



# Basic Chemicals

**// Sales rose 7.5% to KRW 1,683 billion in 2017 as polysilicon prices rose and sales volume increased following our strategic acquisition of a new 20,000 metric ton production base in Malaysia. EBITDA climbed 34% to KRW 325 billion as our new Malaysia operations immediately began contributing to profitability. //**

### Polysilicon

This raw material is the primary material used to manufacture solar PV cells and modules as well as semiconductor wafers. We are currently the world's No. 2 polysilicon maker with a nameplate production capacity of 72,000 metric tons at the end of 2017.

We continued to improve our operating performance throughout 2017 driven by ongoing cost-reduction initiatives and the successful launch of operations at our new production base in Malaysia. Marketwise, we benefitted from a global polysilicon supply shortage in the second-half of the year as well as the ongoing shift in the solar wafer market from polycrystalline to higher-quality monocrystalline wafers.

The most important development of the year was the expansion of our manufacturing operations internationally with the acquisition of Tokuyama Malaysia at the end of May. Our early ramp-up of operations at the Sarawak P2 plant in July boosted capacity by

13,800 metric tons, enabling us to grow sales while putting in place a solid foundation for greater improvements in our production cost structure going forward.

A second key development was in the silicon wafer market where we signed our first long-term contracts with major monocrystalline wafer manufacturers since 2011. We will be dedicating a growing portion of our high-purity polysilicon production capacity to meet these and future commitments.

The Chinese government wrapped up its latest anti-dumping review investigation of polysilicon imports in 2017. While the tariffs assessed on our polysilicon increased from 2.4% to 4.4% beginning in November 2017, the lowest rate applied to any Korea-based producer, we believe this favorable outcome will enable us to remain highly competitive in that key market.

Looking ahead, the global solar PV and semiconductor industries will continue to drive growth in polysilicon demand for the foreseeable future. Our expanding production network in Korea and Malaysia will position us to profitably meet the requirements of our growing customer base and ultimately increase global market share. In 2018, we plan to complete a debottlenecking project currently underway at the Sarawak P2 plant as we aim to boost our global effective production capacity beyond 69,000 tons by year end.

### Phosphoric Acid

This chemical is used in etching semiconductors, industrial applications, and food additives.

We have produced phosphoric acid (H<sub>3</sub>PO<sub>4</sub>) since 1980, LCD-grade phosphoric acid since 2003, and high-purity phosphoric acid since 2008. Over the years, we have made steady inroads into the global high-purity phosphoric acid market, serving customers in Taiwan, the United States and the Philippines. Today, we are a major supplier to Korea's semiconductor industry with a growing product portfolio that includes a full range of grades from feedstock to high-purity. In 2017, sales increased slightly as demand from Korean semiconductor makers continued to rise. Profitability improved significantly for the year due to successful process optimizations.

Looking ahead, we are positioned for continued growth in 2018 as we continue to incrementally optimize our production processes and facilities to maximize output and profitability. This will help us secure new business from major Korean semiconductor makers who continue to ramp up production capacity in emerging fields such as 3D NAND. Our Gunsan hexachlorodisilane (HCDS) plant will also continue to generate synergies with our polysilicon business by using the by-products of the polysilicon production process to produce HCDS for use in value-added applications such as the thin-film deposition of SiO<sub>2</sub> and SiN layers as well as spacers.

### Hydrogen Peroxide

This chemical is used as an oxidizing agent in various applications such as bleaches, feedstocks, preservatives, sterilizers, and etching and cleaning agents used in electronics manufacturing. We produce

hydrogen peroxide products in various purities and concentrations by controlling the concentration and dilution processes. Sales and profitability were flat in 2017, reflecting the overall market trend.

Looking ahead, we expect ongoing capacity expansion by Korean semiconductor makers to continue to boost demand for high-purity and electronic grade H<sub>2</sub>O<sub>2</sub> in 2018. Our extensive product portfolio positions us for future growth in the semiconductor industry.

### Fumed Silica

This white, fluffy amorphous powder has extremely low bulk density and high specific surface area. It is used as a thickener, reinforcing filler, or abrasive in paint and coatings, sealants, rubber, adhesives and chemical mechanical polishing slurry.

