

BONDERITE®**BONDERITE L-MR 77-4**Known as Multan 77-4
September 2013**PRODUCT DESCRIPTION**

BONDERITE L-MR 77-4 provides the following product characteristics:

Technology	Lubricants
Product Type	Water-miscible cutting fluid for metal working
Application	Grinding, CNC-Machining, Honing, Broaching etc.

BONDERITE L-MR 77-4 creates a finely dispersed emulsion with a wider range of different water qualities. BONDERITE L-MR 77-4 is free of Cl, S-, and P-containing EP-additives and Formaldehyd Releasing Agents. By using Henkel's patented emulsifier system BONDERITE L-MR 77-4 generates a long lifetime, also because of its high hardwater stability. In general, no addition of Bactericides over the life time of the emulsion is necessary. The long emulsion life time of BONDERITE L-MR 77-4 in combination with low topping up concentrations reduces the product consumption significantly. The high lubricity of BONDERITE L-MR 77-4 extends the tool life time and reduces the process costs. The excellent cleaning performance of BONDERITE L-MR 77-4 keeps the machine clean and reduces the maintenance cost, also e.g. in a following cleaning step.

Application Areas

BONDERITE L-MR 77-4 is a water-miscible cutting fluid for medium to heavy-duty machining of aluminum, stainless steel, titanium, high alloyed steel and all other types of steel. Brass and copper, etc. can be co-machined in a material mix as well.

TECHNICAL DATAConcentrate:

Density, 20°C, g/cm ³ DIN 51757	~0.95
Viscosity, (20°C), mm ² /s DIN 53211	~171
Refractive index	~1.461

Emulsion:

Appearance	colorless, finely dispersed
pH-Value, (3%, DI-Water) DIN 51369	~9.4

Corrosion protection properties:

according to DIN 51360/1	R0/S0 at 3.0%
according to DIN 51360/2	0/0 at 3.0 %

Emulsion stability:

according to DIN 51367	100 %
with 3 to 5 g/l NaCl added	98 %

Lubricants Reichert-Waage**Steel:**

5%, 1.5 kg, (mm ²)	19
8%, 1.5 kg, (mm ²)	17

DIRECTION OF USE**Preliminary Statement**

Prior to use it is necessary to read the **Material Safety Data Sheet** for information about precautionary measures and safety recommendations. Also, for chemical products exempt from compulsory labeling, the relevant precautions should always be observed. Please also refer to the local safety instructions and contact Henkel for analytical support.

ConcentrationMake up concentration:

5 % to 10 %
(depending on the machining operation and Material)

Topping up concentration:

1 % to 2 %

Control of the emulsionRefractometer:

The reading in °Brix multiplied by the product factor 1.1 is equivalent to the concentration in percent.

Titration:

100 ml of the emulsion are titrated with 0.5 N HCl using an electronic pH-meter down to pH 5.5. The consumption of acid in ml multiplied by the product factor 0.3 is equivalent to the concentration in percent.

Splitting with acid (DIN 51368):

100 ml of the emulsion are heated up with concentrated hydrochloric acid. The reading in ml multiplied by the product factor 1.28 is equivalent to the concentration in percent.

Storage

Temperature, °C +5 to +40

Classification

Please refer to the corresponding **Material Safety Data Sheets** for details on:

Hazardous Information
Transport Regulations
Safety Regulations



ADDITIONAL INFORMATION

Disclaimer

Note:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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Reference 0.1