CHEMICAL PROFILE: POLYCARBORATE

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USES

Polycarbonate (PC) resins are tough thermoplastics with major uses in electronic/electric components/parts (22%), glazing/sheet (18%), optical media (15%), car industries (15%), appliances (12%), packaging (4%), pharmaceutical/medical (3%) and recreation/toys (3%). It is available in different grades. PC is also used as alloys with acrylonitrile-butadiene-styrene (ABS), poly methyl methacrylate (PMM), polybutylene terephthalate (PBT) and polyethylene terephthalate (PET).

SUPPLY/DEMAND

Global capacity stood at just under 4.8m tons/year in 2013, with 1.9m tons/year in Asia Pacific (excluding Japan), 1.23m tons/year in Western Europe, 0.88 tons/year in the US and 0.42 tons/year in Japan. Asia Pacific is the largest consumer at about 2.1m tons/year, followed by Western Europe at 0.53m tons/year, the US at 0.4m tons/year, Asia/Middle East at 0.26m tons/year and Japan at 0.19m tons/year. Global demand in 2013 was nearly 3.86m tons/year. The capacity in China was 0.48m tons/year at the end of 2013 and an additional 0.5m tons will come on stream in 2014/2015. The global market is oversupplied, pressuring prices and utilization rates and negatively impacting European and the US exports.

PRICING

First quarter contract prices for general-purpose molding grade in the US, Europe and China were between $3.4-3.8/kg, €2.4-2.7/kg and ¥15.0-17.0/kg, respectively. Producers have been heavily squeezed by higher upstream costs. Despite prices are way behind reinvestment economics, global growth is seen at 6.3%/year going forward, and more than 8%/year in China.

TECHNOLOGY

The prevalent process to make PC is still based on interfacial technology where phosgene reacts with phenol to diphenyl carbonate (DPC), which is reacted with BPA. Environmental and cost issues have forced producers to seek non-phosgene routes. The commercial approach is the melt process, as the two stage polymerization of diphenyl carbonate and bisphenol A takes place without solvent. The melt process is practiced by Bayer (Antwerp, 80k tons/year), Bayer (Shanghai), Chi Mei, Kazanorgsintz, Mitsubishi, Samsung, Saudi Kayan and Sinopec-Mitsubishi.

OUTLOOK

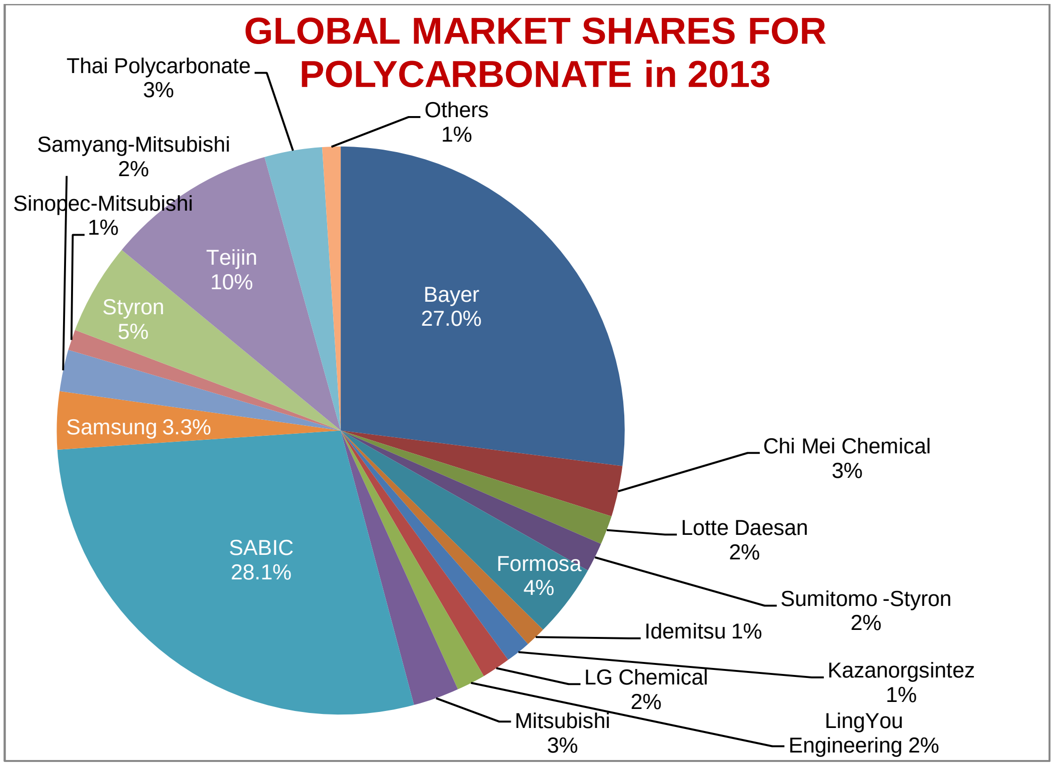
Growth in optical media will continue to fall at the rate of 4%/year as it is superseded by other data storage options. However, sharp growth in demand from blu-ray players, personal computers and glazing will alleviate the rate of decline. Steady growth will continue in sectors such as alloys, which are used in automotive and electronic products. Higher-than-average growth is predicted for new applications, such as solar modules and light emitting diodes.

GLOBAL POLYCARBONATE CAPACITY, 1000 TONS/YEAR

Company	Location	Cap
Bayer MaterialScience	Antwerp, Belgium	240.00
	Baytown, TX, US	260.00
	Leverkusen, Germany	330.00
	Map Ta Phut, Thailand	270.00
	Shanghai, China *	200.00
Chi Mei Chemical	Yunlin, Taiwan	140.00
	Zhenjiang, PRC**	75.00
Formosa - Idemitsu	Mailiao, Taiwan	200.00
Idemitsu	Tokuyama, Chiba, Japan	50.00
Kazanorgsintez	Kazan, Russia	65.00
LG Chem	Yeosu, SKO	75.00
LingYou Engineering-Plastic	Shanghai, Caojing, PRC	80.00
Lotte Daesan Petrochemical	Yeosu, South Korea	80.00
Mitsubishi EP	Kawasaki, Japan	120.00
National Petrochemical	Bandar Imam, Iran	25.00
Policarbonatos do Brasil	Camacari, Brazil	18.00
SABIC	Bergen op Zoom, Netherlands	260.00
	Burkville, AL, USA	265.00
	Cartagena, Spain	260.00
	Ichihara, Chiba, Japan	45.00
	Mount Vernon, IN, USA	245.00
SABIC-Sinopec	Tianjin, China**	260.00
SABIC (Saudi Kayan)	Al Jubail, Saudi Arabia	260.00
Samsung	Yeosu, South Korea	160.00
Samyang-Mitsubishi EP	Chonju, South Korea	120.00
Shandong Luhuayi	Dongying, Shandong, China**	60.00
Sinopec-Mitsubishi EP	Yanshan, Beijing, PRC	60.00
Styron	Freeport, TX, USA	105.00
	Stade, Germany	145.00
Styron-Sumitomo	Niihama, Ehime, Japan	75.00
Teijin	Jiaxing, PRC	140.00
	Matsuyama, Japan	130.00
	Palau, Jurong Island, Singapore	210.00
Thai Polycarbonate	Map Ta Phut, Thailand	160.00

*Expansion to 300 in 2015

** New for 2014/2015



For more information about market and site-specific/technology-specific investment and production cost data for polycarbonates and some 1000 more chemicals, please send your inquiries to trantech@chemplan.biz.