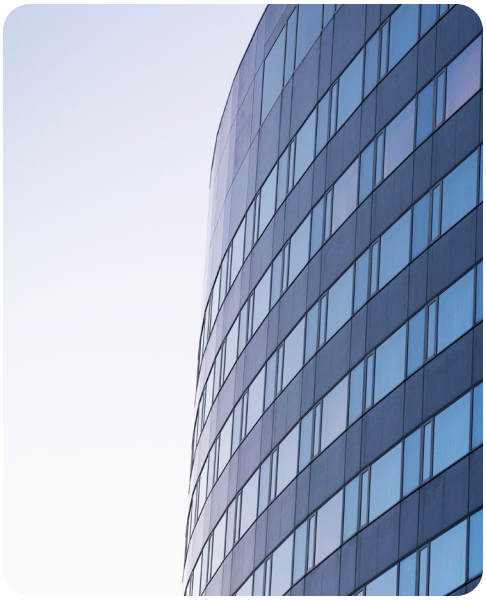
Solstice

# MANGANESE OXIDE TECHNOLOGY

For high-performance and energy-saving sealants & hardeners



# MANGANESE OXIDE TECHNOLOGY FOR POLYSULPHIDE SEALANTS



> Solstice fine chemicals are used to manufacture sealants and hardeners for energy-saving insulating glass products, aircraft and building materials.

Sealants and hardeners based on Solstice's special Manganese Oxide Technology provide greater processing efficiency as well as excellent processing quality. This is proven in the long-term effectiveness against damp and optimal UV stability of Solstice products used in manufacturing high-performance materials for various industries.

An undisputed leader in Manganese Oxide Technology, Solstice stands for the very best quality – consistent in all price ranges and performance categories. Its comprehensive range of activated manganese oxide grades meets the needs of polysulphide sealant formulators across a number of markets.

These materials are manufactured by Solstice Specialty Materials at Solstice's plant in Seelze, Germany, which is certified against ISO/TS 16949, ISO 9001 and 14001.

## FACTS AND PRODUCT BENEFITS

Activated manganese oxide functions as an oxidizing agent to cure the polysulphide resins, by producing disulphide linkages:
2 ~R-SH + [O] R-SS-R~ + $H_2O$

It plays a crucial role in the formulation, application and end property development of the polysulphide sealant. Tailoring the chemical and physical parameters of manganese oxide enables the key formulation, application and performance properties of the sealant to be modified to fit thespecific requirements of the end use application.

Solstice utilizes highly specific production and process conditions to manufacture activated manganese oxide.

All product grades offer the following fundamental benefits to formulators of polysulphide sealants:

• Fine & consistent particle size distribution leading to high processing efficiency of curing paste manufacture

- A high assay of $MnO_2$
- Excellent storage stability of curing paste
- Consistency of performance in sealant formulation.

Solstice is the one brand in the fine chemical industry on which manufacturers of sealants and hardeners all around the world rely absolutely.

Solstice has now developed a new L-grade manganese dioxide product to complete its product range, providing quality at the best price and performance, even at the entry-level segment of the market.

As an established, world-renowned manufacturer of fine chemicals for the manufacture of sealants and hardeners, Solstice draws on its long-standing experience and extensive expertise combined with comprehensive technological know-how to satisfy the most exacting market demands and individual customer requirements.

Solstice is seen as innovator and technological partner to its customers. It provides customer-specific and tailored product solutions.

# PRODUCTS AT A GLANCE

| PRODUCT CODE | PRODUCT | ROLE OF PRODUCT |
|---|---|---|
| 13207 | Manganese(IV) oxide FA | Curing agent for polysulphide sealants |
| 13334 | Manganese(IV) oxide K | Curing agent for polysulphide sealants |
| 13349 | Manganese (IV) L-prime | Curing agent for polysulphide sealants |
| 13327 | Manganese (IV) FA-J | Curing agent for polysulphide sealants |
| 13271 | Manganese (IV) FA-P | Curing agent for polysulphide sealants |
| 13241 | Manganese (IV) FA Granules | Curing agent for polysulphide sealants |

