

Precise Fluid 2001

High-Performance Heat Transfer Fluid for the Temperature Control of Machine Tools

In recent years, the precision required of machine tools has reached the micron and even the submicron level. This order of precision cannot be achieved only by mechanical adjustments. It is now also necessary to eliminate the thermal displacement that is caused by the heat from the rotating elements. Therefore, **Precise Fluid 2001** has been developed as a high-performance heat transfer fluid for the temperature control of machine tools.

● SPECIAL FEATURES

1. No Risk of Fire

Since **Precise Fluid 2001** consists mainly of water and does not have a flash point, it is not treated as a hazardous substance under the fire safety laws of Japan. Machine tools are often heated and cooled automatically, especially at the start of work and during unmanned nighttime operation. Since **Precise Fluid 2001** is flame resistant, it can be used without worry even in large factories operating at full capacity and in advanced unmanned plants.

2. Outstanding Thermal Conductivity

Because it is water-based, **Precise Fluid 2001** has about two times the specific heat and five times the thermal conductivity (about 3.8 times the thermal conduction coefficient) of conventional mineral-oil-based heat transfer fluids. These excellent heating and cooling characteristics shorten the warming-up operation time, maintain high working precision during machine tool operation, and enable the manufacture of high-added-value products.

3. Excellent Corrosion and Rust Prevention

When water alone is used as a heating and cooling agent, corrosion can cause problems such as worsened heat conductivity and clogged tubes. But thanks to its carefully selected corrosion inhibitors, **Precise Fluid 2001** prevents corrosion to iron- and copper-based metals. It also contains vapor rust inhibitors that prevent rust on tank roofs and in machine pipes during storage.

4. Superb Circulation and Lubrication Properties

A heat transfer fluid requires a certain amount of viscosity and antiwear properties so that it will circulate efficiently and prevent abnormal wear to the circulation pumps. **Precise Fluid 2001** has an ideal viscosity and contains antiwear agents, so it provides excellent circulation and lubrication performance.

● MANAGEMENT OF FLUID DURING USE

Precise Fluid 2001 is water-based, so evaporation and viscosity increases can occur during use. In addition, consumption of its vapor rust inhibitors can result in corrosion and rust problems. It is therefore very important that the fluid be carefully managed during use in order to ensure safe equipment operation.

MANAGEMENT STANDARDS

Kinematic viscosity (40°C)	mm ² /s	3 max.
pH		8.5 min.

● CONTAINERS

200-liter drums and 20-liter cans.

● TYPICAL PROPERTIES OF Precise Fluid 2001

Appearance		Transparent blue
Density (15°C)	g/cm ³	1.008
Kinematic viscosity (40°C)	mm ² /s	1.99
pH		9.5
Foaming (24°C)	ml	10
Metal corrosion (mass decrease, mg/cm ²) (88°C, 336 h)	Cast aluminum	-0.25
	Cast iron	0.05
	Steel	0.00
	Brass	-0.06
	Solder	0.15
	Copper	-0.03
pH change after test		-0.3

Note: The typical properties may be changed without notice. (June 2002)



Handling Precautions

▼ Follow these precautions when handling this product.

Composition :	Water, Morpholine, Glycerin ethoxylate and glycerin propoxylate, Additives
Precautionary :	Not applicable
Signal word :	Warning
Hazard Statement :	Causes mild skin irritation Causes eye irritation
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.• 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.• If eye irritation persists : Get medical advice/attention.
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.