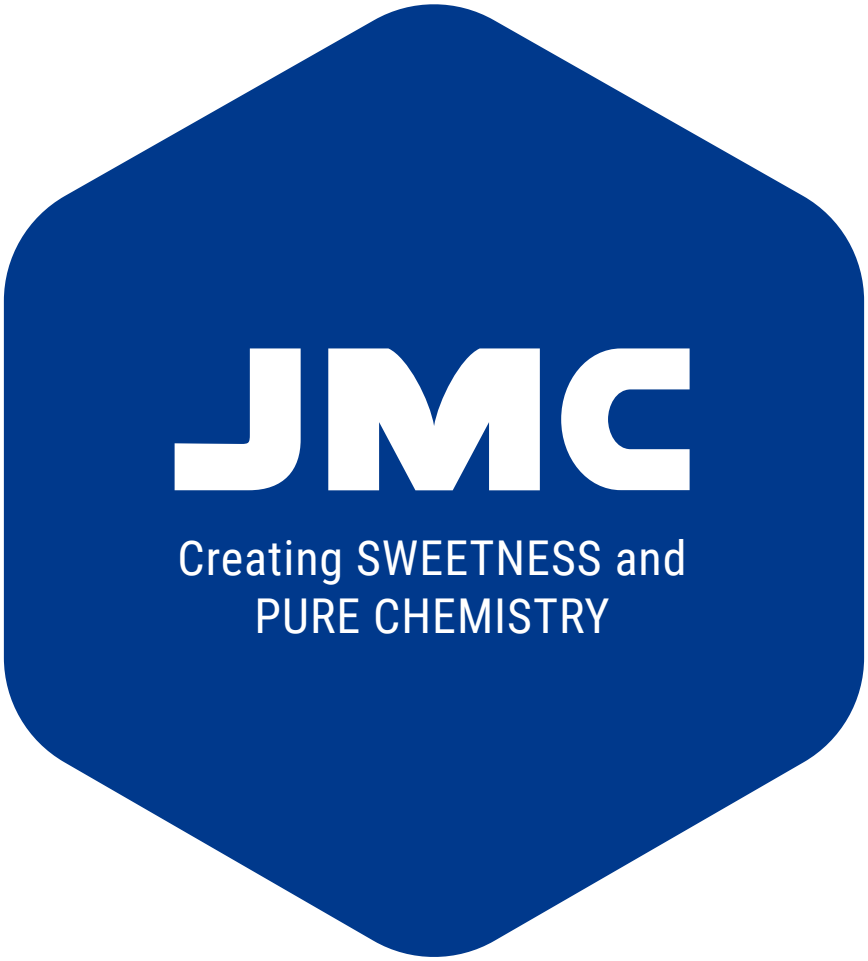
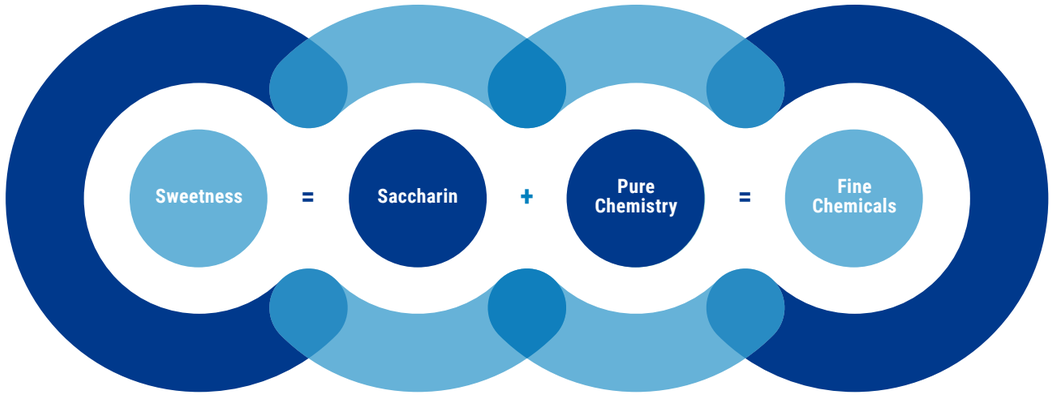

JMC
Creating SWEETNESS and
PURE CHEMISTRY

Creating SWEETNESS and PURE CHEMISTRY



About JMC

JMC (originally the Jeil Moolsan Company) was established in 1953 and is a world leader in the field of saccharin and sulfur-based fine chemicals. JMC produces materials for fluorescent pigments/resins, medicinal intermediates, electronics, plastics and agriculture. JMC is also a large-scale manufacturer of saccharin, a safe, artificial sweetener that enables a drastic reduction in sugar content. We supply saccharin to some of the world's largest, quality-oriented, multinational food and medicine producers. JMC was acquired by the KISCO group in 2004. JMC's research and development leverages the capabilities across the KISCO group and JMC provides raw materials for many other products manufactured by KISCO.

