

ASIA IS A BUSINESS IMPERATIVE... NOW MORE THAN EVER

ASIAN SPECIALTY CHEMICALS NEWSLETTER

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INTRODUCTION

Asian stock markets are booming. Consolidation of the specialty chemicals industry continues apace in Asia as in the rest of the world. Ronald Hampel, Chairman of ICI, has declared that "the chemical industry's center of gravity has shifted to Asia."

We hope that you find *Asian Specialty Chemical Newsletter* informative. BDA is a corporate finance advisory firm that helps clients to identify and execute acquisitions and JVs in Asia. If you think that BDA's services may be useful to you, please contact us in New York at (212) 265-5300 or in Singapore at (65) 533-8500.

Euan Rellie
Managing Director

CHINA

Albermarle of the US and **Beijing Yanhua** have formed an agrochemical JV in Beijing. Albermarle will hold the majority stake and operations are scheduled to begin in H2 2000. (August 2, 1999)

BASF, ICI Polyurethanes, Nippon Polyurethane Industry, Shanghai Tianyuan and four Chinese companies are building a plant in a chemical industry zone near Shanghai to produce MDI, nitrobenzene and aniline. (July 16, 1999)

LG Chemical, the leading Korean producer of ABS resin and PVC, is expanding the capacity of its two production bases in China. LG Chemical has invested US\$100m to increase capacity at its ABS resin plant in Ningbo, Zhejiang Province from 50,000tpa to 300,000tpa. The company also plans to invest US\$70m in its PVC plant in Tianjin, to increase the production capacity three and a half times to 350,000tpa by 2002. With this increase, LG Chemical's worldwide ABS resin and PVC production will reach 600,000tpa and 900,000tpa, respectively. (July 15, 1999)

Shanxi Jinfeng Chemical Works has successfully produced anthracene series products with composite technology that meets international standards. The products are used to make anti-chemical agents, dyestuffs, paper, pharmaceuticals, pesticides, explosives and resin materials. Germany, France, the US, Japan and China are the only five countries which produce anthracene products. (July 16, 1999)

Toray Industries Inc of Japan and **Yizheng Chemical Fibre Group** are to form a JV to produce and market polyester film. The companies will split the initial US\$26m of an estimated US\$24m total investment. The JV will take over Yizheng's polyester film production facilities, which currently produce 6,000tpa. Toray now produces 200,000tpa of polyester film. (June 21, 1999)

UCB of Belgium and **Shanghai Dongsheng** of China plan to build a plant in Shanghai to produce unsaturated polyester resins for the paint and coatings industries. The plant will cost US\$9.6m and will have a 7,000tpa capacity. (July 16, 1999)

Zhenhai Refining & Chemical Industrial and **Ningbo Chemical Controlling Group Co** have agreed to build a RMB1.4bn (US\$169m) JV compound fertiliser plant in Zhejiang, China. Zhenhai, which holds a 70% stake in the JV, will provide the urea feedstock. The plant will have a 300,000tpa capacity and will be completed in 2000. (July 26, 1999)

INDIA

Clariant India Ltd reported an increase in net profit from Rs3.1crores to Rs3.6crores (US\$72,000 to US\$84,000) for the quarter ended June 1999, up 15% YoY. Net sales for the quarter increased 10% from Rs51.1crores to Rs56.2crores (US\$1.2 to US\$1.3m). The increase is attributed to the introduction of a range of fibre lubricants, finishing agents and products for industrial textiles. Clariant plans to enter the market for flame retardants, fluorochemicals and antimicrobial finishes. (July 29, 1999)

Indo-Rama Synthetics India Ltd is expected to select a site for its PTA (purified terephthalic acid) JV by September 1999. The JV is to produce 350,000tpa of PTA and is scheduled to start up in mid 2001. However, start up is likely to be delayed

due to financial constraints and poor market conditions. (August 2, 1999)

Nirma, a leading Indian producer of detergents and soaps, has signed up **Indian Petrochemicals Corporation Ltd (IPCL)** to distribute excess produce from its linear alkyl benzene (LAB) plant. The product will mainly be sold to Nirma's competitors in the soaps and detergents business, including **Hindustan Lever**, **Godrej Soaps**, **Procter & Gamble** and **Hippolin**. (July 20, 1999)

