INTRODUCING QUICK SMART LUBRICANTS, A SMALL NICHE MARKET SPECIALITY COMPANY CATERING FOR YOUR INDUSTRIAL OIL REQUIREMENTS.

CUTTING OILS

INTRODUCTION

Quick Smart Cutting Oils are specially formulated to provide maximum performance over a wide range of metal removing operations.

Quick Smart Cutting Oils are available in two distinct families, namely:

- Soluble Cutting Oils
- Neat Cutting Oils

Kool Kut Soluble Cutting Oils are used where rapid heat removal is the major requirement. When diluted with water, they produce stable emulsions which have excellent cooling ability and the necessary balance of lubricity and extreme pressure characteristics required for proper machine conditions.

Easy Cut Neat Cutting Oils are designed for use as they are received and are non-miscible with water. They have excellent lubricity and anti-weld properties, assist in extending tool life and produce a quality finish on machined parts.

PRIMARY FUNCTIONS OF A CUTTING OIL

The main functions of a cutting oil are to lubricate or reduce the friction between the cutting tool and the work piece and to act as a coolant by rapidly removing the heat generated at the interface of the cutting tool and the work piece.

LUBRICATING PROPERTIES

To perform satisfactorily as a lubricant, a cutting oil must greatly reduce friction at or near the tool tip, where the highest temperatures occur and between the moving tip and the rake face of the cutting tool. Special additives are often included in the formulation to provide the needed lubricity under severe boundary lubrication conditions:

For moderate pressures and temperatures, up to approximately 150^{o}C, fatty oils when blended into mineral oils make good boundary lubricants.

For extreme pressures and temperatures, additives such as chlorine and/or sulphur chemically react to form solid-lubricant surface films.
PROPER LUBRICATION REDUCES FRICTION, THUS:

- Less coolant is required to absorb the heat, since there is less friction to be dissipated
- Less cutting energy is required, which results in lower power consumption and/or higher production rates.
- Less cutting tool wear
- Improved surface finishes

COOLING PROPERTIES

A coolant's main function is to remove heat from the cutting tool, chip or work piece. To perform the cooling function properly in a given operation, an appropriate cutting oil should be selected in the lightest viscosity grade available to maximize heat removal.

As water has the highest thermal conductivity, water-soluble oils and synthetics are the best coolants for grinding operations involving high rates of metal removal. At the other end of the scale, high viscosity mineral oils have low thermal conductivity and are most suited to slow speed cutting operations involving high contact pressures.

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COOLING PROPERTIES (CTD)

Cooling is also related to flow rate. Thus by increasing the flow rate of a cutting oil over the tool/work piece area, the cooling action of the oil can be improved.

ANTI-WELD PROPERTIES

Extreme temperatures and pressures at the cutting interface may cause the metal to weld to the tool face. Effective anti-weld characteristics may be imparted to cutting oils by incorporating appropriate additives.

The most common agents for this application are elemental or combined sulphur and combined chlorine. These materials react chemically with metals, under the temperatures and pressures encountered at the chip/tool interface, to form a surface film of low shear-strength thus creating higher lubricity.

NEAT CUTTING OILS

LOW VISCOSITY

- Accelerates heat removal from tool and work piece.
- Facilitates rapid setting of chips and swarf
- Improves clarity of re-circulated oil
- Prevents excessive wear at contact surfaces
- Produces better surface finish

CONTAIN FRICTION REDUCING COMPOUNDS

- Prevents welding and “build-up edge” on cutting tools.
- Reduces friction and heat between tool and work piece
- Lowers power consumption
- Improves surface finish

LIGHT IN COLOUR

- Permits easy viewing of the work piece

SOLUBLE OILS

OUTSTANDING EMULSIFYING PROPERTIES

- Forms fine, highly stable emulsions even in hard water
- Resists Oil separation
- Long oil service life

LOW FOAMING TENDENCY

- Eliminates formation of undesirable foams
- Facilitates easy settling of swarf

HIGH LUBRICITY

- Improves surface finish
- Extends tool life
- Lowers power consumption and/or increases production rates

SUPERIOR RESISTANCE TO RUST AND CORROSION

- Delivers excellent protection to both tools and work pieces against rust and corrosion

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