JMC History

- **2023** Celebrating 70th anniversary
- **2022** Received Ecovadis Bronze Medal
- **2021** Signed MOU for ADPOS with Ulsan city
- **2020** Warehouse Acquisition (Factory Site: 14,851sqm)
- **2019** BCMB New Factory Establishment
- **2018** Acquired Halal certificate
- **2016** Saccharin selected as a world-class product in Korea
- **2004** Became an affiliate of KISCO
- **2002** Changed the corporate name to JMC Corporation
- **1996** Established the JMC Chemistry Research Center
- **1981** Produced N-Acetyl Sulfanilyl Chloride (N-ASC) for the first time in South Korea
- **1965** Produced Ortho-Toluene Sulfonamide (OTSA) for the first time in South Korea
- **1959** Produced Sulfuric acid for the first time in South Korea
- **1954** Produced Saccharin for the first time in South Korea
- **1953** Established Jeil Moolsan Company

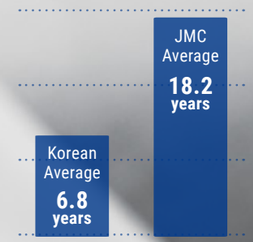
Factory & Office Location

Sales Office
3F, 571 Gonghang-daero,
Gangseo-gu, Seoul 07560
South Korea

Head Office & Factory
71 Ijin-Ro, Onsan-eup,
Ulju-gun, Ulsan 44998
South Korea

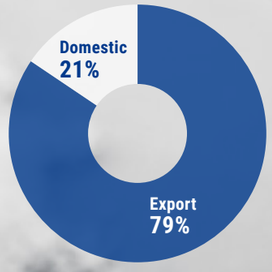
Number of Employees

Years of Service



Annual Turnover

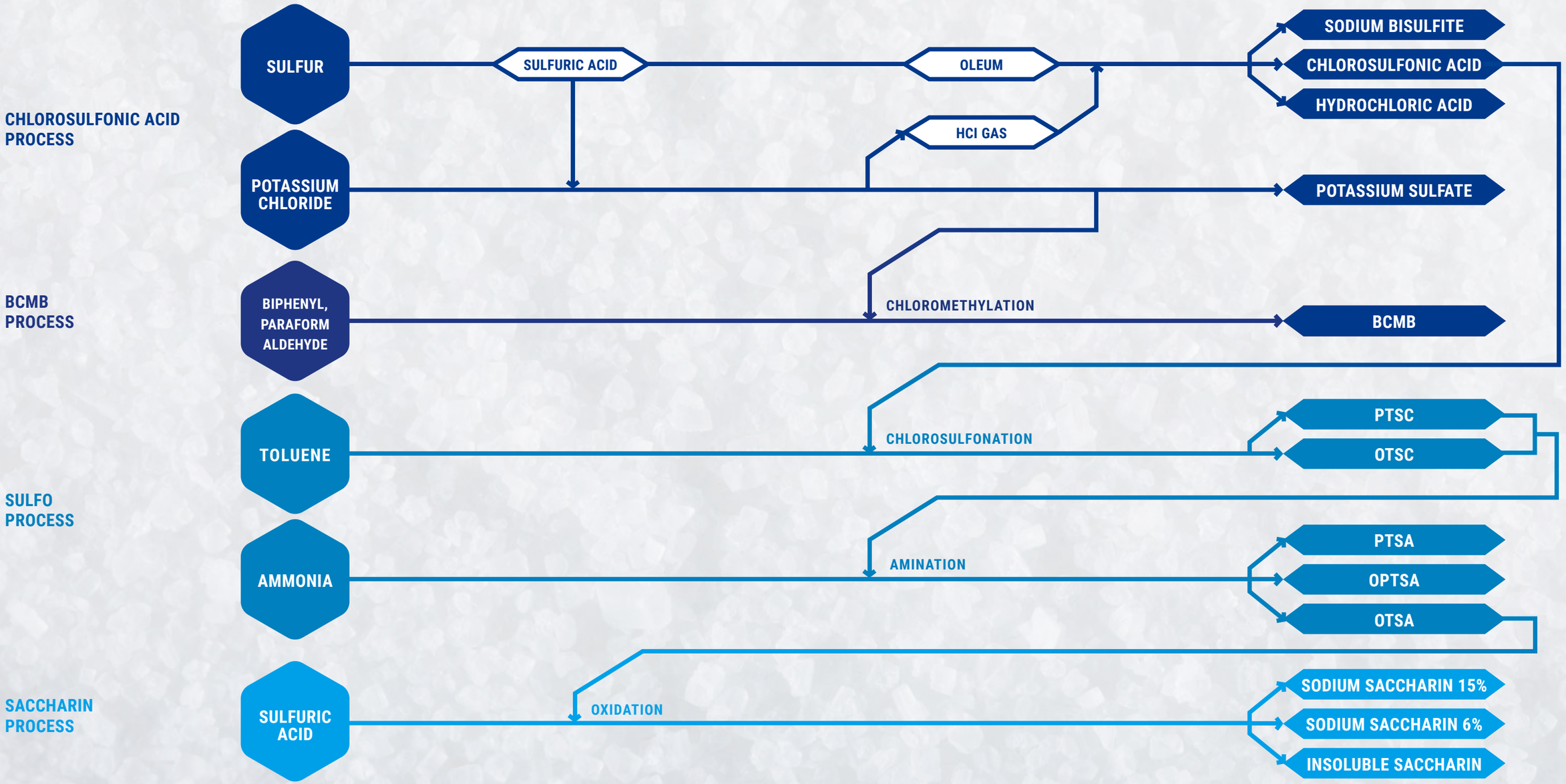
Overseas and Domestic Sales Ratio of JMC



