2016

Fine Chemicals

Investment Opportunities In Korea
Korea’s fine chemical industry is the world’s fifth largest, while four Korean companies – LG Chem, Lotte Chemical, SK Innovation and Hanwha Chemical – ranked among the world’s top 50 chemical companies.

**Industry Overview**
- Global fine chemicals materials market outlook by key sector
- Production of Korea’s fine chemical industry by sector – Top 3
- Foreign direct investments

**Competitiveness**
- Promising outlook for Korea’s high-tech chemical materials
- Industrial clusters

**Success Cases**
- Solvay
- BASF

**Where to Invest**
Location descriptions
1. Saemangeum Industrial Complex
2. Ulsan High-Tech Valley
3. Cheonan 5 Foreign Investment Complex
4. Gwangyang FEZ Functional Chemical Cluster
Industry Overview

Global fine chemicals materials market outlook by key sector

Global fine chemicals market growth by segment: Semiconductor parts materials (10.0%), display parts materials (9.2%) and separators (8.3%)

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dye &amp; pigment</td>
<td>223</td>
<td>229</td>
<td>235</td>
<td>242</td>
<td>249</td>
<td>2.8</td>
</tr>
<tr>
<td>Semiconductor parts</td>
<td>834</td>
<td>917</td>
<td>1,009</td>
<td>1,110</td>
<td>1221</td>
<td>10.0</td>
</tr>
<tr>
<td>parts materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display parts materials</td>
<td>524</td>
<td>572</td>
<td>625</td>
<td>683</td>
<td>745</td>
<td>9.2</td>
</tr>
<tr>
<td>Eco-friendly fine paint</td>
<td>223</td>
<td>231</td>
<td>239</td>
<td>248</td>
<td>257</td>
<td>3.6</td>
</tr>
<tr>
<td>Bioplastics</td>
<td>113</td>
<td>149</td>
<td>196</td>
<td>259</td>
<td>342</td>
<td>3.2</td>
</tr>
<tr>
<td>Fine nanofilms</td>
<td>336</td>
<td>356</td>
<td>377</td>
<td>400</td>
<td>423</td>
<td>5.9</td>
</tr>
<tr>
<td>Separators</td>
<td>171</td>
<td>185</td>
<td>200</td>
<td>217</td>
<td>235</td>
<td>8.3</td>
</tr>
<tr>
<td>Smart fiber</td>
<td>1770</td>
<td>1832</td>
<td>1896</td>
<td>1962</td>
<td>2031</td>
<td>3.5</td>
</tr>
<tr>
<td>Automotive plastic materials</td>
<td>63</td>
<td>66</td>
<td>69</td>
<td>73</td>
<td>77</td>
<td>5.1</td>
</tr>
</tbody>
</table>

Source: Small and Medium Business Administration (2013), Technological roadmap for SMEs: Issue No. 7 Chemical Process

Production of Korea’s fine chemical industry by sector – Top 3

By sector, the basic inorganic chemicals segment stood at KRW 7.466 trillion in 2013, the largest in the fine chemical industry, followed by paint and ink (KRW 6.21 trillion) and pigment and dye (KRW 2.585 trillion).

Note: The chemical industry includes fertilizer, rubber and plastic manufacturing industries, and excludes pharmaceuticals

Source: KOSTAT, KOSIS DB
Foreign direct investments

The foreign direct investment in Korean chemical products recorded a 24.5% increase YoY in 2014. In contrast, the chemical engineering segment attracted as much as USD 3.18 billion, posting a 3.7-fold increase from the previous year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Fine chemicals (USD million)</th>
<th>Chemical products (USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>847</td>
<td>927</td>
</tr>
<tr>
<td>2011</td>
<td>1,769</td>
<td>1,831</td>
</tr>
<tr>
<td>2012</td>
<td>1,067</td>
<td>1,286</td>
</tr>
<tr>
<td>2013</td>
<td>597</td>
<td>867</td>
</tr>
<tr>
<td>2014</td>
<td>743</td>
<td>3,178</td>
</tr>
</tbody>
</table>

*Source: Ministry of Trade, Industry & Energy

Competitiveness

Promising outlook for Korea’s high-tech chemical materials

The foreign direct investment in Korean chemical products recorded a 24.5% increase YoY in 2014. In contrast, the chemical engineering segment attracted as much as USD 3.18 billion, posting a 3.7-fold increase from the previous year.

Competitiveness of Korea’s high-tech electronic industry

*Source: Korea Institute for Industrial Economics & Trade, the Overseas Economic Research Institute of The Export-Import Bank of Korea (2014)
Industrial clusters

The industrial clusters are located in the Greater Seoul Area to provide easy access to a highly skilled workforce and anchor companies or petro-chemical national industrial complexes in Yeosu and Ulsan for easy access to logistics.