INDONESIA

GT Petrochemical Industries is expanding its polyester resin plant at Karawang to produce 102,000tpa. The company has also built a new 30,000tpa ethoxylates plant at Merak, West Java to open in Q3. (July 26, 1999)

JAPAN

Great Lakes Chemical (GLC) is transferring the distribution of its flame-retardants in Japan from its sales agents to **Great Lakes Chemical Asia Inc Japan Branch**. This is to help GLC become more closely involved with end users and to improve customer support. However, flame-retardant sales will continue to be handled by existing agents. (July 20, 1999)

Itochu's JV with **Arco Chemical** is scheduled to begin production at its 200,000tpa PP plant in H2 1999. The JV will export one third of output to west coast US customers mainly in the automotive sector. In addition, Itochu has set up a JV with **Mitsubishi Plastics** in Shanghai to produce moulded plastic for **Sony**. Itochu's Chinese liquid phosphoric acid plant is due to begin operations in

2000. Itochu's core businesses include petrochemicals, inorganic chemicals, specialty chemicals, fine chemicals, VCM and PVC. (July 16, 1999)

Mitsubishi Gas Chemical (MGC) has installed a new facility at its Yamakita factory in Kanagawa Prefecture to manufacture a water-borne antioxidant for the cleansing and drying of metallic electronic components. This new product dries the components while vaporizing all chemical ingredients, leaving no residue on metal surfaces. MGC is planning to mass-produce and market this product as an alternative to traditional chlorine and alcohol cleansers. (July 21, 1999)

Mitsui Chemicals Inc is to build another isocyanates unit in Asia. The company has increased its production capacity of toluene diisocyanate (TDI) to 120,000tpa in Japan. The details of the new facility are yet to be announced. (August 2, 1999)

Montell Polyolefins Company and its partners, **Showa Denko KK (SDK)**, **Nippon Petrochemical Co Ltd (NPC)** and **Taiwan Polypropylene Co Ltd**, have completed construction of their Japanese JV, **Montell Sunrise Ltd (Sunrise)**. The JV will produce and market PP resins and advanced polyolefins in Japan and will hold a 10% share of Japan's PP market. Sunrise will also take over the activities of **Montell JPO Co Ltd**, a 1996 50:50 JV between Montell and **JPO**. (June 14, 1999)

Techno Polymer, the Japanese plastics major, is expanding its synthetic resin sales to Asia through its affiliates in Hong Kong, Shanghai, Singapore and Thailand. To increase its market share in China, Techno Polymer plans to increase marketing of its transparent and flame retardant products. Total Japanese exports to the Chinese market have increased 20% in 1999. (July 16, 1999)

To submit stories to the *Asian Specialty Chemicals Newsletter* please contact Paul DiGiacomo on (212) 265-5300 or pdigiacomo@bdallc.com.

KOREA

Ashland-ACT Korea Ltd, a subsidiary of **Ashland Specialty Chemical Company's** electronics chemicals division, will operate a new advanced photoresist strippers facility near Seoul, Ashland's first photoresists facility outside of North America. The subsidiary is also the parent company's sales arm in Korea for wet-process chemicals made by **Ashland Union Electronic Chemicals Corporation**, an **Ashland-Union Petrochemical Corporation** partnership. (July 12, 1999)

Eka Chemicals of Sweden, a business unit of **Akzo Nobel**, is to acquire the paper chemicals and resins businesses of **Dongsung Chemical Ltd** of Korea. The acquisition includes Dongsung's paper chemical and resins businesses, a manufacturing plant in Kunsan, and Dongsung's 70% stake in **Fengkai Dongsung Chemical Co Ltd**, a Chinese gum resin producer. Eka Chemicals is one of the world's leading suppliers of sizing chemicals and retention systems to the paper industry. (July 19, 1999)

Honan Petrochemical is to build a methyl methacrylate (MMA) facility in Yosun beginning in October. The Won92bn (US\$78m) facility will have a 40,000tpa capacity. **Kuraray** and **Mitsui Chemicals** will provide the technology. A **TMS**, **Toyo Engineering**, **Shinwah Engineering** and Mitsui JV is the contractor. (July 26, 1999)

Hyundai Petrochemical Co has sold its air separation device operations to **BOC Gases Korea**, a local subsidiary of UK-based **BOC Group**, for US\$70m. The sale is in preparation for Hyundai Petrochemical's scheduled merger with **Samsung General Chemicals**. Hyundai plans to sell other non-core businesses and assets to raise an additional Won400bn (US\$33m) by Q4 1999. (June 7, 1999)