We are China' No. 4 and the global No. 5 producer of fumed silica with a global production capacity of 15,000 metric tons, including 9,000 tons in Korea and 6,000 tons in China. Sales rose slightly in 2017 backed by stable sales in our home market and expanding sales overseas. We marked our second straight year of profitability thanks to customer-oriented service and technical support.

Looking ahead, we expect our 6,000 metric ton Tangshan OCI Chemical plant in China's Hebei Province to turn its first operating profit in 2018. Completed in 2013, the plant gives us direct access to the Chinese market, enabling us to deliver high-quality products to satisfy the needs of local customers.

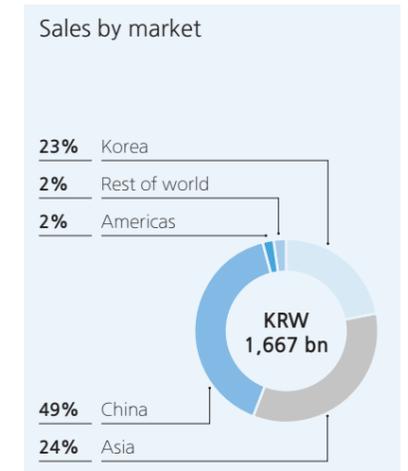
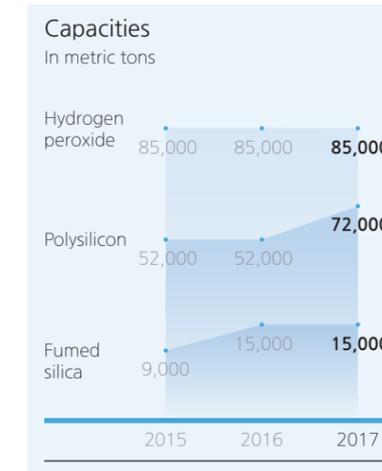
### Chlor Alkali

Caustic soda, hydrogen, and chlorine as well as downstream products such as hydrochloric acid and sodium hypochlorite are used in a wide range of applications, processes, and everyday products.

Our chlor alkali business produces 117,000 metric tons of products annually for both captive use and sale to domestic customers. Prices in the Korean market rose in 2017 as global supply tightened in the wake of plant closings and lower operating rates in China due to rigorous environmental inspections aimed at improving air quality. This favorable market environment combined with

our ongoing cost-reduction efforts and success at winning long-term caustic soda and chlorine supply contracts with major customers enabled us to increase profitability as we continued to strategically grow our customer base and gain market share.

Looking ahead, we expect the current tight market supply situation to continue in 2018, setting the stage for additional improvements in profitability. Our high-purity anhydrous hydrochloric acid synthesis tower completed in November 2015 will continue to play a key role in enhancing cost competitiveness and elevating quality.



\* Before adjustment for consolidation



# Petrochemicals & Carbon Materials

**// Sales climbed 50% to KRW 1,319 billion in 2017 thanks to strong TDI and pitch prices driven by tight supply as well as growing revenue from our new coal tar distillation and carbon black operations in China. EBITDA soared nearly 95% to KRW 247 billion as our cost leadership combined with strong pricing and demand boosted profitability. //**

## Carbon black

This material is produced by the incomplete combustion of hydrocarbon fuels. It is primarily used as a reinforcing filler in tires and other rubber products as well as a color pigment in plastics, paints, and inks.

We are Korea's No. 1 carbon black producer with plants in Korea and China and a global production capacity of 450,000 metric tons, including 100,000 tons from joint venture subsidiary Hyundai OCI Carbon. In 2017, sales rose 17% as we ramped up new capacity in both Korea and China. While profitability was also up, strong price competition and delays in completing qualification with local tiremakers in China limited our gains.

A key development for the year was the early completion of our joint venture Hyundai OCI Carbon plant in Daesan, Korea in October. The new 100,000 metric ton plant began commercial production

in early 2018. Based on current market trends, we plan to accelerate construction of the 50,000 metric ton second phase as we aim to begin commercial production in late 2020.

Looking ahead, we expect our 80,000 metric ton Shandong OCI-Jiayang Carbon Black plant in China's Shandong Province to make a significant contribution to profitability starting in 2018 following the completion of qualification with global tiremakers in the first quarter of 2018. We also will continue to expand sales in value-added carbon black fields such as speciality black and mechanical rubber goods as we accelerate the shift of our product portfolio toward those markets.

