

# UNISOLUBLE EM, EM-B

## Emulsifying Cutting Fluid for General Use

UNISOLUBLE EM or EM-B is a water-soluble cutting fluid blended with mineral oil and a surfactant, which is non-chlorinated cutting and grinding fluid suitable for general processing. It corresponds to JIS K 2241 Type A1, No.1.

### ● Special Features

1. Outstanding lubricity and improved machining performance
2. Excellent rust resistance
3. Outstanding Foaming Prevention

### ● Applications

UNISOLUBLE EM or EM-B is suitable for general machining such as lathe turning, drilling and mill processing of carbon steel, cast iron and aluminum alloy.

### ● Dilution Rate During Use

Cutting of steel materials: 10 to 30 times

The above dilution rates are intended for typical operating condition. The rates must be adjusted depending on the cutting conditions and volume.

### ● Containers

200-liter drums, 20-liter cans.

### ● Typical Properties of UNISOLUBLE EM, EM-B

	EM	EM-B
Appearance (original fluid)	Light yellow	Yellow
(diluted fluid)	White emulsion	White emulsion
Density (15°C), g/cm <sup>3</sup>	0.913	0.880
Flash point(COC), (original fluid), °C	188	166
pH *	9.3	9.3
Anticorrosion test(RT,48h)*		
Steel sheet	No discoloration	No discoloration
Aluminum sheet	No discoloration	No discoloration
Copper sheet	No discoloration	No discoloration
Foaming* (24°C), ml	0	0
Emulsifying stability* (RT:24°C)		
Distilled water, ml oil	0	0
Distilled water, ml creamy	0	0
Hard water, ml oil	0	0
Hard water, ml creamy	0	0
Tapping energy of efficiency, %	92.4	91.2

### Cutting Evaluation (Tapping Test)

$$\eta^e = \frac{\text{Tapping energy of reference oil}}{\text{Tapping energy of test oil}} \times 100$$

<Test conditions>

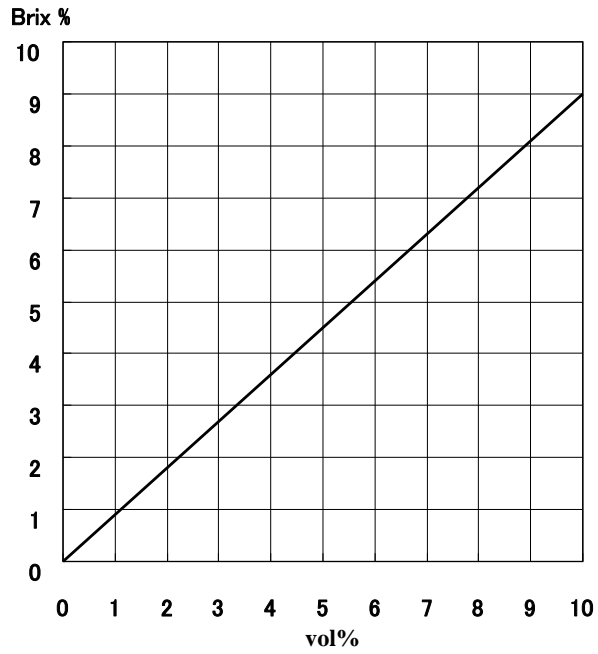
- Tap:M8
- Workpiece:JIS S25C, 10 mm thick
- Diameter of pilot hole:7.0 mm
- Cutting speed:9.0 m/min.
- Reference oil:DIDA