Success Cases

Solvay

Solvay, a global chemicals company founded in Belgium in 1863, operates the chemicals and plastic businesses, making active investments in fuel cells, rechargeable batteries, new and renewable energy, water treatment, organic electronic materials and LED. Solvay will invest KRW 120 billion in the Seoul Capital Area by 2017 to build a 9,000m² production plant to produce ESS, solar electric materials and displays.
BASF is the world’s largest comprehensive chemicals company and headquartered in Germany. It is also the world’s best in terms of sales revenue, R&D and equipment investment. Since launching BASF Korea in 1988, the company has been expanding its manufacturing facilities in Yeosu, Ulsan, and elsewhere. The annual sales of BASF Korea is over KRW 2 trillion. Having recently relocated its Asia-Pacific Electronic Materials Division to Korea, BASF has also opened a new R&D Center at Sungkyunkwan University in Suwon with a total investment of USD 32 million.

The new R&D center works with corporations and research institutes in Korea to research and develop semiconductor chemicals and display materials.
Where to Invest

Location Descriptions

1. **Saemangeum Industrial Complex**
   Designated as a comprehensive bonded area and the exclusive industrial complex for Korea-China FTA, it is an optimal location to secure the supply of raw materials and serves as a bridgehead for companies extending their business into the Chinese market.

2. **Ulsan High-Tech Valley**
   Located in Ulsan Metropolitan City, which boasts the largest cluster of automobile, shipbuilding/maritime and chemical industries, it provides an optimal location for the field of fine chemicals to enhance its competitiveness, making the best of transportation and infrastructure facilities and the industrial cluster.

3. **Cheonan 5 Foreign Investment Complex**
   Situated near the capital area, securing a stable exchange of raw materials with other industrial clusters in the region and having an outstanding transportation infrastructure, it is an optimal location for enterprises to strengthen their competitiveness.

4. **Gwangyang FEZ Functional Chemical Cluster**
   As an international distribution hub with an impressive logistic infrastructure including a port and an airport, it boasts an optimal location for investment as it enjoys not only the benefits of industrial concentration including machinery, steel and petrochemical fields, but also a designation as a free economic zone.
1. Saemangeum Industrial Complex

**Investment Highlights**

**Location Description**
Designated as a comprehensive bonded area and the exclusive industrial complex for Korea-China FTA, it is an optimal location to secure the supply of raw materials and serves as a bridgehead for companies to extend their business into the Chinese market.

**Key Rationale**
- Possibility of a close relationship with Chinese clusters provided by its selection as the single industrial complex for Korea-China FTA in 2015
- Creation of the synergy through an association or convergence with other industries and related industries in the area, including new and renewable energy (e.g. solar power, wind power, hydrogen fuel cells) and high-tech materials

**Location Requirements**

<table>
<thead>
<tr>
<th>Recommended Business Sector</th>
<th>Research and Development (R&amp;D), Chemistry-related Manufacturing Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Lotting-out</td>
</tr>
<tr>
<td>Land Zoning</td>
<td>Free Economic Zone in the National Industrial Complex</td>
</tr>
<tr>
<td>Investment Condition</td>
<td>Terms of Investment and Undertaking: manufacturing business, start-up costs, acquisition of stocks/shares and securing a long-term loan, sole investment by foreign investment enterprises or joint venture with domestic companies</td>
</tr>
</tbody>
</table>

**Location Overview**

- **Target Area**
  - Total Area: about 18,495,000 m²
  - Available Area: 790,378 m²

**Related Companies (13)**
- Major Companies: Hana Precision Co., Ltd., Chungdo Fine Chemical Co., Ltd.
- Manufacturer of Primary Batteries and Storage Batteries: EchoPro Inc.
- Manufacturer of Basic Medical Materials and Biological Medicines: KPK Biotech Co., Ltd.
- Other Manufacturers of a variety of Chemical Products: SPC Co., Ltd., Hana Precision Co., Ltd., Top Nanonic Inc., REPROD, MEX Inc., Kenko Precision Inc., Sungdong Precision, DOOBON Inc., Chungdo Fine Chemical Co., Ltd.
Case References

Toray New Materials

- Location / Area: Saemangeum Industrial Complex/214,951m²
- Investor: Toray Industries (Japan)
- Business Contents: macromolecular materials (PPS resin, Manufacturing PPS compound and producing its material)
- Total amount of investment / Employment Size: 254.5 million USD (FDI: 80 million USD) / 150 people

Support for Investment

- Free leasehold of public land: 214,951 m² (Costs for purchasing land: 17 million USD)
- Offering investment subsidies
  - Investment grants: about 2.5 million USD (Provincial support) - 2% of the amount invested over 833 thousand USD
  - Employment grants: about 500,000 USD
  - Grants for educational training and youth employment: when meeting the requirements
- Tax reduction or land exemption: approximated at 19.103 million USD
  - National tax (corporate tax): for 7 years (100% for 5 years, 50% for 2 years)
  - Local tax (acquisition tax, property system): 100% for 15 years
- Other financial support including infrastructure
  - Investment subsidies for infrastructures: about 2.5 million USD - costs for the wastewater preprocessing facilities