## Toluene di-isocyanate (TDI)

This chemical is normally reacted with polyol to produce polyurethane used for slab and mold foam in furniture, automobiles, electronic components, and shoes as well as paints and resins.

We are a top-3 TDI supplier in Korea with a 30% market share. We also supply TDI to more than 200 customers in 70 countries spanning Asia, the Middle East, Africa, and South America. In 2017, sales volume rose slightly and profitability continued to climb as we benefitted from an industry-wide undersupply situation triggered by the exit of several major global players in 2016 and low utilization rates at new plants that have come online since then.

Looking ahead, we expect the current favorable market dynamics to continue through at least the first half of 2018. We are well positioned

to further improve profitability as we continue to leverage the unique cost advantages that come from our ability to self-source key feedstocks such as chlorine and hydrogen and strategically shift our focus to higher-margin products and markets.

## Pitch

This material is used as a binding agent in high-quality anodes for aluminum smelting, graphite electrodes, refractory bricks, and water-proofing products. Coal tar, the raw material used to make pitch, can also be distilled to produce carbon black oil and naphthalene, key feedstocks used in our carbon black and phthalic anhydride businesses.

We are a global top-3 coal tar distiller with a total global distillation capacity of 1,280,000 metric tons, including 550,000 metric tons at two plants in Korea and 730,000 metric tons at two plants in China. We currently supply pitch to major aluminum smelters in the Middle East, Africa, Oceania, and North America.

Pitch export sales volume from China increased substantially in 2017 thanks to our new 350,000 metric ton Ma Steel OCI Chemical plant in China's Anhui Province that began commercial operations in the final quarter of 2016. While sales improved substantially, rising feedstock costs as well as the 2~3 month lag before their reflection in selling prices dampened our momentum.

Looking ahead, our diversified East Asia production network with plants in Pohang and Gwangyang in Korea and Shandong and Anhui Provinces

in China positions us to continue to expand our global market share. This production flexibility, more than two decades of experience in the business, and long-term supply agreements with the world's top aluminum smelters give us a solid foundation for growth going forward.

## BTX

These three chemicals are the mainstay aromatic hydrocarbon feedstocks of the chemical industry used to make countless other petrochemicals. Benzene is used in styrene monomer, phenol, cyclohexane, and aniline. Toluene is used as a solvent for various chemical products and as a raw material for dinitrotoluene. Xylene is used as a solvent.

We are Korea's sole manufacturer of coal-based BTX products with a capacity of 260,000 metric tons. Sales rose strongly in 2017 as tight supply driven by increased imports by China pushed international selling prices higher and we successfully ramped up production at an 80,000 metric ton capacity expansion at our Gwangyang plant completed in November 2016. Profitability was also up substantially for the same reasons.

Looking ahead, our recently expanded capacity, stable domestic and international feedstock sourcing, and ongoing cost-reduction activities will continue to enhance our industry cost leadership going forward.

## Other Aromatics

Phthalic anhydride is used in plasticizers, unsaturated polyester resins, paints, and pigments. Plasticizers are used

to soften PVC plastics to produce products such as wire insulation, synthetic leather, film, automotive sealer, and building materials.

We are Korea's sole supplier of naphthalene-based phthalic anhydride with an overall domestic market share of 40% and a major domestic plasticizer producer with a 20% market share. We source 100% of our feedstocks internally, giving us a unique competitive edge over our industry peers.

Phthalic anhydride and plasticizer sales both rose in 2017 boosted by a global price recovery for the former and

growing sales for the latter backed by our new 15,000 metric ton eco-friendly DOTP plasticizer plant in Pohang, which marked its first full year of production. However, profitability suffered as the domestic market leader slashed selling prices to grow market share, forcing us to follow suit as well as pursue less-profitable export contracts.

Looking ahead, we will be focusing on differentiating our product lineup, de-emphasizing commodity products as we develop unique eco-friendly solutions. These efforts will be backed by a modern 15,000 metric ton plant completed in Pohang, Korea in May 2016.



