



SOLUBLE CUTTING FLUID

PRODUCT DESCRIPTION

Hi-Tec Soluble Cutting Fluid is premium quality chlorine-free, borate-containing soluble cutting oil. It is designed for light to moderate machining operations including boring, milling, drilling, tapping, threading, broaching, turning, reaming and grinding.

Hi-Tec Soluble Cutting Fluid forms stable white emulsions with good "emulsion reserve" and possesses excellent resistance to bacteria degradation. The product does not contain any free phenolics or nitrites. The product also offers low foaming tendency solution in its applications.

CHARACTERISTICS

MAXIMISED LUBRICATION & COOLING is assured between the cutting tool and work surfaces using **Hi-Tec Soluble Cutting Fluid**, which promotes long tool life and excellent surface finish to the machined surfaces.

RUST PROTECTION is given to steel and ferrous machined metals with emulsion dilutions up to 60:1 water to oil concentrations.

BACTERIAL RESISTANCE. The inclusion of an effective biocide in **Hi-Tec Soluble Cutting Fluid** ensures long emulsion service life, resisting bacteriological degradation which often results in staining and corrosion of the machined components.

LONG TOOL LIFE is aided by the high oiliness, low frictional and good cooling properties of **Hi-Tec Soluble Cutting Fluid**.

EMULSION STABILITY of **Hi-Tec Soluble Cutting Fluid** is unsurpassed. It provides excellent emulsion stability in hard water up to 400 ppm calcium carbonate.

RECOMMENDATIONS

Hi-Tec Soluble Cutting Fluid is recommended at the following dilutions:

Turning, Milling and Drilling:	3 - 5%
Threading, Reaming and Tapping:	4 - 5%
Broaching:	4 - 5%
Grinding:	2.5%

When making an emulsion, always add oil to water slowly whilst mixing well. Never add water to oil.

CLASSIFICATION OF WORKPIECE METALS ACCORDING TO THEIR MACHINABILITY

Easy machining – High machinability (> 70%)	Medium machining- Medium machinability (50% - 70%)	Difficult machining – Low machinability (< 50%)
<u>Non-ferrous</u> - Lead bronzes - Non-lead brasses - Zinc-base alloys - Magnesium - Aluminium - Aluminium/silicon alloys	<u>Non-ferrous</u> - High tensile bronzes - Copper <u>Ferrous</u> - Cast iron - Mild, low carbon and unalloyed steels	<u>Non-ferrous</u> - Nickel - Nickel/chrome alloys - Titanium <u>Ferrous</u> - High carbon and low alloyed steels (heat treatable steels, ball-bearing steels, construction steels, tool steels, etc.) - High carbon and high alloyed steels (stainless steels, high speed steels, heat resistant alloys, etc.)

Hi-Tec Soluble Cutting Fluid is suitable for FERROUS materials with a machinability of > 50% (medium machinability) and for NON-FERROUS materials.

HOW TO ACHIEVE THE OPTIMUM RESULTS

- The emulsion strength should be controlled very carefully.
- As much contamination as possible should be prevented.
- Grinding dirt, chips, and any other contaminants should be removed quickly.

HOW TO EXTEND THE COOLANT LIFE

Filtration of coolants is a must, especially in grinding systems where solid matter is small, and in cast-iron machining where fine debris forms. Filtration will permit consistently better finishes and will also extend the life of the coolant.

Some of the hydraulic equipment on modern automated machines will leak as the equipment wears. Leaking hydraulic oil, or carry-over oil from previous machining, will soil the system. Trapped solid matter plugs filters and causes coagulation of the emulsion. This will make the operation hot and smoky. Centrifuges or skimmers can remove such "tramp oil" before it does much harm.

Because there are many variables in the operating systems, nobody can guarantee how long a coolant or emulsion will last. However, in central systems that are equipped with filters and centrifuges, and use a good source of clean water with low mineral content, emulsions have provided continuous service for up to a year with simple control of pH and emulsion strengths.

Hi-Tec suggests that the equipment manufacturers' recommendations for performance requirements and general operating conditions should be checked prior to use.



TYPICAL PROPERTIES

Properties

Appearance

Density (g/cm³) @ 15°C

Viscosity (cSt) @ 40°C

20:1 Emulsion Stability, 1 hour

Rust Prevention, Cast iron -

60:1 for 168 hours

Results

Blue

approximately 0.895

> 20.6

No cream or separation

No rusting