Business Considerations

Market Perspective

- Domestic market about USD33.426 million
- Global market about USD530.657 million

Business Suggestion

On the basis of locational advantages given to the single industrial complex for Korea-China FTA are suggested businesses associated with China (e.g., fine chemical manufacturing, securing distribution channel)

Main Costs

- Land lot prices: about 126 USD/㎡
- Wage level: 2,308 USD (based on the real wages in Jeollabuk-do as of 2015. 4)

Business Cluster

Major Corporations in the region

- Solar power: OCI COMPANY LTD NEXOLON CO., LTD OSUNGLST CO., LTD SOLARPARK KOREA CO., LTD
- Hydrogen fuel cells: PRO-POWER COMMUNICATION CO., LTD
- Bio: Next Oil, B&D Energy, BDK CO., LTD, J&B Oil, ECO enerntech CO., LTD
- Advanced materials: SOLVAY, TORAY

Potential Customers

- Advanced materials industries related to fine chemical industry

Related Organization

- Saemangeum Development Board: www.saemangeum.go.kr
- Jeollabuk-do: www.jeonbuk.go.kr
- Integrated Information Network of industry-university-institute: www.e-cluster.net
Infrastructure

Utilities
- Water: industrial water 96,000 tons/day, water for living 28,000 tons/day
- Wastewater: sewage disposal plant, treatment capacity 33,000 m³
- Electricity: lead-in course (Yeonggwang Nuclear Power Complex → Gimje → Gunsan Power Transmission Branch Office → Saemangeum Substation), supply capacity 2 million kw
- Telecommunication: number of telephone circuit 162,689 circuits
- Industrial waste: landfills 157,700 ㎡, waste disposal 1,468 tons/day
- Power supply facilities: heat supply facilities (steam 1,400 Gcal/hr)

Transportation
- Airport: Gunsan Airport
- Railroad: Saemangeum Railroad (To be completed in 2025)
- Road: 25km from Gunsan I.C of Seohaean Expressway, 50km from Jeonju I.C of Honam Expressway
- Port: Gunsan Port (berthing capacity 22 vessels, cargo handling capacity 3 million tons/year)

Labor & Material

Labor Condition
- Regional population: (Unit: persons, %)

<table>
<thead>
<tr>
<th>Items</th>
<th>Total Population</th>
<th>Available labor force</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeollabuk-do</td>
<td>1,766,044</td>
<td>1,053,759</td>
<td>210,315</td>
<td>23,712</td>
<td>6,027</td>
</tr>
<tr>
<td>Ratio</td>
<td>-</td>
<td>59.7</td>
<td>11.9</td>
<td>1.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Gunsan-si</td>
<td>258,845</td>
<td>160,877</td>
<td>30,531</td>
<td>2,976</td>
<td>634</td>
</tr>
<tr>
<td>Ratio</td>
<td>-</td>
<td>62.2</td>
<td>11.8</td>
<td>1.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>
- Average wage: 2,308 USD (Based on the real wages in Jeollabuk-do as of April 2015)

Core Resource Supply
- Desirable location for adequate supplies of raw materials: Conveniently situated in the center of Pan Yellow Sea area, it provides an easy access to China, Japan and Eurasia (about 60 cities with a population of more than a million people are located within a 3-hour distance by airplane) with the metropolitan area including Seoul, Gyeonggi-do and Incheon within two hours distance of it.
- Competitive Infrastructure: Most desirable environment for a cruise port to China (easy berthing for vessels of 120,000 ton or more class), optimal distances to major Chinese ports, extended Gunsan Airport pushing ahead with the operation of international airliners
- Designation of a comprehensive bonded area: Reduction and exemption of custom tariffs on raw materials secures the price competitiveness against the products of other regions

Living Conditions

Education:
- Six four-year colleges, about 18,000 graduates/year
- Two two-year colleges, about 800 graduates/year
- Two Korea Polytechnic Universities, about 700 graduates/year
- Manpower training systems in specialized vocational (technical)high schools in the Province: 14 schools, 2,400 graduates/year
- Corporations and private institutes for manpower training: 50 institutions, about 2,800 graduates/year

Government Support
- Support for the premises, postponement of the appointed date of payment and divided payments: permissions on the use and revenue are given to the resident foreign investment enterprises through private contracts and the enterprises are eligible to get a loan and sell.
- Reduction & exemption benefit of the rent for national and public property: the reduction rate of rent (state property – within a range of 99-100th of the rent, public property – fixed by the regulations of local governments)
- Lease of land or building which is state owned or public: lease within 50 years/extendable for additional 50 years
- Funding support: site renovation rented to the resident foreign investment enterprises, reduction and exemption of the rent for land, installation of a variety of amenities for foreigners including medical facilities, education facilities and housing
2. Ulsan High-Tech Valley

Investment Highlights

Location Description
Located in Ulsan metropolitan city, which boasts the largest cluster of automobile, shipbuilding/maritime and chemical industries, it provides the optimal location for the field of fine chemicals to enhance its competitiveness, making the best use of its transportation and infrastructure facilities and the industrial cluster.

