

# China's Propylene Market Has New Structure

Released on 06/12/12

1. Production Expansion There were eight propylene projects under way in China 2011, either for new units or expansions. Three coal-to-olefins projects were put into operation that year, bringing the year's propylene output to 14.67 million tons and alleviating domestic propylene short supply. By the end of 2011, the country boasted a 17.2 million t/a propylene capacity, with coal-to-olefins projects contributing 1.36 million tons; co-production propylene in ethylene cracking units, 8.8 million tons; refineries' propylene recovery units, 7 million tons. Downstream enterprises that are engaged in polypropylene, epoxypropane, acrylonitrile, butanol and octanol are located mainly in North China, East China and South China, where domestic propylene capacity, therefore, is concentrated. In China's propylene spot market, most commodity circulation is generated in Shandong by propylene from local refineries' gas separation units. Restricted by the limited crude processing capacity of local refineries and in the case of feed gas insufficiency, operators of the gas separation units find it hard to run at full load, generally running at 50-70%, which makes the domestic propylene supply tight. But as some local refineries have successfully launched PDH propylene, the undersupply pressure is expected to be eased in 2013 and 2014. The domestic propylene market structure has been altered, with ethylene cracking, PDH and MTO each accounting for a one third market share. According to statistics, the propylene capacity will grow 20 million tons in the next five years – PDH creation 50%; MTO, 26%; ethylene cracking, 24%. 2. Import Dependence is Lessening With increasing demand from makers of downstream derivatives, China imported more and more propylene from 2007 to 2011, when Korea – contributing 46.9% in 2011, soaring from 32.6% in 2010 – Taiwan (20.29%) and Japan (20.27%) were the top three sources. In 2011, the imports in the form of general trade (major trade pattern) accounted for 96.35% of the total. And the imports were mainly received in East China, especially in Nanjing, Ningbo, Shanghai and Hangzhou, imports through these four reaching 1.41 million tons, 80.5% of the gross – Nanjing (No. 1), 27.8%; Ningbo (No.2), 22.5%. Due to tight supply, China imported 1.76 million tons of propylene in 2011, but exported just 1 530 tons. Most expansion activities of the domestic propylene industry chain in 2012 are related to polypropylene pellets (PP), with new PP capacity totaling 3.8 million tons – part from ethylene supporting downstream enterprises of Sinopec and PetroChina, and part from private companies (2.2 million tons). As domestic supply of polypropylene powder has topped demand, there are no expansion reports in 2012. The capacity of other downstream products has expanded in varying degrees, but they drive propylene demand only a little. China's imported propylene will exceed 1.8 million tons in 2012, and the import dependence is expected to lessen owing to new capacity of "coal to olefins" and PDH. 3. Growing Downstream Demand In 2011, China consumed 16.43 million tons of propylene, which was mainly used in polypropylene, acrylonitrile, acrylic acid, etc. Polypropylene – Polypropylene remains as a major downstream consumer of propylene in China, consuming 70% of the products. Its apparent consumption was around 13.23 million tons in 2011, down 1.5% compared with 13.43 million tons in 2010. New polypropylene projects in 2010 were put into production in 2011 in succession, like a 300 000 t/a unit of Shenhua Baotou Coal Chemical Company, a 550 000 t/a unit of PetroChina Dushanzi Petrochemical Company, and a 500 000 t/a unit of Shenhua Ningxia Coal Industry Group, pushing domestic output to 10.9 million tons in 2011, when polypropylene makers' demand for propylene reached 12 million tons. Acrylonitrile – By 2011, China had 10 acrylonitrile manufacturers – mainly subsidiaries of PetroChina and Sinopec – with a gross capacity of 1.3 million tons. As the largest producer, PetroChina Jilin Petrochemical Corporation boasts a capacity of 452 000 tons, 34.8% of the total; SECCO (second largest), 260 000 tons, 20%. In 2011, the operating rate of the acrylonitrile industry was 82.7%; gross output, 1.07 million tons; demand for propylene, 1.24 million tons, expected to increase 66 000 tons to 1.3 million tons in 2012. Mainly expansion projects will be conducted or completed in 2013. In 2012, Anqing Petrochemical Company expanded its acrylonitrile capacity from 130 000 tons to 210 000 tons. Acrylic acid – By 2011, China's acrylic acid capacity had reached 1.25 million tons, mainly in East China (970 000 tons). Due to slow development in downstream industries such as resins, coatings and adhesives, the oversupply of acrylic acid and ester is worsening, with makers maintaining an operating rate at 80%. In 2011, China produced 1.08 million tons of crude acrylic acid, which required 850 000 tons of propylene. It is predicted that the demand for domestic acrylic acid products for use in making propylene will be more than 900 000 tons in 2012. Epoxypropane – The domestic epoxypropane supply increased 150 000 tons in 2011 from 2010's level. East China is the main epoxypropane production area, providing 65% of the products. With increasing epoxypropane capacity but decreasing imports, the consumption in 2011 remained unchanged compared from a year earlier. According to statistics, China's epoxypropane output was 1.36 million tons in 2011; overall operating rate, 80%; demand for propylene, 1.16 million tons. Though China's epoxypropane capacity is planned to rise 1.41 million tons from 2012 to 2013, only 210 000 tons of the total could be ensured in 2012. Therefore, epoxypropane capacity is expected to reach 1.91 million tons by the end of 2012, requiring 1.25 million tons of propylene. Butanol and Octanol – With a 725 000 t/a n-butyl alcohol capacity in 2011, China produced 592 600 tons, requiring 385 000 tons of propylene; octanol, 920 000 t/a capacity, 857 500 tons of output, requiring 643 000 tons of propylene. In the same year, isobutanol production required around 60 000 tons of propylene. In 2012, PetroChina Daqing Petrochemical Company conducted a 200 000 t/a butanol & octanol reconstruction project; Shandong Jian Lan Chemical Co., Ltd, a 70 000 t/a butanol & octanol project; Shandong Bluesail Chemical Co., Ltd, a 150 000 t/a butanol & octanol project; Wison (Nanjing) Clean Energy Co., Ltd, 250 000 t/a butanol & octanol project; Anqing Petrochemical Company, 250 000 t/a butanol & octanol project (ongoing). It is expected that the capacity of n-butyl alcohol and octanol will expand 250 000 tons and 325 000 tons respectively, with their demand for propylene reaching 1.4 million tons. Phenol/Acetone – With six phenol/acetone producers in 2011, China boasted a capacity of 688 000 t/a and 570 000 t/a respectively that year (77% held by Sinopec and PetroChina); output, 703 000 tons, 458 000 tons; total demand for propylene, 355 000 tons. As no new phenol & acetone projects are put into operation in 2012, the total demand for propylene is forecast to remain at 2011's level.

Source China Chemical Reporter