

**Technical Data Sheet****Lupranat® MR/MRS**

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**Chemical nature**

Lupranat MR and MRS are 4,4'-diphenylmethane diisocyanates (MDI) with high acidity. Lupranat MRS contains a stabiliser, in order to prevent yellowing.

**Applications**

Lupranat MR and MRS are used for the manufacture of prepolymers. They are also used for the production of pigments, adhesives and coatings. Lupranat MRS must not be used for the production of polyurethane products, which will come into contact with foodstuffs.

**Typical properties**

Appearance at room

temperature:

white crystalline solid

Appearance as a liquid:

colourless

Molar mass	250	g/mol	
Purity	99.5	g/100 g	titrimetric
NCO-content	33.5	g/100 g	ASTM D 5155-96 A
2,4'-isomer	1.5	g/100 g	GC
Melting point	38.5	°C	ASTM D 1638-74
Acidity as HCl	15	mg/kg	titrimetric
Hydrolysable chlorine	40	mg/kg	titrimetric
Total chlorine	100	mg/kg	ASTM D 1638-74
Viscosity at 42 °C	5	mPa·s	DIN 53 018
Density at 42 °C	1.22	g/cm <sup>3</sup>	DIN 51 757
Specific heat at 50 °C	1.5	kJ/(kg · K)	
Latent heat of fusion	110	kJ/kg	

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### **Delivery**

Lupranat MR and MRS can be delivered in each of two forms:

	container	quantity
Lupranat MR liquid Lupranat MRS liquid	heated road tanker	10 t max. 26 t
Lupranat MRS solid	non-returnable drum	240 kg

Transport temperature should normally be the same as storage temperature. For road tankers, the temperature should be between 39 °C and 47 °C, for delivery in drums it should be between 0 °C and 5 °C, whereas for a transport less than one day and early consumption, transport temperatures between 0 °C and 25 °C do not have any negative influence on the product.

### **Storage**

Lupranat MR and MRS are sensitive to moisture. The non-stabilized type yellows, particularly on exposure to light and air. The products slowly form dimeric diphenylmethanediisocyanate, which is seen as a precipitate and which might influence the properties of the final products if used for special applications. This dimer cannot be removed by heating.

Liquid Lupranat MR and MRS can be stored up to about a fortnight only in a narrow temperature range of about 41 °C to 45 °C and under a dry nitrogen blanket. It is essential to be able to accurately control the temperature of the storage tank and associated pipework to avoid cold spots. Consequently, the recommendation is to keep Lupranat MR or MRS in circulation via a double pipe arrangement in which a heating medium surrounds the inner pipe which carries the Lupranat MR or MRS. The temperature of the heating medium should be strictly controlled for each line whereas water, glycol and its mixings must not be contained in the heating medium. Trace heating should be used at the bottom, and in the walls, of the storage tank.

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Solid products should be stored at temperatures below +5 °C, but preferably considerably below 0 °C; under this condition and if moisture and oxygen are excluded, Lupranat MR and MRS can be stored for at least 2 to 3 months.

Drums containing Lupranat MR or MRS stored at temperatures lower than room temperature must not be opened in a moisture containing atmosphere. Complete warming up to room temperature prior to utilization avoids condensation of moisture on the crystals.

Crystallised products must be melted out immediately in a hot air oven at an air temperature of 80 °C to 100 °C. The heating period must be as short as possible; during heating the overall temperature of the product must not exceed 70 °C. Local overheating must be avoided, because the product will be destroyed at temperatures above 230 °C with consequent gas production. Rolling of the drums in a hot air oven is the recommended method of dissolving the crystals. After melting out, the contents of the drum must be thoroughly mixed.

More detailed information on transport and storage of isocyanates is given in the ISOPA-Guidelines "For Safe Loading / Unloading Transportation Storage of TDI and MDI in Bulk" and "For the Safe Transportation, Unloading & Storage of Packaged TDI & MDI".

### **Safety advice and environmental protection**

Labelling, transportation, storage, processing, waste treatment and disposal must comply with national regulations.

Occupational exposure limits are to be observed.

Lupranat MR/MRS is classified as harmful if inhaled. It causes skin irritation and serious eye irritation. It may cause respiratory irritation. It may cause sensitisation by inhalation and skin contact. It is suspected of causing cancer. It may cause damage to organs through prolonged or repeated inhalation exposure.

Before processing the product, we recommend reading the safety data sheet. For further information consult our Technical Information leaflet "Safety and Precautionary Measures for the Processing of Polyurethane Systems".

In order to avoid accidents, the residual product in the drums must be handled with care. Any water or moisture which is allowed to enter the drum will react with Lupranat MR/MRS and release carbon dioxide. Unless action is taken to prevent moisture entry or gas entrapment, the drums will become pressurized and could rupture.



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If it is intended to use BASF materials for the manufacture of toys or consumer goods (e. g. products which will come into contact with foodstuffs or with the skin) or medical products, national and international regulations have to be observed. Where no regulations exist, consumer goods or medical products must at least comply with European legislation. We recommend contacting our Sales and our Ecology and Product Safety departments.

### Disposal of drums

Residues of MDI remaining in drums must be neutralized. Information on disposal is given in our Technical Information „Safety and Precautionary Measures for the Processing of Polyurethane Systems“. Please contact our local agencies for further information on national disposal regulations.

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