Key Rationale
- Secure supply of high-quality human resources through the Ulsan support center for the Korea Research Institute of Chemical Technology (KRICT), Yeongnam headquarters for the Testing and Research Institute of Chemical Technology, Ulsan Fine Chemical Industry Center (UFCCI) and Biological Chemistry Commercialization Center etc.
- Efficient cooperation and exchange of raw materials with other industrial clusters in Ulsan metropolitan city in addition to the improved competitiveness of companies through convergence and connection between related businesses.

Location Requirements

<table>
<thead>
<tr>
<th>Recommended Business Sector</th>
<th>Research and Development (R&amp;D), and chemical manufacturing business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Lotting-out</td>
</tr>
<tr>
<td>Land Zoning</td>
<td>General Industrial Complex</td>
</tr>
<tr>
<td>Investment Condition</td>
<td>Occupants must follow pollution and wastewater treatment regulations</td>
</tr>
</tbody>
</table>

Target Area
- Total Area: about 2,060,000 ㎡
- Available Area: about 140,000 ㎡

Location Overview

Related Companies (11)
- Major Company: Samsung Fine Chemical
- Other Manufacturers of a variety of Chemical Products: WISCO, Samba Fine Chemical Co., Ltd., Young Poong Precision Corporation, Samsung Fine Chemical, Daehung Chemical Co., Ltd., An Sung Fine Chemical Co., Ltd., Daehung Fine Chemicals Co., Ltd., Han Fine Fine Chemical Co., Ltd.

1 USD = 1,200 KRW
Case References

Solvay Chemicals Korea Co., Ltd.

- Established in 1863, the Solvay S.A. is the Europe’s representative chemical company, having a history of 150 years and over and its Headquarters in Belgium.
- Invested with 100 million USD, Solvay Chemicals Korea received the subsidy of 14.333 million USD from the Government and its local government in addition to the tax break incentives on corporate tax (7 years), tariff (5 years) and local tax (15 years).
- First, Solvay Chemicals Korea Co., Ltd. and Solvay Fine Chemicals Co., Ltd. were established in Onsan National Industrial Complex, Ulsan; and the Korea Research and Test Center for Solvay Chemicals Korea Co., Ltd. was also established in Ulsan Fine Chemistry Center in Jung-gu Daun-dong on March 19, 2009.
- Company invested about 0.75 million USD by 2011, finally developing the functional chemical material for second-life lithium-ion batteries.
- Fine Chemical Business Group in Ulsan Industrial Development Techno Park and Solvay Fluor GmbH Germany voted for international cooperation business on ‘The development of functional chemical materials for the second-life lithium-ion batteries’ in July, 2008, realizing the investment in line with such strategy.
- The company participated in the joint business with Napes, a fine chemicals company in Korea’s electronic material field to develop the nanotechnology-based next-generation electronic materials.

Business Considerations

<table>
<thead>
<tr>
<th>Market Perspective</th>
<th>Domestic market USD 33.43 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Global market USD 530.66 billion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Suggestion</th>
<th>Businesses creating new value in relation with industrial clusters including automobile, shipbuilding/maritime, fine and petro chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Businesses strengthening the research and development sector in cooperation (e.g. consortium, strategic alliance) with Ulsan Metropolitan City R&amp;D facilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Costs</th>
<th>Average lotting-out price: ‘304 USD /㎡’</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wage level : 2,392 USD (based on the real wages in Gyeongsangnam-do as of April, 2015)</td>
</tr>
</tbody>
</table>

Business Cluster

<table>
<thead>
<tr>
<th>Major Corporations in the region</th>
<th>Samsung SDI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New General Industrial Complex : Oweol Tech, Serlim Chemical Inc. Jungwoo tech co. Wooshin metal co. ltd</td>
</tr>
<tr>
<td></td>
<td>Gilcheon 1 : Rinno Aluminum CO., Ltd.</td>
</tr>
<tr>
<td></td>
<td>Gilcheon 2 : Taeyeong Fine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential Customers</th>
<th>Advanced materials industries related to fine chemical industry</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Related Organization</th>
<th>Ulsan Metropolitan City <a href="http://www.ulsan.go.kr">www.ulsan.go.kr</a></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated Information Network for Industry University Institute <a href="http://www.e-cluster.net">www.e-cluster.net</a></td>
</tr>
</tbody>
</table>
Infrastructure

