



KUHLKE PLASTICS REVIEW

“World Volume Polymer Markets in Perspective”

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GENERAL

There is a lot happening in the volume plastics markets since our last Newsletter. The major even is probably another mega-merger. This time, it is Phillips and Chevron getting together with their chemical assets. There is also a lot to report on new plant construction and plant closures.

Phillips and Chevron have agreed to form a new petrochemical company, still unnamed, to be owned 50% by each company. The new company will be headquartered in Houston and will include most of their petrochemical assets. It will borrow \$1.6 billion in order to pay each of the parents \$800 million in cash. The major assets of the new company will be as follows:

PHILLIPS-CHEVRON JOINT VENTURE

Thousand tons per year

PREVIOUS OWNER	LOCATION	ETHYLENE CAPACITY	LDPE CAP.	LLDPE CAP.	HDPE CAP.	PS CAP.	PP CAP.
Chevron	Cedar Bayou	680	281	175	175		
Chevron	Orange		136		552		
Chevron	Port Arthur	773					
Chevron	Marietta, OH					364	
Phillips	Sweeney	1117					
Sweeney Olefins	Sweeney	862					
Phillips	Pasadena			182	906(3)		
Phillips Sumika	Pasadena						341
Phillips	Alberta, Canada				(1)		
Phillips Solvay	Pasadena				(2)		
Qatar-Phillips	Qatar	(4)					
Q-Chem	Qatar				(5)		
CNPC	Lanzhou, China	(6)			(6)		(8)
Shanghai Golden	Shanghai, China				100(7)		
Phillips Sing.	Singapore				395(9)		

- (1) Looking at building a 450K t/y plant to come online about 2004
- (2) Planning to build a 318K t/y JV plant.
- (3) Looking at adding 272K t/y of capacity
- (4) A 500K t/y steamcracker to come online in 2002. Phillips to own 49% of this JV.
- (5) A 450K t/y HDPE plant in planning stage. To be owned 49% by Phillips.
- (6) An LDPE and HDPE plant in planning stage.
- (7) Phillips (40%) JV partner with Shanghai Petrochemical(60%).
- (8) A PP plant proposed
- (9) Phillips owns 50%

In addition Phillips will contribute its K-Resin business to the joint venture with plants at Pasadena and in South Korea. At Borger, TX, Phillips also produces PPS. Phillips will also contribute its cyclohexane business and para-xylene business, its mercaptans plant in Belgium and specialty chemicals plant at Borger TX.

Chevron also has Alpha olefins at Cedar Bayou, and Styrene monomer at St James, La., but will not contribute its fuel and lubricant additives business. In addition, Chevron will contribute its aromatics assets in Pascagoula, MS and Saudi Arabia.

The main sticking point to this merger may be the HDPE pipe market. Phillips owns Driscopipe and Chevron owns Plexco Pipe. Between the two companies they have more than half of the HDPE pressure pipe market with combined sales of about \$350 million. However, HDPE pipe is only a small segment of the total pipe market and competes with PVC pipe, PP pipe, steel, copper, concrete and ductile iron as well as some other specialty materials. The total plastic pipe market in 1998 was about 3.4 million tons of which HDPE was about 10 to 11%.

The merger of Totalfina and Elf Atochem is proceeding. Effective 3/31/00, the name of the merged company will become Atofina. When the merger becomes effective, the group will re-look at its participation in the polypropylene and polystyrene businesses to see how it should be structured with particular attention as to how the Appryl joint venture with BP/Amoco fits into the total picture. In mid-February, it appears Appryl will be dissolved, but details as to how this will happen are not available. Headquarters of Atofina will be in Paris.

In 4Q99 Repsol purchased YPF in Argentina. This was primarily a petroleum acquisition. The resulting new company will be called "Repsol-YPF". At the time of the acquisition, YPF owned 50% of Petroken that has a capacity to produce 170K t/y of PP. Repsol currently produces PP in Spain either directly or in a JV with Targor. YPF also owned 28% of the Petroquímica Bahía Blanca steamcracker. In addition, YPF was a joint venture partner with Dow in Polisar, which produces polyethylene in Argentina. Repsol also produces polyethylene in Spain and has a joint venture with ENIP to produce HDPE in Algeria. The acquisition of YPF will give Repsol a foothold in Latin America for the production and marketing of polyolefins.

