which is expected to bode well for pricing dynamics of PVC manufacturers. Nevertheless, cyclicality in business has historically remained high due to volatility in primary raw material prices translating into moderate to high business risk.

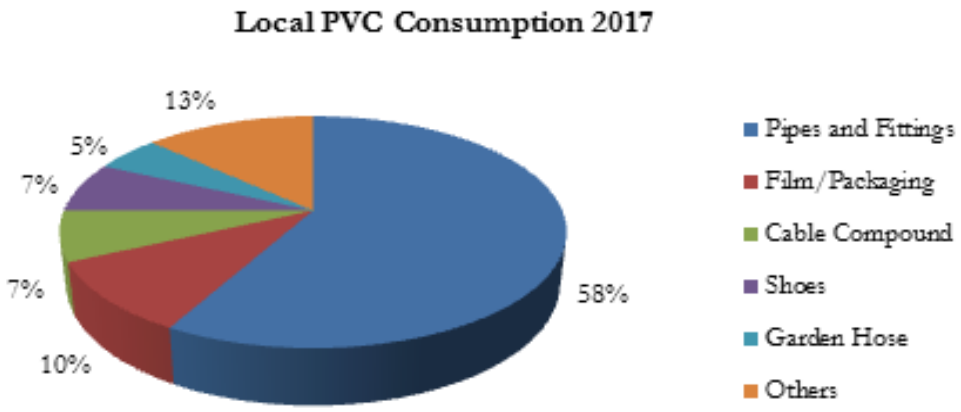


Consumption pattern of PVC products vary from region to region. Globally, around 45% of the total PVC demand emanates from the pipe fittings segment with the remaining share contributed by plastic bottles and packaging segments. However, in South Asia conventional usage by pipe fittings segment is higher at around 72%. Other industry where PVC is used includes packaging, cables and shoes. With development in new diversified applications of PVC, demand outlook in the South Asian region is projected to remain strong.

PVC Sector Dynamics- Pakistan

Engro Polymer and Chemicals Limited (EPCL) is the sole manufacturer of PVC in Pakistan. Demand growth of PVC has remained strong over the last five years and increased at a CAGR of 11%. With increased infrastructure development & construction activities and higher usage in new applications, domestic demand growth of PVC has remained robust during 2016 and 2017. Pipes and fittings constitute the major portion of PVC demand at over 50% followed by film/ packaging, cable compound and shoes. Growth in demand has also been supported by new applications including foam board, onduline roofing, interlock indoor tiles, spiro pipe and blister packs. Currently lower per capita consumption of PVC against regional peers (Pakistan: 1.2kg; India: 2.3kg; Indonesia: 2.5kg) also bodes well in terms of future demand growth. While JCR-VIS expects demand growth over the rating horizon to slow down from levels witnessed in 2017 due to anticipated decline in GDP growth, the same is expected to continue to grow at higher than country's GDP growth rate. Other business risk factors include increase in gas prices which may adversely impact margins; however impact may vary depending on rate at which GIDC provisions is being undertaken and quantum of increase in gas prices.





PVC demand witnessed a year on year growth of 28% in 2017 to 279,000MT. Around two-third of the demand is currently being catered by EPCL with remaining being met through imports. Most of the imports are currently being undertaken by large manufacturers. Market position of EPCL is expected to be strengthened post its expansion where the company aims to recoup lost market share due to capacity constraints. Post capacity expansion, risk of over supply remains limited with demand (even assuming growth at a significantly slower pace than historical average) projected to surpass the increased capacity by 2021 with installed capacity of EPCL projected at 295,000MT. Supply demand dynamics, availability of export markets and imposition of anti-dumping duty is expected to result in strong pricing power for EPCL.