Utilities
- Industrial water: current water-intake 6,000 tons/day; smooth supply ensured (maximum daily consumption: 1,204 m³)
- Water for living: through waterworks facilities, water for living is supplied on a stable basis
- Waste water: Bangeojin Terminal Disposal Plant of Sewage
- Electricity: lead-in channel (as the industrial electricity), supply capacity (total demand 31,334 KVA, industrial use 29,430 KVA, public use 1,904 KVA)
- Telecommunication: 2,300 lines (plant and support facilities: 1,226 units)
- Industrial waste: separate collection in waste disposal plant, before incineration/reclamation (treatment facilities: 7,210 m³), daily generated amount 11.26 tons (living: 1.45 tons, business 9.81 tons)

Transportation
- Airport: Ulsan Airport (6km)
- Railroad: KTX Ulsan Station (35km), Seoul-Busan Railroad Line Hyomun Station (9km)
- Road: Ulsan-Eonyang Expressway (18km), National Highway 7
- Port: Ulsan Port (2km)

Labor & Material

Labor Condition
- Regional population: (Unit: persons, %)

<table>
<thead>
<tr>
<th>Items</th>
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<th>Available labor force</th>
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<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gyeongsangnam-do</td>
<td>3,119,571</td>
<td>1,974,411</td>
<td>351,198</td>
<td>34,313</td>
<td>6,300</td>
</tr>
<tr>
<td>Ratio</td>
<td>-</td>
<td>63.3</td>
<td>11.3</td>
<td>1.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Ulsan Metropolitan City</td>
<td>1,071,673</td>
<td>719,360</td>
<td>125,331</td>
<td>10,641</td>
<td>1,673</td>
</tr>
<tr>
<td>Ratio</td>
<td>-</td>
<td>67.1</td>
<td>11.7</td>
<td>1.0</td>
<td>0.2</td>
</tr>
</tbody>
</table>

- Average wage: 2,392 thousand USD (based on the real wages in Gyeongsangnam-do as of April, 2015)

Core Resource Supply
- Beneficial to secure raw materials and human resources: National Industrial Complex (e.g. Onsan, Mipo) and General Industrial Complex (e.g. Maegok, Jungsan, Bonggye) located in Ulsan Metropolitan City
- Ulsan support center for the Korea Research Institute of Chemical Technology (KRICT), Yeongnam headquarters for the Testing and Research Institute of Chemical Technology, Ulsan Fine Chemical Industry Center (UFCIC) and Biological Chemistry Commercialization Center (under construction) etc.

Living Conditions
- Education: 18 kindergartens (16,245 people), 588 nursery facilities (21,868 people)/61 middle schools (52,299 people), 51 high schools (52,447 people)/10 vocational high school (9,027 people), 12 Polytechnic College departments (440 people)/2 college (11,714 people), 2 universities (22,022 people), 7 graduate schools (2,581 people)
- Medical Facilities: 4 general hospitals, 64 hospitals, 496 clinics, 295 dental clinics, 4 traditional medical centers, 5 community health-care centers, 241 traditional medical clinics, 9 care hospitals
- Others: 178,719 flats, 6 hotels, 1 golf course

Government Support

Tax benefits
- Target: high-technology businesses, industry supporting services, separated companies in foreign investment region
- National tax (corporate tax, income tax): 100% for 5 years, since then 50% for 2 years
- Local tax (acquisition tax): 100% for 15 years
- Local tax (property tax): 100% for 7 years, since then 50% for 3 years

Cash-grant
- Target: foreign investment companies with the foreign investment rate of 30% and over
- By checking whether high-technology is applied and considering the effects of technology transfer and the scale of employment creation as well as considering whether it is overlapped with domestic investment
3. Cheonan 5 Foreign Investment Complex

Investment Highlights

Location Description
Situated near the capital area, securing a stable exchange of raw materials with other industrial clusters in the region and having an outstanding transportation infrastructure, it is an optimal location for enterprises to strengthen their competitiveness.

Key Rationale
- As an important traffic hub, it provides an easy access to roads, railroads, airports, and ports
- An outstanding workforce is secured from universities within the jurisdiction of the city of Cheonan. The region has enough infrastructure facilities including industrial water, water for living, electricity, and telecommunication.