## PRODUCTS, INDUSTRIES AND BENEFITS

| PRODUCTS | INSULATING GLASS | CONSTRUCTION | AEROSPACE | BENEFITS |
|---|---|---|---|---|
| **FA** | X | X | X | • Excellent hardening efficiency<br>• Fast through cure of sealant combined with desirable open time<br>• Very good UV & weathering properties, chemical resistance, swelling behavior and adhesion |
| **FA - J** | X | X | X | • Excellent hardening efficiency<br>• Fast through cure of sealant combined with desirable open time<br>• Very good UV & weathering properties, chemical resistance, swelling behavior and adhesion<br>• Low viscosity of curing paste |
| **FA - P** | X | X | X | • Excellent hardening efficiency<br>• Fast through cure of sealant combined with desirable open time<br>• Very good UV & weathering properties, chemical resistance, swelling behavior and adhesion<br>• Low viscosity of curing paste |
| **FA Granules** | X | | X | • Excellent hardening efficiency<br>• Fast through cure of sealant combined with desirable open time<br>• Very good UV & weathering properties, chemical resistance, swelling behavior and adhesion<br>• Low viscosity of curing paste |
| **K** | X | X | | • Fast pot-life and fast initial cure speed<br>• Fast hardness development<br>• Developed for construction sealants<br>• Cure profile especially suitable for construction sealants<br>• Very good chemical resistance, weathering properties and adhesion<br>• Superior swelling behavior |
| **L-Prime** | X | X | | • Fast pot-life and fast initial cure speed<br>• Fast hardness development<br>• Developed for construction sealants<br>• Cure profile especially suitable for construction sealants<br>• Very good chemical resistance, weathering properties and adhesion<br>• Superior swelling behavior |

**PROPERTY COMPARISON OF MANGANESE OXIDE GRADES**

| | K POWDER | L-PRIME | L-BASE | FA GRANULES | FA POWDER | FA-P POWDER | FA-J POWDER |
|---|---|---|---|---|---|---|---|
| SOLSTICE PRODUCT NUMBER | 13334 | 13349 | 13348 | 13241 | 13207 | 13271 | 13327 |
| Assay MnO2 % | 79.5 – 84 | 76-82 | 76-80 | 77 – 83 | 76 – 82 | 76 – 82 | 76 – 82 |
| Assay Mn % | 54 – 56 | 51-53 | 51-54 | 51 – 53 | 51 – 53 | 51 – 53 | 51 – 53 |
| Loss on drying % | 1 – 4 | 1-4 | 1-4 | 2 – 4 | 2 – 5 | 2 – 5 | 3 – 6 |
| Bulk weight g/l | - | 600 - 700 | 600-700 | 600 – 800 | 250 – 400 | 250 – 400 | 250 – 400 |
| pH value | 10 – 11.5 | 10-11,5 | 10-11,5 | 7.5 – 9.5 | 9 – 11 | 9 – 11 | 10 – 11.5 |
| Alkali total % | – | max.1,5 | max.1,5 | 5 – 7 | 5 – 7 | 5 – 7 | |
| Alkali soluble % | <1.5 | <1,5 | <1,5 | < 1.2 | 0.4 – 1.3 | 0.4 – 1.3 | 1.5 – 2.0 |
| Potlife min | < 50 | <50 | <50 | 80 – 120 | 30 – 120 | 30 – 120 | < 50 |
| Viscosity Pa | < 400 | - | 300-500 | n.a. | 600 – 700 | 600 – 700 | 600 – 700 |
| BET surface m²/g | 11 – 14 | 12-17 | 12-17 | n.a. | 18 – 21 | 18 – 21 | 17 – 20 |

## SPECIALTY MATERIALS

Solstice Specialty Materials is a global leader in providing customers with high-performance specialty materials, including fluorine products; specialty films and additives; advanced fibers and composites; intermediates; specialty chemicals; electronic materials and chemicals; and technologies and materials for petroleum refining.

The business has Research and Development Centers in Buffalo (New York, USA), Des Plaines (Illinois, USA), Morristown (New Jersey, USA), Richmond (Virginia, USA), Seelze (Germany), Shanghai (China) and Sunnyvale (California, USA).

The business has more than 50 production facilities around the world. One of them is the Specialty Chemicals Seelze GmbH where Solstice's inorganic fine chemicals are manufactured.

Specialty Materials is part of Solstice International, a diversified technology and manufacturing leader, serving customers worldwide with aerospace products and services; control technologies for buildings, homes and industry; automotive products; turbochargers; and specialty materials. Based in Morris Township, N.J., Solstice's sharesare traded on the New York, London and Chicago Stock Exchanges.



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**For More Information Visit**
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