*All numbers are based on June/July 2024

PRODUCTION PROCESS CHART

Production Process Chart



Inorganic Materials

JMC is also a leading manufacturer of sulfur-based acids and salts. We derive these products as part of our saccharin manufacturing process which means that we use the same, high standard facilities and processes across our entire product range. JMC has a long-term record of manufacturing and supplying materials safely without accidents, injuries or transportation incidents. We use purpose-built transportation vehicles to deliver materials within Korea and have extensive experience with shipping overseas using ISO accredited containers.

Chlorosulfonic Acid (HSO_3Cl)
CAS # : 7790-94-5

Chlorosulfonic acid is a widely used industrial chemical with applications in detergents, ion exchange resins, dyes, electronic materials and as an intermediate for the manufacture of pharmaceutical ingredients.

JMC has been using a completely vertically integrated process to produce chlorosulfonic acid since 1953. Beginning with elemental sulfur, we manufacture sulfuric acid and then chlorosulfonic acid. This means that JMC has complete control over our supply chain allowing us to reliably deliver high quality material.

Hydrochloric Acid (HCl)
CAS # : 7647-01-0

JMC produces hydrochloric acid from the direct reaction of sulfuric acid with potassium chloride. This is distinct from the electrolytic method used by many other manufacturers.

We source the highest quality potassium chloride from Canada and produce the sulfuric acid ourselves directly from elemental sulfur. The direct reaction gives highly pure hydrochloric acid that we use in our own processes and can provide safely and reliably to our customers.

Sodium Bisulfite ($NaHSO_3$)
CAS # : 7631-90-5

Sodium bisulfite is used as an agent in applications such as chromium waste water treatment. JMC produces sodium bisulfite from the reaction of sulfur dioxide and sodium hydroxide. We produce the sulfur dioxide directly from elemental sulfur therefore guaranteeing a continuous and reliable supply of the sodium bisulfite.

JMC's sodium bisulfite is supplied as a 23% solution in water which can enable cost savings and process improvements when compared with supply as a solid material.

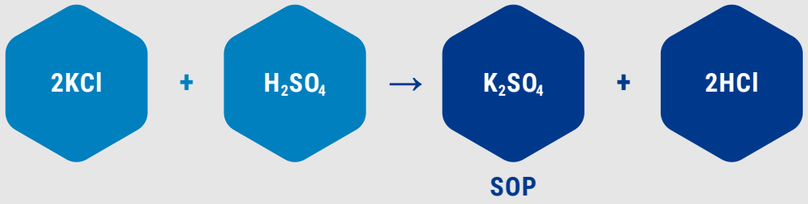
POTASSIUM SULFATE

Potassium Sulfate (SOP)

Sulfate of potash, or potassium sulfate (K_2SO_4), is widely used as an agricultural fertilizer. Potassium is an essential element for plants that assists in enzymatic reactions, water flow in cells and in the production of starch, sugars and proteins. The addition of potassium and sulfur to soils that are deficient in these elements can significantly improve crop growth. The use of potassium sulfate avoids adding further chloride salts to soils that may already have high levels of chloride. Potassium sulfate is widely used in the production of high value fruits such as bananas and pineapples.

JMC uses the Mannheim Process, which is the reaction of potassium chloride (KCl) and sulfuric acid (H_2SO_4), to produce potassium sulfate. JMC produces our own sulfuric acid directly from elemental sulfur and we source the highest quality potassium chloride from Canada. JMC has been producing potassium sulfate since 1984 and our annual production volume is approximately 30,000 tons.

