# PRODUCT INFORMATION
# LEWATIT® MonoPlus SM 1000 KR

**Lewatit® MonoPlus SM 1000 KR** is a ready-to-use mixed bed comprising strongly acidic gel-type cation and strongly basic (type I) gel-type anion exchange resins in fully regenerated form.

**Lewatit® MonoPlus SM 1000 KR** constitutes of a cation and anion exchange resin mixture in a volume ratio of 1:2. Both components are premium grade and purified 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 and very low fines content result in particularly low pressure losses compared with standard resins.
Designed for operation in radioactive water circuits, they can be used in multiple applications in that specific area.
The achievable water quality complies with the requirements of the nuclear power industry.

Potential applications of **Lewatit® MonoPlus SM 1000 KR**:

» polishing in the primary and secondary 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
» polishing in the moderator water purification section of Candu reactor stations (gadolinium and nitrate removal).

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 Liquid Purification Technologies.

## Common Description

| | |
|---|---|
| Type | H+/OH- |
| Functional group | Quaternary ammonium Typ1 /sulfonic acid |
| Matrix | Styrenic |
| Structure | Gel |
| Appearance | Black/ Light brown translucent |

## Specified Data

| | | | |
|---|---|---|---|
| Uniformity coefficient | | max. | 1.1 |
| Mean bead size (SAC component) | d50 | mm | 0.60 (+-0.05) |
| Mean bead size (SBA component) | d50 | mm | 0.64 (+-0.05) |
| Total capacity (SAC component $H^+$ form) | | min. eq/L | 2.1 |
| Total capacity (SBA component $OH^-$ form) | | min. eq/L | 1.2 |

## Typical Physical and Chemical Properties

| | | | |
|---|---|---|---|
| Bulk density for shipment | (+/- 5%) | g/L | 720 |
| Water retention (delivery form) | | approx. weight % | 42-63 |
| Volume change (during exhaustion) | | max. approx. % | -15 |
| Stability pH range | | | 0-14 |
| Storage time (after delivery) | | max. years | 1 |
| Storage temperature range | | °C | -20 - +40 |
| Friability | | average g/bead | 600 |
| Friability | >200 g/bead | min. vol % | 95 |
| Ionic conversion $OH^-$ | | min. eq. % | 95 (SBA) |
| Ionic conversion $CO_3^{2-}$ | | max. eq. % | 5 (SBA) |
| Ionic conversion $Cl^-$ | | max. eq. % | 0.2 (SBA) |
| Ionic conversion $SO_4^{2-}$ | | max. eq. % | 0.3 (SBA) |
| Ionic conversion $H^+$ | | min. eq. % | 99.9 (SAC) |

## Operation

| | | | |
|---|---|---|---|
| Operating temperature | | max. °C | 60 |
| Operating pH range | during exhaustion | | 0-14 |
| Bed depth for single column | | min. mm | 800 |
| Specific pressure loss kPa*h/m² (15°C) | | kPa*h/m² (15°C) | 1 |
| Max. pressure loss during operation | | kPa | 200 |
| Specific flow rate | | max. BV/h | 100 |

## Trace Impurities

| | | |
|---|---|---|
| Na | max. mg/kg dry resin | 50 |
| Fe | max. mg/kg dry resin | 30 |
| Cu | max. mg/kg dry resin | 5 |
| Al | max. mg/kg dry resin | 5 |
| Co | max. mg/kg dry resin | 5 |
| Pb | max. mg/kg dry resin | 10 |
| Hg | max. mg/kg dry resin | 5 |
| $SiO_2$ | max. mg/kg dry resin | 50 |
| Total Chloride | max. mg/kg dry resin | 500 |
| $SO_4^{2-}$ as Sulphur | max. mg/kg dry resin | 600 (SBA) |

## 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.

**Packaging**
The experience has shown that the packaging stability for reliable resin containment is limited to 24 months under the storage conditions described above. It is therefore recommended to use the product within this time frame; otherwise the packaging condition should be checked regularly.