

PRODUCT STEWARDSHIP SUMMARY

METALWORKING FLUID ADDITIVES

Introduction

The metalworking fluid market is currently undergoing profound changes. These are driven by companies that want to safeguard the health of their member workers as well as by changes taking place in additive supply and logistics. Trends supporting these drivers are numerous and merit detailed consideration in this summary.

Uses and Advantages

Metalworking Fluid (MWF) Additives are used in other lubrications to extend the life of the machine or tool and to coat the surfaces of these work pieces. They reduce friction, corrosion and adhesion by carrying away generated heat. MWFs may be complex mixtures of oils, emulsifiers, lubricity additives, corrosion inhibitors, extreme pressure additives, quench additives, and other additives. Advantages in using a MWF are numerous.

Extreme Pressure (EP) Advantage:

- High molecular weight
- Reduces lighter sulfur chemistry volatility and odor in tramp oil
- Light color provides for high work piece visibility

Emulsifier Advantage:

- Non-acidity leads to higher emulsion stability
- Works with soft and hard water

Lubricity Advantage:

- Metal and chlorine free
- Improves emulsification properties

Quench Additive Advantage:

- Suitable for formulating mineral oil based fluids
- Excellent deposit and oxidation control

Health Effects

Metal Working Fluids (MWF) can cause adverse health effects through skin contact with sprays or mists and through inhalation from breathing MWF mists or aerosols. Health problems including irritation of the skin, eyes, and respiratory tract are associated with skin and airborne exposures to MWFs.

SDSs listing treat rate usage and training are provided to workers to ensure they are knowledge-able about handling material.

Environmental Effects

MWFs range from non-toxic to very toxic to aquatic organisms. They may cause long-term adverse effects in the aquatic environment. Some fluids may contain components which may be persistent in the environment.

Exposure

Methods of avoiding direct contact with metalworking fluids include wearing chemical resistant gloves, a chemical resistant suit, boots, safety goggles with face shield, and appropriate respiratory protection. Adequate exhaust ventilation or other engineering controls should be used to keep the airborne concentrations of vapors below their respective threshold limit value.

Industrial Use Exposure:

- Exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value
- Safety glasses with side shields
- Appropriate respiratory protection
- Chemical resistant gloves (Nitrile gloves of minimum thickness 0.4 mm)
- Chemical resistant suit and boots

Consumer Exposure Use:

- Consumer exposure is negligible since the product is incorporated into lubricants at various treat rates.

Risk Management

The Metalworking Fluid Industry may have various hazardous components present at different concentrations in its products. The risk of these chemicals are dependent on the manufacturing process, as well as changes such as refining, recycling, degradation, or using re-claimed chemicals, and potential reactions between components. Worker exposures are managed with the following:

Conclusion

A very important factor driving the metalworking industry is the variety of changes in supply and logistics that are taking place in this market. Afton has committed to making sure the workers and community at large is knowledgeable about their products. Afton is committed to providing its customers with the information they need to responsibly manage any health and environmental risks associated with the intended use of Afton products.

For additional information, contact us at:

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