JMC can supply potassium sulfate in a variety of packaging types and sizes and we supply to customers all around the world.



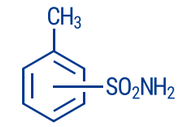
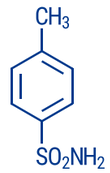
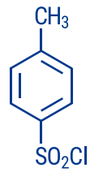
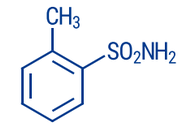
SPECIFICATION	
Appearance	White crystalline powder
Potassium Content	Min 51.0%
Moisture	Max 0.1%
Chloride	Max 1.5%
Sulfur	Min 17.5%

Sulfur-Based Products

JMC manufactures a range of sulfur-based chemicals for use in applications such as fluorescent pigments/resins, medicinal intermediates, electronics, plastics and agricultural materials. These sulfur-based products are derived as by-products or as value-added intermediates from our saccharin production processes. This means that we use the same, high standard facilities and processes across our entire product range.

JMC produces the toluene sulfonyl chlorides (OTSC and PTSC) from the direct reaction of toluene and chlorosulfonic acid. Subsequent amination reactions produce the toluene sulfonamides (OPTSA, OTSA and PTSA).

SULFUR-BASED PRODUCTS

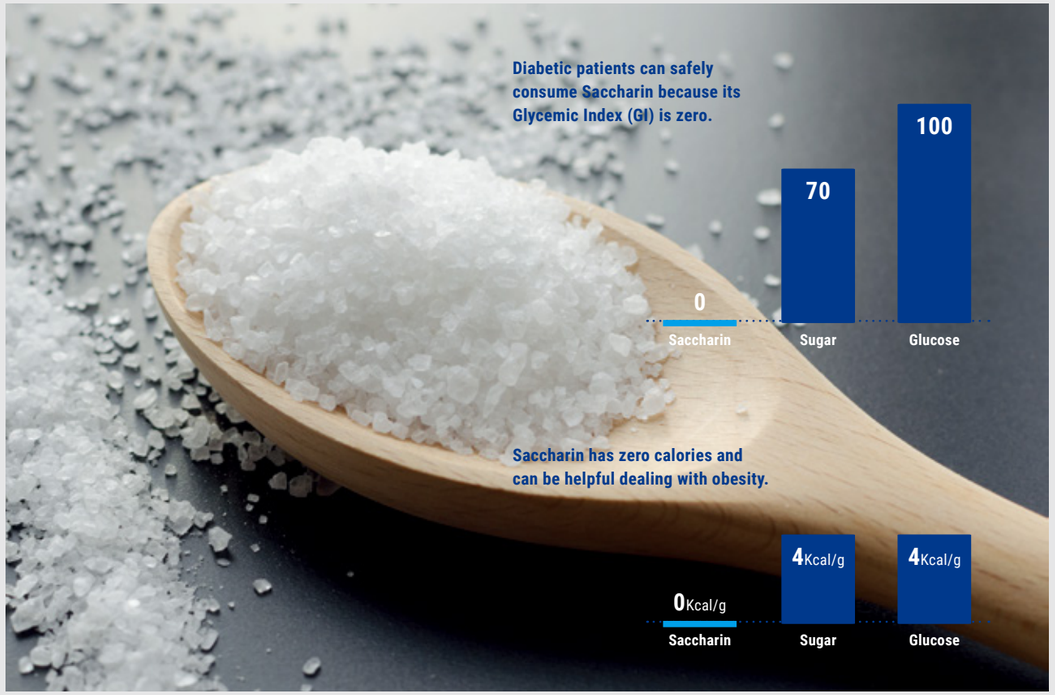
PRODUCT	STRUCTURAL FORMULA	DESCRIPTION	APPLICATION
OPTSA mixed ortho- and para-toluenesulfonamide **CAS # : 1333-07-6**		White crystalline powder	- Raw material for fluorescent pigments and nail polish resins - Plasticizer for thermosetting and melamine resins
PTSA para-toluenesulfonamide **CAS # : 70-55-3**		White crystalline powder	- Raw material for resins - Intermediate for dye stuffs - Raw material for disinfectants
PTSC para-toluenesulfonyl chloride **CAS # : 98-59-9**		White crystalline powder	- Raw material for blowing agents - Intermediate for pharmaceutical and agricultural products
OTSA ortho-toluenesulfonamide **CAS # : 88-19-7**		White crystalline powder	- Raw material for Saccharin