Location Requirements

<table>
<thead>
<tr>
<th>Recommended Business Sector</th>
<th>Manufacturing businesses related chemical materials and chemical products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Public development of national industrial complex (lease, lotting-out)</td>
</tr>
<tr>
<td>Land Zoning</td>
<td>Foreign Investment Zone (complex type)</td>
</tr>
<tr>
<td>Investment Condition</td>
<td>Eligibility for residency: companies with 30% and more of foreign investment shares, with USD 41,667 and more of foreign investment amount</td>
</tr>
<tr>
<td></td>
<td>Restrictions on residency: excluded companies according to the above mentioned eligibility, businesses incongruous for entering industrial complex</td>
</tr>
</tbody>
</table>

Target Area
- Total Area: 5,745,000 m²
- Available Area: 23,000 m²

Location Overview

1 USD = 1,200 KRW
Case References

JIOS Aerogel Corporation

- Products: with superb insulating and waterproof qualities, aerogel is used in a variety of fields including construction, energy transportation, industrial facilities, home appliances, automobile and textiles
- Manufacturer of high-tech nanomaterials in USA
- With an investment of 30 million USD in Cheonan 5 Foreign Investment Complex, the company constructed a plant of 27.4 thousand m², starting to produce the material from 2015
- Cheonan 5 Foreign Investment Complex anticipates that the investment of three enterprises including JIOS Aerogel Corporation will bring about economic effects of direct employment (250 people), sales (1,020.833 million USD), import substitution (312.5 million USD) and induced production (2,225 million USD) over the next 5 years

Business Considerations

Market Perspective
Domestic market about USD 33.43 billion/ Global market about USD 530.66 billion

Business Suggestion
Businesses with the potential to create synergy making use of the adjacent Cheonan-Asan Crystal Valley (display industry) and Daesan Petrochemical Complex (petrochemical industry) etc.

Main Costs
Period : 50 years (decennial renewal of contract)
Average letting-out price : about 207 USD/m²
Rental : 206 KRW/m² (prepayment for a year)
Wages : 2,804 USD (total average per capita wages of Chungcheongnam-do)

Business Cluster

Major Corporations in the region
- International: Rohm and Haas Electronic Materials Korea Ltd

Potential Customers
- Domestic companies supplying fine chemistry products

Related Organization
- Industrial Activities Support Institute : Cheonan Branch of Daejeon District Court, Cheonan Tax Office, Cheonan Customs, Cheonan Regional Labor Office, Korea Industrial Complex, Korea Labor Welfare Corporation, Korea Institute of Industrial Technology, Cheonan Chamber of Commerce and Industry, Korea Appraisal Board
- Industrial Activities Education Institute : Ilseong Vocational Training Institute, Korea Association of Machinery Industry (KOAMI)
- Financial Institute : all banks including Korea Bank, Korea Technology Credit Guarantee Fund, Donga Venture Capital, Credit Guarantee Fund, Korea Technology Banking Corporation
Infrastructure

Utilities
- Water: 6,565 m³/day (industrial water 6,101 m³, water for living 464 m³)
- Waste water disposal plant: 22,337 m³ (4,400 m³/day)
- Waste disposal facility: 39,669 m³
- Electricity: 337,206 MWh/year
- Communications: 2,021 circuits
- Distributing reservoir: 5,100 m³/day

Transportation
- Airport: Cheongju Airport (35km)
- Railroad: High-speed railroad Cheonan Station (7km), Seoul-Busan Railroad Line, Janghang Line Cheonan Station (7km)
- Road: Seoul-Busan Expressway Cheonan IC (7km) (Seoul 90km, Daejeon 90km), 1 national highway, (Seoul--Cheonan--Sineuiju), 628 local roads (Eungbong--Oryang), 693 local roads (Seonggeo--Anseong)
- Port: Pyeongtaek Port (20km, 20~50 thousand tons berthing, cargo handling capacity 24.5 million tons/year, Cargo-berthing capacity 6~8 vessels)

Labor & Material

Labor Condition
- Regional population: 2,000,473 (Chungcheongnam-do), 565,201 (Cheonan-si)
- Available labor force: 1,193,274 (Chungcheongnam-do), 347,533 (Cheonan-si)
- Bachelor's: 187,496 (Chungcheongnam-do), 69,996 (Cheonan-si)
- Master's: 25,427 (Chungcheongnam-do), 8,884 (Cheonan-si)
- Ph.D.: 4,789 (Chungcheongnam-do), 2,169 (Cheonan-si)
- Ratio: 59.6%, 12.4%, 1.3%, 0.4%
- Average wage: 2,804 USD (Chungcheongnam-do Total average wages per capita)

Core Resource Supply
- Core manpower: Though Chungcheongnam-do itself boasts superb manpower, its proximity to Seoul is beneficial as well for securing outstanding manpower with specialties
- Synergy with other industries: Cheonan-Asan Cristal Valley (display industry), Daesan Petrochemical Complex (petrochemical industry)

Environment

Living Conditions
- Education: 28 middle schools, 21 high schools, 12 universities/ industrial manpower training institute: 4 vocational high schools / supporting infrastructure for housewife workforce: 97 kindergartens
- Medical Facilities: 4 general hospitals, 21 hospitals, 296 clinics, 137 dental clinics, 123 traditional medical clinics, 1 community health-care, 13 branch offices of the community health-care, 18 Health Care Centers
- Others: 195,000 households (housing supply ratio: 92%), 3 golf courses, 7 gymnasiums, 1 sports complex

