

RELIASOL E-NA

Emulsion Type Cutting Fluid for General Purpose

RELIASOL E-NA is emulsion type cutting fluid for general use that is superior in lubricity, rust prevention characteristics, anti-foaming and decay resistance. **RELIASOL E-NA** is an environment-friendly fluid which PRTR law is not applicable to, because sulfur, phosphorus and chlorine type additives are not used. It can be used for a wide range of materials. It meets to the water-soluble cutting fluid of JIS Type A1, NO.2.

● Special Features

1. Excellent Lubricity and Good Machining Performance

Because **RELIASOL E-NA** uses synthetic lubricant, it has superior cutting performance.

2. Superior in Rust Prevention Characteristics

RELIASOL E-NA is formulated with high performance anti-rust additives, because it is aimed for the machining of steel materials such as the cast iron. Therefore, this lubricant will prevent browning of liquid due to rust in case of machining cast iron.

3. Cleaner Environment for Machine

RELIASOL E-NA can reduce the adhesion and the deposition of viscous substances on equipment and machinery.

4. Superior Decay Resistance

RELIASOL E-NA can maintain decay resistance for a long term and extends the life of fluid compared with conventional emulsion type cutting fluid, because novel biostatic technology is adopted.

5. Environment-friendly Fluid

PRTR law is not applicable to **RELIASOL E-NA**.

● Applications

RELIASOL E-NA is suitable for lathe turning, drilling, reamer and end mill processing of steel materials such as carbon steel and cast iron, and also aluminum alloy.

● Dilution Rate During Use

Cutting of steel materials: 10 to 30 times

Cutting of aluminum materials: 20 to 30 times

● Containers

200-liter drums and 20-liter cans

● Typical Properties of RELIASOL E-NA

Appearance	(original fluid)	yellow
	(diluted fluid)	White emulsion
Density (15°C), g/cm ³		0.927
Surface tension* (25°C), mNm		24.6
pH *		9.4
Anticorrosion test(RT,48h)*		
Steel sheet		No discoloration
Aluminum sheet		No discoloration
Copper sheet		No discoloration
Foaming* (24°C), ml		0
Rust prevention on cast-iron cuttings(RT,24h), (multiple)		No rust (10) No rust (30)
Emulsifying stability* (RT:24°C)		
Distilled water, ml oil		0
Distilled water, ml creamy		0
Hard water, ml oil		0
Hard water, ml creamy		0

*Measured with 10x diluted fluid

Note: The typical properties may be changed without notice. (Nov. 2011)

● **Anti-corrosion property**

-Test method

Disperse 1 g of cast iron chips uniformly in a circle with a diameter of 36 mm on a paper placed in a petri dish and drop the sample dilution liquid using a syringe so that the entire cast iron chip moistens. After that, after leaving the petri dish for 24 hours at room temperature, remove the chips and visually observe the degree of discoloration (rust transfer) in the circle on the filter paper and judge rust prevention level according to the score in Table 1.

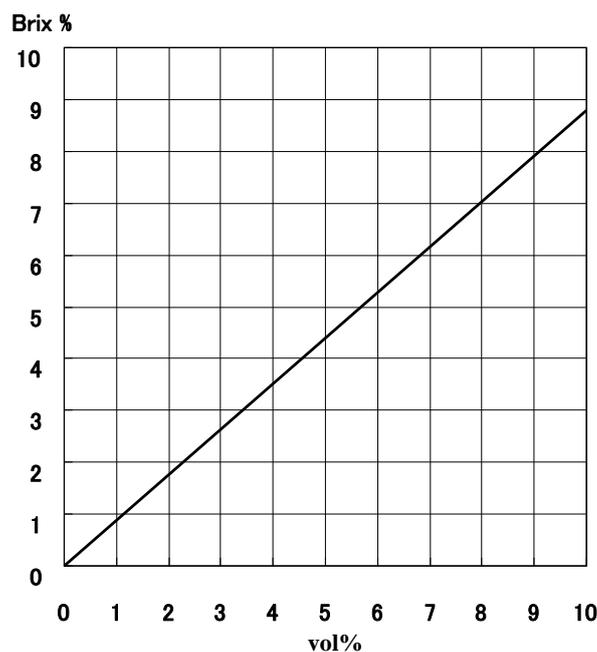
Table 1 Rating of rust prevention performance

Rating	Discoloration degree
0	No discoloration
1	Discoloration within 1 mm radius is within 3 locations
2	Discoloration less than 1% of the surface
3	Discoloration is 1% or more and less than 5% of the surface
4	5% or more discoloration on the surface
5	Discoloration is the whole surface

Table 2 Test results (Anti-rust performance) of RELIASOL E-NA

Dilution Rate	10x diluted fluid	30x diluted fluid
Rating	0	0

**Concentration Conversion Graph for RELIASOL E-NA
(Atago Digital Refractometer PR-101)**





Handling Precautions

▼ Follow these precautions when handling this product.

Composition :	Water-soluble processing oil Mixture(Base oil, Additives)
Precautionary pictograms:	
Signal word:	Danger
Hazard Statement:	Harmful if swallowed Causes skin irritation Causes serious eye damage
Precautionary Statements:	
Prevention	<ul style="list-style-type: none">• Do not handle until all safety precautions have been read and understood.• Wear protective gloves/protective clothing/eye protection/face protection.• Do not allow the eyes to become exposed to the product. Do not swallow the product.• Wash hands thoroughly after handling.• Do not eat, drink or smoke when using this product.
Response	<ul style="list-style-type: none">• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.• If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.• IF ON SKIN: Wash with plenty of soap and water.• Take off contaminated clothing and wash before reuse.• If skin irritation occurs: Get medical advice/attention.• IF IN EYES: Rinse continuously with water for several minutes.• Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.• Remove contact lenses if present and easy to do. Continue rinsing.• Rinse mouth.• IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Storage	<ul style="list-style-type: none">• The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.• Containers that have been opened must be tightly sealed.
Disposal	<ul style="list-style-type: none">• Dispose of contents/container in accordance with local/regional/national/international regulations.• If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.