LG Chemical of Korea has signed a contracting

agreement with **Techno Polymer** of Japan to produce methyl methacrylate butadiene styrene (MBS) resin. (July 15, 1999)

Mitsui Chemicals plans to expand its toluene diisocyanate (TDI) production capacity in its Korean venture, **Kuhmo Mitsui**. The JV will increase capacity from 30,000tpa to 50,000tpa by 2001. (July 26, 1999)

Shibley Company, a wholly owned subsidiary of **Rohm & Haas Company**, has acquired the remaining 49% of its Korean JV with **LG Chemical**. The JV supplies photoresists and other specialty chemicals for computer chip and high-tech device manufacturers. As Asian markets recover from the downturn, Shibley is well placed to grow its specialty chemicals for the electronics sector. (June 2, 1999)

MALAYSIA

Eastman Chemical (Malaysia) Sdn Bhd is investing RM7.0m (US\$1.8m) to upgrade the environmental protection systems at its copolyester plastics plant at the Gebeng industrial estate near Kuantan. The enhancements will reduce its raw material costs. Eastman expects demand for its proprietary products, *Eastar* and *Spectar* copolyesters, to increase by 20% within the next year or two. (June 21, 1999)

Goodmaid Chemicals Corp of Malaysia has signed a MOU with an, as yet, unnamed US company to manufacture cleaning products for its Asian markets. Goodmaid is also seeking to acquire a company that produces carton and plastic packaging materials. The company is an original equipment manufacturer (OEM) for various international brands and packs for local hypermarket chains under its house brands. (June 21, 1999)

SINGAPORE

Borax Flame Retardant Group, a global manufacturer of flame and smoke suppressing products, has set up a Singapore office to handle all Asia-Pacific transactions. To expand its supply channels, Borax also appointed three new distributors in Singapore, Thailand and Malaysia for its *Firebrake ZB* products. (July 7, 1999)

Eastman Chemical's new oxo production complex in Singapore has come online and will supply the Asian market. The complex comprises five plants, which produce oxo aldehydes with a capacity of 150,000tpa, 2-ethylhexanol/n-butanol, NPG glycol, Texanol esteralcohol and TXIB plasticizer. (July 15, 1999)

TAIWAN

Taita Chemical of Canada has announced its plans to build a high impact PS and crystal PS plant in Taiwan. The facility will have a production capacity of 100,000tpa and is scheduled to be completed Q4 2000. (July 26, 1999)

THAILAND

Advance Paint and Chemical (Thailand) Plc, maker of *Dutch Boy* (a **Sherwin-Williams** brand), *Proton* and *Seven Stars* paint, expects to increase sales by 200%, to Bt500m (US\$13m), in the next two years after linking its distribution network with **Siam Cement Group Plc**. It currently has a network of 100 authorized dealers throughout Thailand, and has been using 600 Siam Cement dealers and sub-dealers since the beginning of June. Advance expects sales to reach Bt160m this year, up 60% from Bt100m

(US\$3m) in 1998. Advance's current market share is 2.5%, but it expects to increase this to 10% by 2001. (June 17, 1999)

The **Siam Cement Public Co** of Thailand and **Dow Chemical** of the US have formed a JV, **Siam Polyethylene Co**, in Rayong, Thailand to produce polyethylene. The companies invested US\$100m in this 300,000tpa plant which will use the latest technology from Dow. (July 19, 1999)

Thai Polycarbonate is expanding the production capacity of its polycarbonate (PC) plant in Rayong from the current 50,000tpa to 60,000tpa. (August 2, 1999)

Thasco Chemical has delayed its soda ash project in Rayong for another 2 to 3 years. The 25,000tpa facility was originally scheduled to begin operations in Q4 1998. **Asahi Glass** of Japan owns a 45% stake in Thasco. Thasco has, however, begun production at its pearl caustic soda plant in Rayong, which opened in January 1999. (August 2, 1999)

VIETNAM

LG Vina Chemical, a dioctyl phthalate (DOP) manufacturer based in Dong Nai Province, is to boost its export sales to compensate for the decline in domestic sales in 1999. It exported eight containers of DOP to Southeast Asia in June, and was expected to ship another 15 containers in July. (July 20, 1999)