Government Support

Tax benefits
- corporate tax: income tax 100% for 5 years, 50% for 2 years
- acquisition tax: property tax 100% for 5 years, 50% for 2 years
- tariff (related with capital goods imports) 100% for 3 years

Finance
- telephone enquiries: Chungcheongbuk-do, International Trade Department 042)251-2174
- Target: high level technique, cutting-edge technology, other manufacturing businesses
- lease period: contract renewal - every 10 years (up to 50 years)
- rental reduction ratio
  - tax benefits business: 100% (investment of 1 million USD and over)
  - manufacturing business: 75% (investment of 5 million USD and over)

Tax cut: foreign investment of 10 million USD and over into general manufacturing business
- corporate tax 100% for 3 years, since then 50% for 2 years
- local tax cut for 15 years
- tariff (related with capital goods imports) 100% for 5 years
  - Local investment promotion subsidy, Support for business relocation, Government loan for SME (low-cost loans)
4. Gwangyang FEZ Functional Chemical Cluster

Investment Highlights

Location Description
As an international distribution hub with logistic infrastructure including a port and an airport, it boasts an optimal location for investment as it enjoys not only the benefits of industrial concentration including machinery, steel and petrochemical fields, but also a designation as a free economic zone.

Key Rationale
- Sepoong General Industrial Complex and the nearby industrial complexes (including Yeosu National Industrial Complex and Yulchon Industrial Complex I & II) provide the region with the advantage of a stable supply of raw materials and high-quality human resources in its related fields.
- It is the bridgehead towards China and Japan, the largest markets of Northeast Asia.
- Located in the world’s major sea route, Gwangyang Port and Mokpo Port offer superb infrastructure.

Location Requirements

Recommended Business Sector: Functional Chemical Materials

Type: Foreigner exclusive industrial complex, General industrial complex, Research and development center etc.

Land Zoning: Sepung Industrial Complex in the Gulf of Gwangyang FEZ

Investment Condition: Development is due to be finished by 2020
- Manufacturing business: 10 million USD and over
- Research and development: 1 million USD and over

Location Overview

Target Area:
- Total Area: about 3,000,000 m²

Related Companies (3):
- Major company: KUMHO PETROCHEMICAL Yeosu Plant Fine Chemistry
- Fine chemicals: manufacturing business
- Industrial complexes: Yeosu National Industrial Complex and Yulchon Industrial Complex I & II

Korea Trade-Investment Promotion Agency
Case References

Daesan MMA : a joint corporation of Honam Petrochemical Corp. and Mitsubishi Rayon Co., Ltd. (Japan)

Summary on Daesan MMA

• Honam Petrochemical Corp. collaborated with Mitsubishi Rayon Co., Ltd. (Japan)
• Daesan MMA is a joint venture (foreign investment company) established in 2006 between Honam Petrochemical Corp. of Korea and Mitsubishi Rayon Co., Ltd. of Japan for the purpose of specialized production of MMA and PMMA

Summary of Investment

• Daesan MMA invested a total of 50 million USD (including foreign investment of 25 million USD) to build production facilities in the site of 16,500 m² located in Yeosu Industrial Complex for the second plant of Honam Petrochemical Corp. (June 14, 2007)
• For the purpose of integrated production of MMA (materials of imitation marble -ABS) and PMMA (used in producing parts of automobile and light guide plates of LCD∙LED etc.), the plant was constructed in Yeosu National Industrial Complex (2011)
• Jeollanam-do contracted an investment agreement (MOA) of 233.333333 million USD with the co-representatives and presidents of Daesan MMA (2011)
• Through the Realization of vertical systemization to produce MMA products in the first phase and PMMA products in the second phase, the reduction of distribution costs was expected
• World’s largest in the light of the scale of single PMMA plant

**MMA (Methyl Methacrylate) is the material of imitation marble and PMMA (Poly Methyl Methacrylate) is used in producing parts of automobile and light guide plates of LCD∙LED**

Business Considerations

<table>
<thead>
<tr>
<th>Market Perspective</th>
<th>Domestic market : USD 33.43 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Global market : USD 530.86 billion</td>
</tr>
</tbody>
</table>

Business Suggestion

Value creating businesses in association with chemical businesses (including fine chemicals and petrochemistry) and research institutes resident in the adjacent industrial complex

Main Costs

Lotting-out: USD 103 /m² (based on Yulchon Industrial Complex 1 already developed in Gwangyang FEZ)

Wage level: manufacturing business USD 2,604 (based on the permanent workers in Jeollanam-do) / Research and development: USD 2,694

Real wages: USD 2,588 (based on the real wages in Jeollanam-do in April 2015)

Business Cluster

Major Corporations in the region

• Yeosu Petrochemical Complex (Korea's biggest)
  - LG chemical (PVC, ABS, acrylic acid), Lotte Chemical (HDPE, PP), Air Liquid (industrial gas)
  - Yeoecheon NCC (ethylene, propylene), Hanhwa Chemical (PE, LDPE) etc.
• Korea’s biggest steelworks and its related affiliates
  - POSCO (cold and hot rolling coils), POSCO CHEMTECH (storage battery, negative index of refraction materials) etc.