In South Korea, the proposed big merger between Mitsui, Sumitomo, Hyundai, and Samsung to restructure the Daesan petrochemical complexes has fallen through. It will be interesting to see what the next step will be.

There also appear to be problems on the horizon in the restructuring of the large debts of Thai Petrochemical and Chandra Asri. This will also bear watching.

The new polyolefins JV between Royal Dutch/Shell and BASF will be called "Nicole". Nicole will combine the assets of Montell, Targor and Elenac. See our NL of 12/99.

POLYETHYLENE

DuPont Dow Elastomers is building a 136K t/y *Engage* metallocene polyolefins elastomers plant at Plaquemine LA costing about \$150 million. It is targeted to come online in April 2002. The company already has a 200K t/y *Engage* unit at Plaquemine and is planning to raise its capacity to 120K t/y in 2000. The products from this plant are being targeted to replace EPDM rubber, flexible PVC products and ethylene-vinyl acetate copolymers. At Freeport, TX, Dow produces about 340K t/y of products made with their *Insite* technology.

Dow at Sarnia, Ontario is moving forward with plans to build a 113K t/y plant to make *Index* ethylene styrene interpolymers. The plant is targeted to come online by 2002.

Eastman Chemical has licensed its *Energx polyethylene* technology to Chevron for use in gas phase LLDPE facilities to produce high performance LLDPE and HDPE grades.

Equistar has introduced LLDPE grades that can be processed on grooved-feed, short L/D extruders to make high gloss low-haze films with a good balance of strength and stiffness. The first grade to be introduced is called Petrothene GA605, which has a density of 0.903 g/cc and a melt index of 0.6 g/10 min.

Atochem and Union Carbide have dissolved their Western European joint venture formed in 1995, primarily to make polyethylene grades for the wire and cable industry. All of the polyethylene production at Gonfreville, France will revert back to Atochem or to Atofina (after 3/31/00). At the same time Atofina will shut down 30K t/y of tubular capacity at Gonfreville, which was used to make specialty grades of LDPE.

As part of the olefins complex 6/7 being built at Bandar Imam, Iran, the National Petroleum Co and Elenac have formed a joint venture to build a 300K t/y LDPE plant. The plant will use Elenac tubular technology and is targeted to come online in 2003. Elenac will own 55% of the LDPE plant with NPC owning 45%.

Amir Kabir Petrochemical Co is proposing to build a 140K t/y HDPE plant at Bandar Imam as part of olefins complex 6/7. It is targeted to come online in 2003.

Q-Chemical at Mesaieed, Qatar is moving forward to build a 189K t/y LLDPE plant and a 273K t/y HDPE plant. As part of this project, Q-Chem will also build a 500K t/y SC and a 47K t/y hexene-1 plant. Q-Chemical is owned by Qatar General Petroleum Corp. and Phillips Petroleum. Phillips will provide the technology for the PE and hexene-1 units. The steamcracker will use KBR's ethane technology. The target online date is 2002.

Petkim at Aliaga, Turkey are planning to build a 120K t/y LDPE plant to come online 2002 using Elenac technology. Petkim has two LDPE plants based on ICI technology with a total capacity in the range of 180K t/y to 200K t/y and a 96K t/y HDPE plant using Mitsui technology. The ethylene will come from an expansion of the steamcracker at Aliaga.

Zhongyuan Ethylene at Puyang, Henan is raising the capacity of its LLDPE plant from 120K t/y to 200K t/y and its polypropylene capacity from 40K t/y to 60K t/y. We estimate these new capacity levels will be achieved in 2001.

Polyolefins Singapore (PTC) at Merbau Island, Singapore is debottlenecking its LLDPE plant, which uses Sumitomo technology. The debottlenecking is to be completed by mid 2001 and raises the capacity to 200K t/y.