SACCHARIN

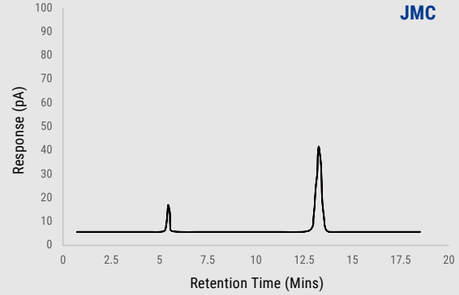
Saccharin

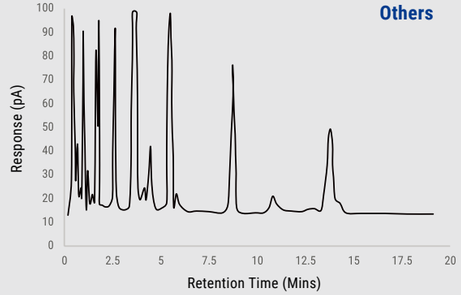
Saccharin is a high intensity, artificial sweetener that has been used for over one hundred years as a sugar substitute. Saccharin tastes over 500 times sweeter than sugar which means that it can be used in small amounts to reduce sugar consumption.

Saccharin has no calories and a Glycemic Index (GI) of zero. Saccharin is not absorbed or broken down by the body and has no effect on blood sugar levels. It is therefore considered as an important sugar substitute to help combat diabetes and obesity. Saccharin is also heat stable. Under conditions of increasing heat, saccharin remains stable at temperatures up to at least 250 °C. Therefore, saccharin is commonly used in candies, cookies, some formulations of soft drinks as well as in mouth washes, toothpastes and as part of the tablet coating in medicines. We also produce the saccharin that is used to make table top sweeteners.



Saccharin has been extensively studied and both the US FDA and EPA have conclusively declared it safe for consumption. Current global health standards only regulate saccharin for impurities based on the Remsen-Fahlberg synthesis route, first developed over 100 years ago. However, many other manufacturers use an alternative synthesis route that can give rise to other impurities and by-products. Saccharin made by the alternative route can therefore comply with the standards but still contain significant impurities. JMC manufactures saccharin in a completely vertically integrated process, via the Remsen-Fahlberg route, using mainly water-based processes and we manufacture all starting materials ourselves. We have on-site analysis facilities that test for all possible contaminants. In summary, JMC has over 65 years of production experience which enables us to deliver the world's highest quality saccharin.





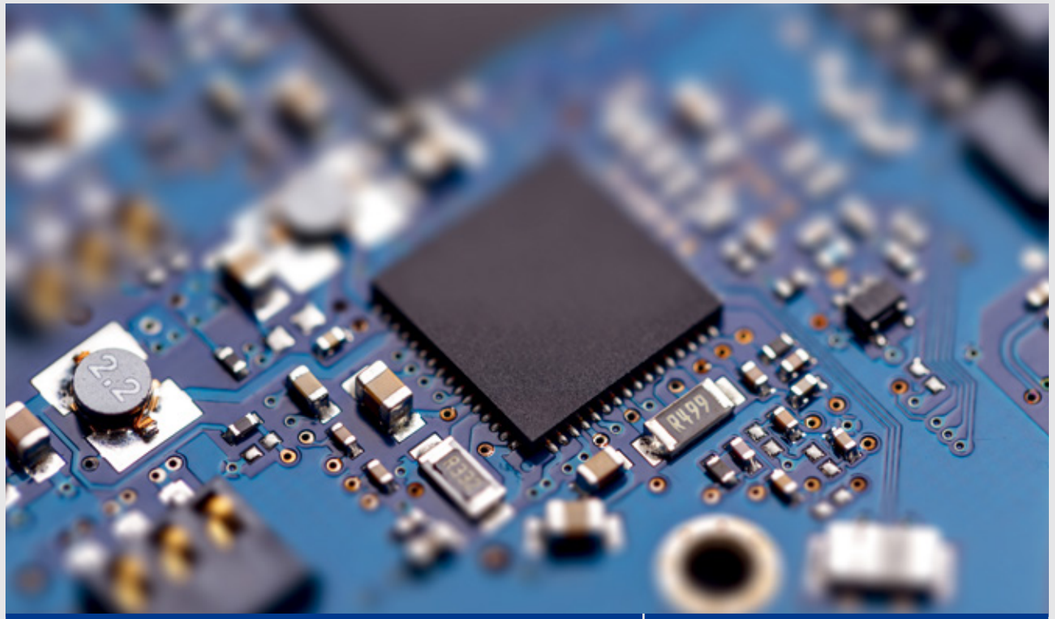
* Source / JMC's R&D Center

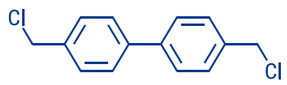
Sodium Saccharin 15% moisture / 6% moisture	Insoluble Saccharin
• $C_7H_4NNaO_3S \cdot 2H_2O$ • CAS # : di-hydrate [6155-57-3], mono-hydrate [82385-42-0], anhydrous [128-44-9]	• $C_7H_5NO_3S$ • CAS # : 81-07-2