Vietnam Plastics Corporation has generated a 15% increase in production in the first six months of 1999. Among the high growth rate products, PET bottles increased 51.2%; leatherette increased 29.7% and profile increased 26.1%. (July 21, 1999)

FOCUS:

Electronics chemicals in Asia

Asia is fast becoming the most important market for electronics chemicals in the world, as the manufacture of PCs and other electronics is increasingly concentrated in the region. **Taiwan, Japan and Korea** are the key regional electronics markets today but **China and India** are growing fast, as the industry migrates to lower cost manufacturing locations. **Indonesia, Malaysia, the Philippines and Thailand** are striving to win their share of the market. Even high-cost **Singapore** has managed to retain a key role in the manufacture of disk drives. The more interesting, and substantial, **Asian electronics chemicals companies are clustered in NE Asia**. In this article, we look at what the Western players are doing, and at how they are rapidly penetrating the Asian market, principally by JVs and acquisitions. We also list some of the key remaining Asian players in the market.

These trends have **shortened the list of market entry opportunities for multinationals**, despite market growth. Chipmakers are demanding that vendors deliver all their needs. We are witnessing a race by the Western players to tie up (a) with horizontal technology partnerships such as **Air Liquide/Arch** and **Merck KgaA/Praxair**, and (b) with the strongest Asian players in their own market segments. Nevertheless, these JVs and alliances are mostly loose, and may be fluid in the medium term. According to market observers, the market for **chemicals for semiconductors is growing at 30% per annum in volume terms**, but has faced pricing pressure during the downturn. These factors combined have acted as a catalyst to world scale players trying to increase their dominance and to localize manufacture of these chemicals in Asia. Chemicals suppliers are being encouraged to expand worldwide by a sharp recovery in the semiconductor industry.

We have identified certain chemicals which have been promoted by market players as being particularly worthy of investment. These include **photoresists, CMP** (chemical mechanical planarization) and **wet process chemicals**. Key players in electronics chemicals in Asia include:

Allied Signal [US], which is selling electronics chemicals with **Air Products** worldwide, has a limited presence in Asian markets.

Arch Chemicals [US] is active in Asia in photopolymer resists; photoimagable polyimides; and process chemicals using sub-ppb chemistries for the semiconductor and silicon industries – including acids, etchants, solvents, CMP slurries, thin film systems. Arch is allied with **Air Liquide**.

Asahi Kasei/Chemical Industry Co, Ltd [Japan], is active in electronics chemicals in **Japan**. It manufactures LSIs, magnetic sensors, *Sunfort* photosensitive dry film resists, DFR, mask pellicles and lithium ion cells. Asahi cooperates with **Clariant** subsidiary **AZ Electronics Materials** in the US [see below].

Ashland Specialty Chemical Co [US] has been selling electronics process chemicals in Asia since the mid-1980s and, since 1994, stripper products from the acquired ACT business. Ashland is now building a **photoresist strippers plant** in Pyongtaek City, **Korea**. The plant will be the first to be built outside North America by Ashland, and will be operated by **Ashland-ACT Korea Ltd**. The plant will begin production in August 1999. **Ashland Union Electronics Chemicals Corp** [an Ashland JV with **Union** - see below] is building a **wet process chemicals plant** in **Taiwan**. Ashland is an oil company, with a presence in marine/water treatment chemicals through its subsidiary **Drew Ameroid**.

Cabot Corp dominates the US with an 80% share of the oxide slurries market, and 55% of the metal slurries market.

Clariant subsidiary **AZ Electronics Materials** has a new manufacturing plant for resists and developers in Korea. It manufactures flat panel display and deep-UV photoresists in Japan, and collaborates with **Asahi Kasei** [see above].

Daido Hoxan [Japan] formed a JV in 1997 with **Air Products** called **DAP**, to serve **gases to the semicon industry**.

Degussa AG [Germany] and **Degussa Corp** [US] cooperated in **Japan** to develop an advanced paste for voltage dependent transformers.

Dongjin Chemical Industry [Taiwan] is strong in photoresists, foaming agents, melamine cleaning compounds for the semicon/wafer industries.

ECI [Taiwan] is conducting research into IC photoresists, CMP and developers. ECI is looking for international alliances. It is also developing sol-gel materials for glass coatings in electronics and pigment-dispersed color resists

(PDCR) for LCD manufacturing.