Domestic PVC Demand (MT)	2012	2013	2014	2015	2016	2017
EPCL	132,000	139,000	124,000	149,000	168,000	186,000
Imports	34,000	31,000	36,000	33,000	50,000	93,000
Total	**166,000**	**170,000**	**160,000**	**182,000**	**218,000**	**279,000**
Demand Growth		2%	-6%	14%	20%	28%

Duty Structure

Pakistan: EPCL had filed a case with the National Tariff Commission (NTC) for the imposition of anti-dumping duties (ADD) on cheaper influx of imports of PVC. To shield the domestic industry from dumping, NTC has imposed a definitive ADD in the range of 3.44%-16.68% on PVC imports from China, Korea, Thailand and Chinese Taipei for a period of five years effective from June'2017.

Besides ADD, importers have to incur a duty cost of 18% (Custom, Regulatory, Additional Custom Duty, and Incidental Duty) which provides a level playing field to the local manufacturer in the domestic market. Duty structure applicable on PVC imports is as follows:

Duty Structure for Importers	2018 (Post Budget)
Custom Duty	11%
Additional Custom Duty	2%
Regulatory Duty	2%
Incidental Duty	3%
Anti-Dumping Duty (ADD)	3.44% to 16.68%
Total	**18% (Plus 3.44% to 16.68%)**

Country	Anti-Dumping Rates
China	3.44% - 20.47%
Korea	4.00% - 14.97%
Thailand	13.98%
Chinese Taipei	16.68%

Other Countries

Duty structure on imports of PVC chemical in other countries is as follows:

Country	Duties	Antidumping Duties %
India	5-7.5%	1%-21%
China	0-6.5%	7%-84%
Malaysia	0-10%	
Indonesia	0-10%	
Vietnam	5%	
Philippines	0-10%	
Thailand	0-5%	

Financial Profile

Financial profile of EPCL has depicted significant improvement on a timeline basis due to improvement in core delta, enhanced productivity and operational efficiencies. Financial profile draws support from strong liquidity indicators as evident from healthy cash flows in relation to outstanding obligations and favorable working capital cycle. Capitalization indicators are adequate with gearing levels having declined significantly over the last 3 years. Given growing cash flows and projected dividend payout, healthy cash accumulation is expected over the rating horizon. Despite planned expansion, leverage indicators are projected to improve given the funding mix for expansion projects and healthy internal capital generation.

Financial Indicators and Key Ratios of EPCL (amounts in PKR millions)				
BALANCE SHEET	**2015**	**2016**	**2017**	**1Q18***
Fixed Assets	16,249	16,008	16,011	16,094
Long term Investments	50	50	50	50
Stock-in-Trade	2,941	3,024	3,681	3,879
Trade Debts	437	456	505	392
Cash & Bank Balances	155	372	680	310
Total Assets	24,242	24,461	24,315	26,588
Trade and Other Payables	6,301	6,722	4,513	4,806
Long Term Debt	8,327	9,167	8,750	8,750
Short Term Debt	3,026	415	-	-
Total Debt	11,353	9,582	8,750	8,750
Total Equity	5,303	5,968	7,720	8,637
INCOME STATEMENT				
Net Sales	22,264	22,854	27,731	8,687
Gross Profit	2,773	3,935	6,065	2,500
Operating Profit/ (Loss)	778	2,107	3,930	2,189
Profit Before Tax/ (Loss)	(366)	1,180	3,109	2,032
Profit After Tax/ (Loss)	(649)	655	2,049	1,447
RATIO ANALYSIS				
Gross Margin (%)	12.5%	17.2%	21.9%	28.8%
Net Margin	-2.9%	2.9%	7.4%	16.7%
Net Working Capital	(6,781)	(2,050)	218	1,341
Trade debts/Sales	2%	2%	2%	1%
FFO	66	2,813	5,212	2,424
FFO to Total Debt (%)	1%	29%	60%	111%
FFO to Long Term Debt (%)	1%	31%	60%	111%
Current Ratio (x)	0.5	0.8	1.0	1.2
Debt Servicing Coverage Ratio (x)	NA	0.9	5.7	18.9
Gearing (x)	2.14	1.61	1.13	1.01
ROAA (%)	-3%	3%	8%	23%
ROAE (%)	-12%	12%	30%	71%

** Ratios Annualized*

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