BCMB

BCMB

JMC produces BCMB in our plant in Ulsan, South Korea. JMC is the only BCMB manufacturer in Korea and has the world's largest production capacity. Our production process is completely vertically integrated and we produce our own raw materials. In particular, we produce our own hydrochloric acid, an essential reagent in BCMB production. Our manufacturing processes comply with all environmental and safety regulations. Our in-house QA and QC facilities ensure strict quality control and high uniformity between batches. Our facilities decompose and purify all gases and wastewater generated during the manufacturing process in-house. We are committed to protecting the global environment.



BCMB	STRUCTURAL FORMULA
• 4,4'-BIS(CHLOROMETHYL)-1,1'-BIPHENYL • CAS # : 1667-10-3v	

Expoxy Molding Compound

BCMB is a versatile small molecule that is used as a monomer in epoxies that are applied to electronics. It makes durable coatings that are heat stable. These epoxies are applied to electronic components and circuits in a wide range of devices.

5G Server station

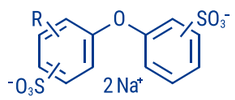
5G communications use high frequencies that have a short travel range. Due to the nature of the frequencies used the requirements of base stations have changed. BCMB has been adopted as a component for Copper Clad Laminates (CCL) that are used to prevent signal loss in 5G base stations.

Optical brightening agent

BCMB was used as an intermediate in fluorescent brighteners, a laundry agent, long before it was used for electronic materials. As the fluorescent component, demand for BCMB in brighteners such as CBS-X remains strong.

DuFAX JX45

DuFAX JX45 is a diphenyl oxide disulfonate anionic surfactant that provides excellent solubility and stability in any system, whether acidic or alkaline. It is used in latex and rubber emulsion polymerization. It is manufactured by a sulfonation process using JMC's exclusive liquid SO_3 capabilities. As an excellent wetting agent, emulsifier, coupling agent and stabilizer, it is also used as a leveling agent in the acid dyeing of nylon.

DuFAX JX45	STRUCTURAL FORMULA
• Alkyl Diphenyl Oxide Disulfonate • CAS# : 119345-04-9	

DUFAX JX45

Latex polymerization surfactant

As a basic emulsifier used in the emulsion polymerization of nitrile (NBR) or styrene butadiene (SBR) rubber, it enables the most stable dispersion and dissolution of latex to improve latex quality and performance.

Leveling agent for Nylon dyeing

Acid dyes for dyeing nylon are prone to uneven dyeing due to poor dispersibility, but using DuFAX JX45 as a leveling agent effectively disperses acid dyes to ensure uniform dyeing.

Graphene-Based Products

Graphene-based materials continue to attract significant interest for use in a large variety of products ranging from microelectronics through to large scale applications such as cement and other composites. The properties of graphene-based materials are strongly influenced by the chemical purity of the materials as well as their physical properties.

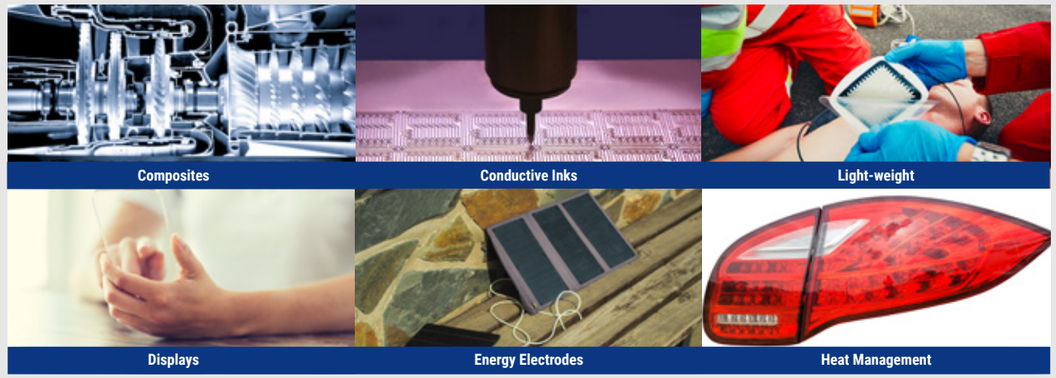
Graphene oxide is typically soluble and more easily processed than pure graphene. In surface applications, graphene oxide can be deposited onto a substrate and then reduced to graphene. This method has been applied to products such as transparent electrodes and filters. Graphene oxide can though, be used directly in a range of applications where it can impart improved strength, thermal and electrical conductivity to composite materials.