POLYPROPYLENE

Repsol-YPF is building a polypropylene pilot plant at Tarragona, Spain. Repsol feel this is necessary to keep pace with the other leading producers in the industry. Repsol claim their total PP capacity is now 385K t/y of which most of it uses Spheripol technology or Himont slurry technology. Repsol also has an interest in a LIPP-SHAC plant in Argentina.

The location for the Oriental Petrochemical Co.'s 120K t/y polypropylene plant in Egypt has been changed from Alexandria to Suez. It is still targeted to come online in 2000, but we suspect, this might slip.

In Libya, Ras Lanuf Oil Co has selected Targor technology for its planned 120K t/y polypropylene plant. It is targeted to come online in 2002.at Ras Lanuf,

National Petrochemical Industrial Co (NPIC) is planning to build a 280K t/y polypropylene plant at Yanbu, Saudi Arabia. This should not be confused with the 450K t/y PP plant proposed by NIC for Al Jubail. (See the Jan 2000 NL). The NIC project has recently select Targor technology for the construction of the plant.

In China, two new polypropylene projects have recently come to light. The first is that Huabei Oil Field is planning to build a 50K t/y PP plant at Renqui to come online in 1Q00. The second is that Qingdao is planning to use a second-generation Spheripol technology to build a 100K t/y plant at Qingdao. No online date is available.

The 70K t/y polypropylene plant of Jingmen Petrochemical Co., at Jingmen China came online in September 1999. It is producing about 25 different grades of PP

In Japan, Sumitomo will scrap two PP units at Chiba with a combined capacity of 70K t/y

Titan Petrochemical in Nov 1999 successfully brought online a 200K t/y PP plant at Pasir Gudang, Malaysia. It uses Spheripol technology.

HMC Polymers in Thailand has been successful in restructuring its debt of about \$129 million. The restructuring will give HMC two and a half additional years to repay the loan.

STYRENICS

Atofina has cancelled plans to build a 60K t/y CPS plant at Gdansk, Poland. In 2000, Atofina will debottleneck its CPS plants at Carling, France and El Prat de Llobregat, Spain. How much capacity will be added in these debottlenecks has not been revealed.

Enichem at Ferrara, Italy has shut down their three styrenic units: a 27K t/y SAN plant, a 36K t/y ABS plant and a 9K t/y alpha-SAN plant.

Shantou SOE at Shantou, Guangdong Province, China has temporarily shelved plans to build a 30 to 50K t/y EPS plant at Shantou and instead will build a 100K t/y CPS plant at Fujian using its own technology. Shantou SOE plan to eventually raise the capacity of the Fujian plant to 260K t/y and to build the EPS plant at a later date.

Sun Styrene at Chiba shut down its 34K t/y polystyrene plant at the end of 1999.

Petrochemical Malaysia at Pasir Gudang, Johor, has delayed its 80K t/y CPS project until 2004-05. It was originally targeted to come online in 2003

VINYLS

Owens Corning is overhauling its vinyl siding plants. It will close the Fair Bluff, NC plant and transfer three of its six extrusion lines to the Atlanta plant effectively doubling its capacity. Where the other three extruders will go has not as yet been decided. At Joplin, Mo., where they make their *Norandex* brand siding, they are adding 100K sq. ft. to their existing 210 sq. ft. At the London, Ontario plant, an unspecified expansion is under way. At the Toledo, Ohio plant, 20K sq. ft. of plant space is being added. Owens Corning expect total siding production in 2000 to be up about 2 to 4%. In 1999, total sales of PVC to siding companies were up 3.6% over 1998 figures. Owens Corning also has a siding plant at Mission, British Columbia.

In China, WuHu Hailuo Plastic Profile Co., Ltd. has raised their capacity to extrude PVC profile extrusions. They now have 40 extrusion lines in operation with a total capacity to consume 70K t/y of PVC resin per year.

Hebei Canghoa at Canghou, China brought online in 3Q99, a 150K t/y PVC plant using Chisso technology. Hebei is already looking at adding another 80K t/y of capacity in the near future.

Chisso is closing its 30K t/y PVC plant at Minimata, Japan and a 50K t/y unit at Chiba. at the end of 1Q00.