# PRODUCT INFORMATION
# LEWATIT® MDS TP 220

**Lewatit® MDS TP 220** is a macroporous weakly basic resin with chelating bis-picolylamine groups attached to a styrene/divinylbenzene co-polymer. Its monodisperse bead size distribution combined with a small mean bead size results in improved adsorption kinetics and an approx. 25% higher copper binding capacity relative to **Lewatit® MonoPlus TP 220**.

**Lewatit® MDS TP 220** exhibits a very high osmotic and mechanical stability to meet the requirements of metal processing technologies. It is delivered in the protonated sulfate form and can therefore be used without pretreatment. Due to the smaller bead size a higher pressure drop factor has to be considered when dimensioning the vessel during process design. The increased sensitivity towards suspended solids requires efficient pre-filtration of the feed stream, e.g. by conventional sand filters or filter candles.

At a pH of 2, heavy metal cations are removed from aqueous solutions consistent with the following selectivity series:

$Cu^{2+} >> Ni^{2+} > UO_2^{2+} > Fe^{3+} > Zn^{2+} > Co^{2+} > Cd^{2+} > Fe^{2+}$.

**Lewatit® MDS TP 220** is especially suitable for the use in the following applications:

» the purification of cobalt electrolytes (cobalt/nickel separation)
» the separation of nickel/copper from ferric solutions
» the recovery of copper from strongly acidic solutions (pH < 2)
» the purification of chromium(III) baths (removal of heavy metals such as copper and nickel)
» the adsorption of heavy metals (e.g. copper) from solutions containing strong chelating agents like EDTA

Whilst most metals are removed from the loaded resin with a conventional acid strip, copper can only efficiently be desorbed with ammonia solution.

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 (LPT).

## General Description

| | |
|---|---|
| Ionic form as shipped | $H_2SO_4$ salt |
| Functional group | Bis-picolylamine |
| Matrix | Crosslinked polystyrene |
| Structure | Macroporous |
| Appearance | Opaque |

## Specified Data

| | | |
|---|---|---|
| | metric units | |
| Uniformity Coefficient | max. | 1.1 |
| Mean bead size | mm | 0.37 (+/- 0.03) |
| Copper capacity | min. g/l | 36 |

## Physical and Chemical Properties

| | | | |
|---|---|---|---|
| | | metric units | |
| Bulk density | (+/- 5 %) | g/l | 725 |
| Density | | approx. g/ml | 1.13 |
| Water retention | | wt. % | 50 - 58 |
| Volume change | delivered form --> free base | max. vol. % | - 30 |
| Storability | of the product | max. years | 2 |
| Storability | temperature range | °C | - 20 - + 40 |

## Recommended Operating Conditions*

| | | metric units | |
|---|---|---|---|
| OPERATION | | | |
| Operating temperature | | max. °C | 70 |
| Operating pH-range | | | 1 - 14 |
| Bed depth | | min. mm | 800 |
| Specific pressure drop | | approx. kPa*h/m² | 2.8 |
| Pressure drop | | max. kPa | 250 |
| Specific flow rate | exhaustion | max. BV/h | 10 - 30 |
| | | | |
| REGENERATION, CO-CURRENT | | | |
| Regenerant | type | | $H_2SO_4$<br>$NH_4OH$ |
| Regenerant | concentration | approx. wt. % | $H_2SO_4$ 20<br>$NH_4OH$ 3.5 |
| Linear velocity | backwash (20 °C) | approx. m/h | 2 - 3 |
| Linear velocity | rinsing | approx. m/h | 5 |
| Rinse water requirement | slow / fast | approx. BV | 4 |
| Bed expansion | (20 °C, per m/h) | approx. vol. % | 25 |
| Freeboard | backwash | vol. % | 100 |

## 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.