Potential Customers

• Fine Chemistry related companies

Related Organization

• Universities : 27 universities in Jeollanam-do
  - Chonbuk National University (Department of Industrial Information Systems Engineering, Department of electrical engineering), Kunsan National University (School of Mechanical and Automobile Engineering), Mokpo National University (Department of Information & Electronics Engineering), Chonnam National University (School of Electronics and Computer Engineering)
• Korea Testing and Research Institute : managing the cluster building, plans to establish the facilities to support chemical field in the cluster
Infrastructure

Utilities
• electricity: produced in the 9 plants including yeonggwang Nuclear Power Complex and Yeosu Thermal Power Plant (6 million kW, 12.7% of Korea’s total)
• water: Juam Dam (707 million m³), Sueo Dam (28 million m³)

Transportation
• Airport: Yeosu Airport (Seoul-Yeosu, 1 hour)
• Railroad: Jeolla Railroad Suncheon station (Seoul-Suncheon, 2 hour 40 minutes)
• Road: Suncheon-Wanju, Daejeon-Jinju, Gwangju-Suncheon, Mokpo-Gwangyang, Busan-Suncheon (5 expressways related)
• Port: Gwangyang Port (Korea’s second biggest, based on the quantity of goods transported - berthing capacity 35 vessels, quay 97 vessels (up to 300,000 tons)
• Port berthing capacity: Yeosu 2, Gwangyang 13, out of the harbor limit 8
• Additional development: establishment of harbor cluster planned; investment of 3.8315 trillion USD by 2020, to form the cargo quay and related industrial complex

Labor & Material

Labor Condition
• Regional population: (Unit: persons, %)

<table>
<thead>
<tr>
<th>Items</th>
<th>Population</th>
<th>Total Population</th>
<th>Available labor force</th>
<th>Bachelor's</th>
<th>Master's</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeollanam-do</td>
<td>Population</td>
<td>1,728,749</td>
<td>1,037,817</td>
<td>148,836</td>
<td>14,093</td>
<td>2,588</td>
</tr>
<tr>
<td></td>
<td>Ratio</td>
<td>-</td>
<td>60.03</td>
<td>8.61</td>
<td>0.82</td>
<td>0.15</td>
</tr>
<tr>
<td>Gwangyang-si</td>
<td>Population</td>
<td>1,317,100</td>
<td>85,833</td>
<td>13,377</td>
<td>1,190</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>Ratio</td>
<td>-</td>
<td>6.52</td>
<td>1.02</td>
<td>0.09</td>
<td>0.01</td>
</tr>
</tbody>
</table>

• Average wage: 2,588 USD (2015.04 based on real wages in Jeollanam-do)

Core Resource Supply
• Abundant utility: abundant electricity (4 plants including Hanbit Nuclear Power Plant) and industrial water (2 dams including Juam Dam in addition to Seomjingang River and Yeongsangsang River)
• Easy environment to secure raw materials: Gwangyang Steelworks (18 million tons/year), one of world’s biggest plants based on the crude steel capacity; and Yeosu National Industrial Complex (fertilizer 1.36 million tons/year), Korea’s biggest petrochemical complex including oil refining (650,000 barrels/day) and petrochemical (5.7 million tons/year) businesses

Environment

Living Conditions
• Education: 28 middle schools, 21 high schools, 2 colleges, 12 universities / industrial manpower training institute: 4 vocational high schools / supporting infrastructure for housewife workforce: 97 kindergartens
• Medical Facilities: hospital 4, clinic 45, dental clinic 34, traditional medical clinic 21
• Others: Jirisan Mountain; nearby national/provincial park 9 including Dadohae Marine National Park and Hallyeo Marine Park

Government Support

Support for foreign investment company
• Conditions: either when the foreign investment rate is 30% and over or when it is about the major shareholders
• Limit: up to 50% of foreign investment or 25% of the total of foreign investment and plowback from the accumulated earnings
• Settlement subsidy: the Complex (up to 50% of normal lotting-out price)
• Employment subsidy: in case the number of newly hired employees exceeds 20 people, 500 USD/month and less per person for up to 12 months
• Educational training subsidy: for the educational training of 20 Korean people and over in purpose of new employment, 500 USD/month and less per person up to 12 months

Tax benefits
• Foreign investment company: on corporate tax and income tax for 7 years (100% for 5 years, since then 50% for 2 years)