Everlight Chemical Industrial Corp [Taiwan], is active in electronics chemicals as well as dyestuffs, bulk drugs and UVA in **Taiwan**.

Great Eastern Resins [Taiwan] manufactures dry film photoresists in JV with **Du Pont**.

Hitachi Chemical Co Ltd [Japan], is active in dry film photoresists in **Japan**.

Hodogaya Chemical Co Ltd [Japan], is active in electronics chemicals in **Japan**.

JSR Microelectronics [Japan] manufactures advanced **electronic photoresists, resins, sensitizers and photoacid generators**.

Merck AG [Germany] has started construction of a **high-purity semiconductor chemical plant** in **Singapore**. This plant will be owned and operated by a 100% Merck owned local subsidiary, Merck Pte Ltd. The plant will cater to new semiconductor plants being built in Singapore and **Malaysia** and will come onstream in Q2 2000. Merck is also starting up its new ultrahigh purity H₂O₂ plant in Singapore – jointly with **Mitsui & Co** and **Santoku Chemical** of Japan. Merck owns 33% of **Kanto Chemical**, an allied electronics chemical player which claims to hold 35% of the ASEAN market. Merck has a JV with **TNC** in **Taiwan** [see below]. Merck is strong in Taiwan, Singapore and Malaysia, and has benefited from **Praxair's** strength in **China** and **Korea**.

Midori Kagaku [Japan], a fine chemical manufacturer, is to build a fourth CMP (chemical mechanical planarization) production facility for drug intermediates and **electronic chemicals** at Ohkuma, **Japan**. The plant is scheduled for commissioning in Q4 1999.

Mitsui Toatsu Chemicals [Japan], is active in electronics chemicals in **Japan**.

Nippon Sanso Corp [Japan], is active in electronics chemicals in **Japan**. The company owns **Matheson Semi-Gas** in San Jose, California, which offers **on-site gas for the semicon industry**. Nippon Sanso has tied up with the Microelectronic Materials subsidiary of **Arch Chemicals**.

Nippon Zeon Co Ltd [Japan], is active in ArF resists and electron beam resists, as well as polymerized toner in **Japan**.

The company's products are also applied as binder resins for magnetic tape, resists for panel displays, I-line and g-line resists and other semicon chemicals.

Praxair [US] is active in semiconductor gases in **China** and **Korea** through its alliance with **Merck** [see above], strong in **Taiwan, Singapore** and **Malaysia**.

Samsung America [US], subsidiary of **Samsung Group** [Korea], is building a US\$30m ultrapure electronics chemicals plant in Tempe, Texas, with **Mallinckrodt Chemicals** [US]. The plant is due to start up 'after 2000'. Other Samsung Group entities are major customers for these chemicals.

San Fu Chemical Inc [Taiwan] is the Taiwanese JV partner of **Air Products** [US] for **semiconductor gases**.

Shin-Etsu Chemical Co [Japan] and its subsidiary **Shin-Etsu Micro Si** [US] offer SIPR positive thick film photoresists in Japan and US. Shin-Etsu Chemical Co is also active in electronics chemicals in **Japan**.

Shipley, a subsidiary of **Rohm & Haas** [US], acquired in June 1999 **LG Chemical's** 49% stake in their **Korean**

electronics chemicals JV. Rohm & Haas is strong in CMP, through its stake in **Rodel**, increased recently to 48%.

Sumitomo Chemical Co [Japan], is active in electronics chemicals in **Japan**. It has previously cooperated in I-line photoresists with **Olin**. Sumitomo produces advanced photoresists, high-purity chemicals, epoxy resins for IC encapsulation and aluminum spluttering agents. It also cooperates with former affiliate, and 90% subsidiary since Q2 1999, **Dong Woo Pure Chemicals** of **Korea**.

TNC Industrial Co Ltd [Taiwan] is active in reagents and ultrahigh purity chemicals for electronics, principally used for etching and cleaning diodes, integrated circuits, semiconductors, etc. TNC has a JV with **Merck** of Germany for high purity nitric acid, and is working with **Materials Research Labs** [US] on R&D into dry-film photoresists.

Tokyo Ohka Kogyo Co [Japan], is active in electronics chemicals in **Japan**.

Union [Taiwan] has resumed construction of its US\$25m/y JV with **Ashland** [see above] set for commissioning in 2000.

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