\* Before adjustment for consolidation



# Energy Solutions



Alamo solar PV plant, Texas, USA

// Sales soared 138% to KRW 811 billion in 2017 as we monetized our stakes in the Alamo 6 and Pearl solar PV projects in the US, re-entered the Korean solar PV development market, and enjoyed solid results from our cogeneration plant in Korea. //

### Solar PV energy

The global solar PV market saw installations once again climb roughly 30% in 2017, rising from over 77 GW to nearly 100 GW. China and the US continued to lead in growth, followed by India, Japan, Germany, and Turkey.

We are a global solar PV project developer with a presence in key markets around the world that include the United States, China,

and Korea as well as emerging solar markets in Southeast Asia and Africa. As of the end of 2017, we had completed projects totaling 620 MW. We currently operate projects totaling 70 MW worldwide with an additional 150 MW in development or under construction.

In the US, we successfully wrapped up the 560 MW Alamo project launched back in 2012 for San Antonio-based CPS Energy. We monetized our investment in the 140 MW Alamo 6 project by selling our stake in January 2017. The plant itself began commercial operations in March. We continue to own and operate Alamo 1 and Alamo 2 and retain a 20% stake in Alamo 4.

In addition to wrapping up the

Alamo project, we made progress on two 66 MW follow-up projects in Texas from CPS Energy in 2017. Alamo 6+ was completed and monetized via a sale in August. The Ivory project broke ground in the first quarter of 2018 and is scheduled to come online before the end of the year.

In other markets, we completed the 1 MW Jiaxing Shenghe project in February 2017 and neared completion of the 3 MW Wuxi (Bridgestone) project, both in China. In Korea, we closed 2017 with multiple projects totaling 8 MW completed and 80 MW in development. Backed by a solid international track record in the solar PV development field, local insights, and the KRW 130 billion OCI Solar PV

Fund established in December 2016 as a funding vehicle for domestic projects, we are well positioned to help accelerate the adoption of solar power in our home market.

Looking ahead, the global solar market is projected to continue to achieve growth of over 20% annually through the end of the decade with China and the US leading the way. Korea is also expected to see significant growth after hovering around 1 GW for the past two years, with installations expected to exceed 1.5 GW in 2018 and 2 GW in 2019 as the market responds to new government incentives. In every market we are present in, we will continue to step up our efforts to create total solar PV solutions and sustainable business models that will enable us and our solar value chain partners to profitably generate greater value for our customers.

### Energy storage systems

In recent years, we have pursued a number of projects focused on integrating renewable energy generation and energy storage systems (ESS) to make our solar PV solutions even more flexible

and competitive. In early 2018, we launched a project to install a 51 MWh ESS system at our Gunsan polysilicon plant as part of a peak shaving strategy to lower our energy costs. The facility is expected to be operational by summer. We are targeting ESS installations totaling 30 MWh in 2018 in conjunction with solar PV projects we are on schedule to complete this year in Korea.

### Cogeneration energy

Subsidiary OCI SE operates a state-of-the-art coal-fired 303 MW cogeneration power plant on 16.2 hectares of reclaimed land in the Saemangeum Industrial Complex on Korea's west-central coast. Building on five decades of expertise in operating captive cogeneration plants at our Incheon, Gwangyang, and Pohang plants, we have incorporated the best available technologies and practices to ensure the plant is as efficient and environmentally friendly as possible.

The Saemangeum plant completed its first full year of operations in 2017. While power sales continued to meet targets, demand for steam continued to be low due to the

slow build-out of the industrial complex. In addition to continuing to optimize overall operations during the year, we diversified the fuel mix by augmenting the main coal fuelstock with wood pellets. This change qualified us for renewable energy certificates from the Korean government which we sold on the market, incrementally improving revenues.

### Plant facts

Power	303 MW
Steam	860 tons/hour
Investment	KRW 557.6 billion
Employees	75

### Solar PV projects

MWdc	
<b>Korea</b>	28.0
<b>US</b>	
Alamo 1	50.0
Alamo 2	5.0
Alamo 3	7.0
Alamo 4	50.0
Alamo 5	114.0
Alamo 6	140.0
Alamo 6+	66.0
Alamo 7	132.0
Delsea	4.0
Holmdel	4.0
Lavonia	1.0
<b>China</b>	
Jiaxing 1	2.6
Hongze	10.0
Wuxi	3.0
Yantai	5.5
Jiaxing 2	1.0
<b>Cumulative projects</b>	<b>620</b>



Cogeneration power plant, Saemangeum, Korea