RT: Room Temperature

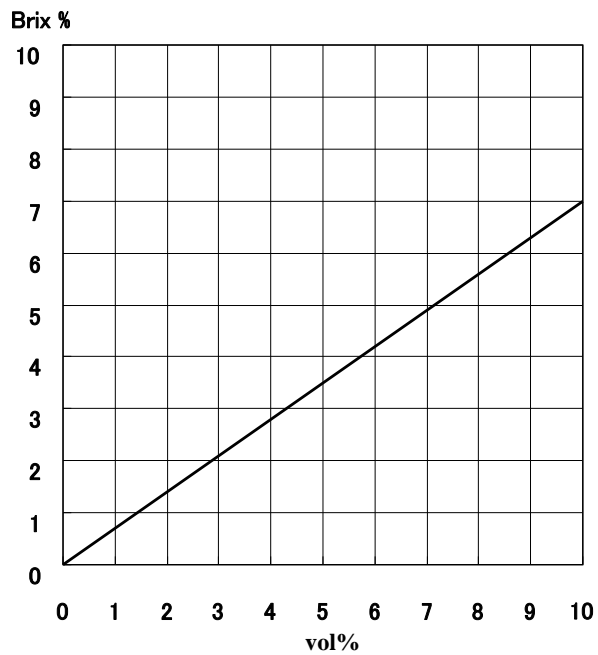
\*Measured with 10x diluted fluid (based on JIS K 2241).

Note: The typical properties may be changed without notice. (Aug. 2009)

**Concentration Conversion Graph for UNISOLUBLE EM  
(Atago Digital Refractometer PR-101)**



**Concentration Conversion Graph for UNISOLUBLE EM-B  
(Atago Digital Refractometer PR-101)**






## Handling Precautions

▼ Follow these precautions when handling this product.

### UNISOLUBLE EM

<b>Composition :</b>	Base Oil, Additives
<b>Precautionary pictograms:</b>	Not applicable
<b>Signal word:</b>	Not applicable
<b>Hazard Statement:</b>	Not applicable
<b>Precautionary Statements:</b>	<ul style="list-style-type: none"><li>• Do not handle until all safety precautions have been read and understood.</li><li>• Wear protective gloves/protective clothing/eye protection/face protection.</li><li>• Do not allow the eyes to become exposed to the product. Do not swallow the product.</li><li>• Wash hands thoroughly after handling.</li><li>• Do not eat, drink or smoke when using this product.</li></ul>
<b>Prevention</b>	
<b>Response</b>	<ul style="list-style-type: none"><li>• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</li><li>• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</li><li>• If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.</li><li>• IF ON SKIN: Wash with plenty of soap and water.</li></ul>
<b>Storage</b>	<ul style="list-style-type: none"><li>• The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.</li><li>• Containers that have been opened must be tightly sealed.</li></ul>
<b>Disposal</b>	<ul style="list-style-type: none"><li>• Dispose of contents/container in accordance with local/regional/national/international regulations.</li><li>• If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.</li></ul>

## UNISOLUBLE EM-B

<b>Composition :</b>	Base Oil, Additives
<b>Precautionary pictograms:</b>	
<b>Signal word:</b>	Danger
<b>Hazard Statement:</b>	May be fatal if swallowed and enters airways
<b>Precautionary Statements:</b>	
<b>Prevention</b>	<ul style="list-style-type: none"><li>• Do not handle until all safety precautions have been read and understood.</li><li>• Wear protective gloves/protective clothing/eye protection/face protection.</li><li>• Do not allow the eyes to become exposed to the product. Do not swallow the product.</li><li>• Wash hands thoroughly after handling.</li><li>• Do not eat, drink or smoke when using this product.</li></ul>
<b>Response</b>	<ul style="list-style-type: none"><li>• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</li><li>• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</li><li>• If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.</li><li>• IF ON SKIN: Wash with plenty of soap and water.</li><li>• Do NOT induce vomiting.</li></ul>
<b>Storage</b>	<ul style="list-style-type: none"><li>• The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.</li><li>• Containers that have been opened must be tightly sealed.</li><li>• Store locked up.</li></ul>
<b>Disposal</b>	<ul style="list-style-type: none"><li>• Dispose of contents/container in accordance with local/regional/national/international regulations.</li><li>• If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.</li></ul>