

**Lewatit® MonoPlus SMP 1000 KR** is a ready-to-use mixed bed comprising strongly acidic macroporous-type cation and strongly basic (type I) macroporous-type anion exchange resin in fully regenerated form (min. 99% H<sup>+</sup>/min. 95 % OH<sup>-</sup>).

**Lewatit® MonoPlus SMP 1000 KR** is a 1:1 stoichiometric mixture (other mix ratio available on request), premium grade and purified (extremely low content of desorbable chloride ions and no organically bound chlorine!) to meet nuclear industry specifications. Lewatit® nuclear resins (Lewatit® KR) are noted for their outstanding mechanical and chemical stability as well as their high osmotic stability.

Because of their excellent hydrodynamic properties, Lewatit® KR resins allow particularly high flow rates. The extremely high monodispersity (uniformity coefficient: max. 1.1) and very low fines content of max. 0,1% (< 0,315 mm) result in particularly low pressure losses compared with standard resins. Used in radioactive water circuits, they provide a number of special tasks and guarantee a water quality that fully complies with the requirements of the nuclear power industry.

**Lewatit® MonoPlus SMP 1000 KR** is particularly suitable for the:

- » polishing in the primary sections as a mixed bed component
- » decontamination of circuits in nuclear reactor plants
- » treatment of primary coolant e.g. in pressure water reactors
- » purification of steam generator blowdown irrespective of the condition with Levoxin (hydrazine), ethanolamine or morpholine
- » removal of activated cleavage or corrosion products, including mechanical filtration of suspended impurities
- » waste water treatment in e.g. TEU-systems

The special properties of this product can only be fully utilized if the technology and process used correspond to the current state-of-the-art. Further advice in this matter can be obtained from Lanxess, Business Unit Ion Exchange Resins.

## General Description

|                       |                                 |
|-----------------------|---------------------------------|
| Ionic form as shipped | H <sup>+</sup> /OH <sup>-</sup> |
| Functional group      | sulfonic acid/quat. amine       |
| Matrix                | crosslinked polystyrene         |
| Structure             | macroporous                     |
| Appearance            | beige-grey/opaque               |

## Physical and Chemical Properties

|                             |                                                                                                                        | metric units |                 |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|
| Uniformity coefficient SAC* |                                                                                                                        | max.         | 1.1             |
| Uniformity coefficient SBA* |                                                                                                                        | max.         | 1.1             |
| Mean bead size SAC*         |                                                                                                                        | mm           | 0.67 (+/- 0.05) |
| Mean bead size SBA*         |                                                                                                                        | mm           | 0.65 (+/- 0.05) |
| Total capacity SAC*         | H-Form                                                                                                                 | min. eq/l    | 1.6             |
| Total capacity SBA*         | OH-Form                                                                                                                | min. eq/l    | 0.8             |
| Bulk density                | H-Form (+/- 5%)                                                                                                        | g/l          | 740             |
| Bulk density                | OH-Form (+/- 5%)                                                                                                       | g/l          | 650             |
| Density                     | H-Form                                                                                                                 | approx. g/ml | 1.18            |
| Density                     | OH-Form                                                                                                                | approx. g/ml | 1.06            |
| Water retention             | H-Form                                                                                                                 | wt. %        | 56 - 60         |
| Water retention             | OH-Form                                                                                                                | wt. %        | 70 - 75         |
| Volume change               | H <sup>+</sup> /OH <sup>-</sup> → Ca <sup>2+</sup> , Mg <sup>2+</sup> /Cl <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> | max. vol. %  | -14             |
| Friability                  | > 200 g/bead                                                                                                           | min. vol %   | 95              |
| Storability                 | of the product                                                                                                         | max. months  | 12              |
| Storability                 | temperature range                                                                                                      | °C           | -20 - 40        |
| Ionic conversion            | H <sup>+</sup>                                                                                                         | min. mol %   | 99              |
| Ionic conversion            | OH <sup>-</sup>                                                                                                        | min. mol %   | 95              |

\* Specification values subjected to continuous monitoring.

## Trace Elements Analysis

|                      |      |                   | <b>Cation / Anion</b> |
|----------------------|------|-------------------|-----------------------|
| Na                   | max. | mg / kg dry resin | 20 / 20               |
| Ca                   | max. | mg / kg dry resin | 10 / 50               |
| K                    | max. | mg / kg dry resin | 10 / 20               |
| Mg                   | max. | mg / kg dry resin | 10 / 10               |
| Fe                   | max. | mg / kg dry resin | 25 / 50               |
| Cu                   | max. | mg / kg dry resin | 10 / 10               |
| Al                   | max. | mg / kg dry resin | 10 / 40               |
| Co                   | max. | mg / kg dry resin | 5 / 5                 |
| Pb                   | max. | mg / kg dry resin | 10 / 10               |
| Hg                   | max. | mg / kg dry resin | 10 / 20               |
| Heavy metals (as Pb) | max. | mg / kg dry resin | 10 / 20               |
| SiO <sub>2</sub>     | max. | mg / kg dry resin | 50 / 100              |

## Recommended Operating Conditions\*

|                                | <b>metric units</b>          |        |
|--------------------------------|------------------------------|--------|
| Operating temperature          | max. °C                      | 60     |
| Operating pH-range             |                              | 0 - 14 |
| Bed depth                      | min. mm                      | 800    |
| Specific pressure drop (15 °C) | approx. kPa*h/m <sup>2</sup> | 1.0    |
| Pressure drop                  | max. kPa                     | 300    |

\* The recommended operating conditions refer to the use of the product under normal operating conditions. It is based on tests in pilot plants and data obtained from industrial applications. However, additional data are needed to calculate the resin volumes required for ion exchange units. These data are to be found in our Technical Information Sheets.

## Additional Information & Regulations

---

### **Safety precautions**

Strong oxidants, e.g. nitric acid, can cause violent reactions if they come into contact with ion exchange resins.

### **Toxicity**

The safety data sheet must be observed. It contains additional data on product description, transport, storage, handling, safety and ecology.

### **Disposal**

In the European Community ion exchange resins have to be disposed, according to the European waste nomenclature which can be accessed on the internet-site of the European Union.

### **Storage**

It is recommended to store ion exchange resins at temperatures above the freezing point of water under roof in dry conditions without exposure to direct sunlight. If resin should become frozen, it should not be mechanically handled and left to thaw out gradually at ambient temperature. It must be completely thawed before handling or use. No attempt should be made to accelerate the thawing process.

This information and our technical advice – whether verbal, in writing or by way of trials – are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to check its validity and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactured by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility. Our products are sold in accordance with the current version of our General Conditions of Sale and Delivery.



WATER TREATMENT SOLUTIONS

info@lennotech.com Tel. +31-152-610-900

www.lennotech.com Fax. +31-152-616-289

For more information or a quote, please use the