Reduced Graphene Oxide

Graphene Oxide can be reduced to give reduced Graphene Oxide (rGO), a form of Graphene. Graphene is extremely strong and highly conductive, both electrically and thermally.

Functionalized Graphene Oxide

Graphene oxide is highly dispersable in water and alcohols due to its hydrophilic functional groups (-OH, -COOH). In order to develop a wide range of graphene oxide composites, high dispersability in organic solvents and polymer resins is desirable. By functionalizing graphene oxide with hydrophobic amine (-NH2) groups, the dispersability of graphene oxide can be improved. In addition, the use of hydrophobic functional groups can enable the formation of hydrophobic surfaces.



JMC Core Technology

>> Reaction : Control of exothermic reaction (using strong oxidants)
>> Product : Lateral size control, low metal and chloride content
>> Application : HVDC cable, batteries, radiation shielding, light-weight materials, Polymer composites barrier films.

JMC Products

JMC Graphene Oxide Products

Product	Concentration	Lateral Size (Particle Size)	Mean
JGO-10	0.5–1.5%	< 10 μm	7 μm
JGO-05	0.5–1.5%	< 5 μm	3.5 μm

*Lateral size can be customizable

JMC Special Grade Products (custom-made products)

Product	Product Features	Specifications
JGO-AF	Alkylamine-functionalized (Polymer and Organic Solvent Dispersion)	C6–C12 alkylamine surface treatmentPowder Carbon content ≥ 50% Nitrogen content ≤ 5%
JEGO	Partially Reduced Graphene Oxide	Carbon content 75~90% Oxygen content 10~25%
JRGO	Reduced Graphene Oxide	Carbon content Min 98.0% Oxygen content Max 2.0%

Available as powder or liquid

Sustainability

We care about the welfare of our staff, the safety of our products and the impact of our operations on the environment.

JMC values our employees and actively supports their health, well-being and development. All employees are provided appropriate personal protective equipment and uniforms when they work. All workers are covered by employment insurance and are treated with respect. JMC does not permit child, forced or involuntary labor at any time. JMC provides all employees with freedom of association and the freedom to choose whether to participate in collective bargaining. These fair work conditions apply across the entire KISCO group of companies, incluing the provision of sickness and family leave. JMC actively enforces policies to prevent social or gender-based discrimination.

JMC is committed to manufacturing using sustainable processes that do not harm our employees or our environment. The water treatment systems in our facilities are monitored and strictly controlled to comply with government regulations. Korean government environmental standards are aligned with those of other developed economies and place a strong emphasis on environmental protection.

JMC is committed to sustainability

Our products and processes are safe for our staff, our customers and our environment.

Transparent Management

Value creation through open and genuine stakeholder engagement

• We practice **transparent management**. Operations that are **legal** and **ethical** are our highest priority.

• All of our business dealings are **fair and honest** to ensure that we maintain the trust of our shareholders, customers, employees and society at large.

• We practice a culture of **management innovation** that enables new technology to be developed through genuine engagement with our staff. This delivers continuous improvements to our processes, products and prosperity.

Green Management

Sustainable development and fulfilment of social responsibilities

• We economically utilize natural resources such as raw materials, energy and water that are input into manufacturing activities and we minimize the generation of pollutants by operating under the 3R principles (**Reduce, Reuse, Recycle**).

• We **strictly observe** domestic and international **environmental, health and safety-related laws** and other requirements applied to our company. We set strict internal standards to minimize pollutants and minimize risk factors to prevent accidents in advance.

• We promote public health by **minimizing emissions of greenhouse gases** and toxic chemicals by signing, implementing, periodically confirming and evaluating voluntary agreements for energy conservation and the reduction of greenhouse gas emissions.

• We purchase raw materials that **do not contain environmentally hazardous substances** (such as lead, mercury, cadmium, hexavalent chromium, PBB, PBDE, CFC, etc.). We supply environmentally friendly and safe products.

• All employees are required to regularly review and practice their **environmental, emergency, health and safety training.**

JMC SUSTAINABILITY

Quality-oriented Management

We commit to global quality standards

• We are **certified under ISO** 9001: 2015, ISO14001: 2015, ISO45001: 2016, FSSC 22000 (ISO22000: 2005 & ISO / TS22002-1). These include customer and legal/ regulatory requirements, GMP and HACCP requirements that are applicable to us.

• We **continuously monitor customer requirements** and assist our partners by providing high-quality products and services that enable value-adding through improved productivity and strict quality control.

