FERRO
ELECTRONIC MATERIAL SYSTEMS

Grinding Fluids

AL-640
Aluminum Machining Fluid

AL-640 is a fully synthetic machining fluid for use in light to heavy machining, turning, tapping, drilling, and cutting. Unlike most extreme or heavy-duty aluminum machining fluids, AL-640 uses no mineral oil, conventional extreme pressure additives such as phosphate esters, fatty acids, chlorinated paraffins or sulfur compounds. Thus, AL-640 will provide long-term trouble-free life and not build up on machine surfaces or parts.

Superior Machinability – AL-640 can increase tool life by lowering cutting forces and tool tip temperatures.

Low Mist Levels – AL-640 produces low mist levels and is not harmful to operator's skin and respiratory systems.

Exceptional Corrosion Protection – Even at extended dilution levels (25:1), AL-640 exhibits passing ratings in a standard ASTM cast iron chip test.

Use Concentrations May Vary – The concentration of AL-640 can be adjusted from 10:1 to 25:1 for maximum economy, depending on the severity of the job.

Rapid Foam Collapse – Naturally low foaming under high agitation means the workpiece is always visible. AL-640 is safe on most all aluminum and alloys.

No Sticky or Gummy Residue – Unlike soluble oils and semisynthetics, AL-640 keeps machine tools clean and free of gummy build up.

Oxidative, Biological, and Hydrodynamic Stability – AL-640 will not break down even under the most severe operating conditions.

Hard Water Stability – AL-640 will not create scum or separate in water up to 450-ppm total hardness.

Calculating Starting Amount of Coolant – To calculate the correct amount of coolant to be added to the sump, multiply coolant sump volume by 7.5 (the number of gallons of liquid in a cubic foot).

Example:
Tank width = 2 ft
Tank length = 6 ft
Tank depth = 2 ft
Volume = 2 x 6 x 2= 24 cu ft
Liquid Volume = 24 x 7.5 = 180 gal

For a 50:1 concentration, add 180/50 = 3.6 gal to the coolant tank.

Adding AL-640 to the Coolant Tank – When diluting AL-640, ensure that the machine sump is clean and free of built up glass fines and other foreign materials. Always add water to the sump first after cleaning, and then add AL-640. Circulate the sump for several minutes before starting production to give the tank time to completely mix.

Checking Concentration – Coolant concentration should be checked daily whenever possible. The simplest method is with a hand held refractometer. For the best results, always filter the coolant through a 1-

09/08

FERRO
ELECTRONIC MATERIAL SYSTEMS

Grinding Fluids

AL-640
Aluminum Machining Fluid

micron filter before reading the solution concentration. Once the coolant has been filtered, place a drop or two on the face of the refractometer. Hold the instrument up to the light and read the number just at the light colored line on the screen face. Write down and use it to refer to the refractive index chart enclosed with the product. Find the reading on the refractometer and locate it on the left-hand side of the chart. Now read to the right and down to determine the current dilution.

Recommended Starting Dilutions

Tapping	8:1 to 10:1
Cutting & Drilling	10:1 to 15:1

Typical Properties

Appearance	Clear Blue Liquid
Volatile Component	Water
Freeze Point	32ºF
Boiling Point	212ºF
pH	8 – 8.3
Evaporation Rate	NA
Odor	Mild
Vapor Pressure	NA
Vapor Density	NA
Specific Gravity	1.08
VOC	None
Weight per Gallon	9.0
Solubility in Water	Infinite

Packaging and Handling

AL-640 is a liquid packed in non-returnable drums, Tote Bins, Pails, and Bulk. Refer to the Material Safety Data Sheet for suitable materials of construction, for handling, and storing of this product. Observe all safety precautions shown on the label and in the Material Safety Data Sheet.

Health	**1**
Flammability	**1**
Reactivity	**0**
Personal Protection	**B**

Ferro Electronic Material Systems Penn Yan, New York, U.S.A. 315-227-5276

09/08