• Through **research and development** we will continue to supply new, high-quality sulfur-based products. We work to satisfy current customer requirements, understand future interests, maximize customer satisfaction and pursue the long-term growth of enterprises.

• Through **effective communication processes** our quality assurance policies are shared with all employees and partners.

• We build, implement and continuously improve our **integrated management system** to meet the needs of our customers. We regularly review the adequacy, fulfillment and effectiveness of our quality assurance policies through internal audits and management reviews.

Food Safety Management

JMC will always ensure world-class product safety and quality

• Since its foundation in 1953, JMC has been a leader in the manufacture, sales and service of saccharin **products for food.**

• JMC takes **responsibility for the entire process** from product planning, manufacturing, sales, distribution to disposal.

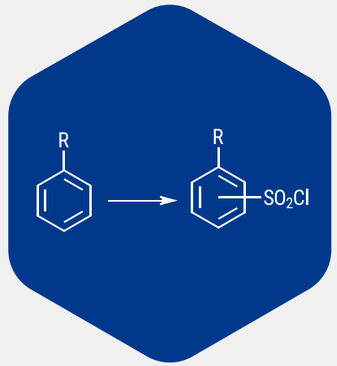
• We are continuously developing products that can **contribute to the health and well-being** of our customers.

• Our products are developed in **safe, hygienic facilities** that are maintained to the highest standards.

Chemical Specialities

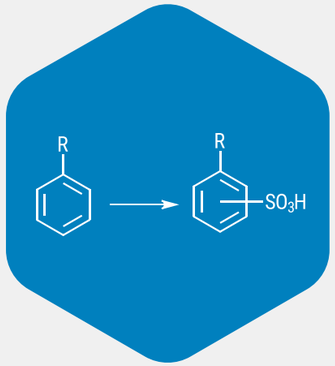
Chlorosulfonation

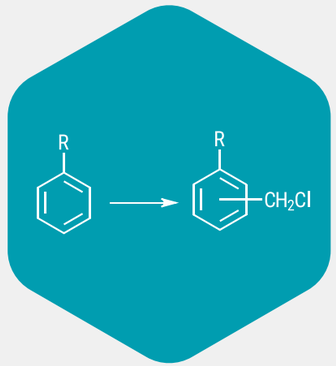
Reaction carried out
with isomer control



Sulfonation

Reaction carried out
with isomer control





Chloromethylation

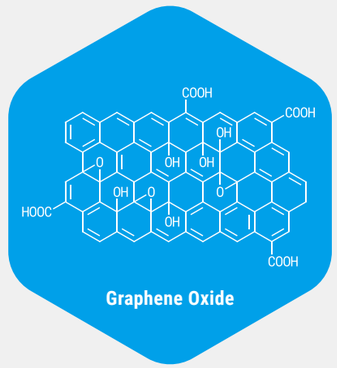
Reaction carried out
with isomer control

Graphene (rGO)

- Low oxygen content of rGO

Graphene Oxide (single layer)

- Lateral size control, High C/O rate



KISCO
CREATING COLORS AND CHEMICAL SOLUTIONS

About the KISCO Group

Kyung-In Synthetic Corporation (KISCO) is a **large-scale developer and manufacturer** of dyes, inks, fine chemicals and other functional materials that has been operating for over 50 years.

KISCO has 3 subsidiaries, **JMC, DKC** and **Wisechem** that together make up the KISCO group. The combined KISCO group has a **market capitalisation of around $US 220M** and had sales of over **$US 320M in 2021**. The group employs over **980 staff** at **10 manufacturing plants** in South Korea and one in Turkey. We have over **120 R&D staff** and are supported by representatives and agents in over **60 different countries**.

KISCO has a track record of **successful, long-term partnerships** and extensive experience with establishing and managing joint ventures. Through these partnerships KISCO is constantly expanding our range of activities and working with our partners to open up **new markets** and **new applications** for our technologies. We are based in **Korea** but **our business is global**.

Joint Venture Companies

Daito-KISCO Corporation (DKC)

DKC was established as a joint venture with Daito Chemix Corporation of Japan. DKC produces **photosensitive materials** that enable the **fine patterning with lithography of LCD, OLED and semiconductors** in circuits and displays for laptops, tablets and mobiles.

Wisechem

Wisechem is a joint venture between KISCO and Korea Alcohol Industrial Co., Ltd that produces **high quality millbase** and **dyestuff** materials for the **color filters** in **Liquid Crystal Displays** (LCDs). Wisechem established the first manufacturing capability in this field in Korea and now supplies materials into Korea's growing supply chain of electronic materials and devices.

JMC

CREATING SWEETNESS AND PURE CHEMISTRY

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