MORRIS

Metcut
METALWORKING FLUIDS

Metalworking Fluids

Tradition in Excellence since 1869

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Over 135 years of progress has seen Morris Lubricants become one of Europe's largest privately owned lubricant companies, serving the UK and exporting to over 65 countries worldwide. Morris Lubricants remains a company with a sense of history and tradition, with sound high quality products and uncompromising customer service combined with a refreshing approach to future development and innovation. Located in the historic town of Shrewsbury, Shropshire, the Morris plant is a statement of modern efficiency and fits discreetly into its market town setting. Continual investment has seen the construction of a dedicated metalworking fluids blending facility, producing grades under the Metcut brand name. Supported by a dedicated Technical and Customer Services Team and backed with a modern R&D laboratory, Metcut products have evolved to provide customers with all the benefits in high performance technology.

Morris Lubricants is an active member of the UK Lubricants Association (UKLA) Metalworking Fluids Product Stewardship Group that were formed to consider topics relating to formulation, health and safety, use, disposal and compliance with growing environmental pressures and legislation. Each member of the group has agreed to adhere to a code of ethics that gives customers and users assurances that new developments take into account all relevant health, safety and environmental concerns. Together with the quest for improved performance, these factors now form the main driving force for product reformulation and new product development. Morris Lubricants is committed to fulfilling these principles and ethics to the benefit of its customers.

COMMITMENT TO QUALITY

Our team of qualified chemists combine an invaluable working knowledge of metalworking applications with an understanding of the latest available raw material technologies.

Using these skills, existing fluids are continually enhanced and new products are developed to satisfy developments in metalworking techniques and workplace legislation, as well as satisfying specific customer requirements.

Morris Lubricants is a BS EN ISO 9001 accredited manufacturer, has attained the Environmental Standard BS EN ISO 14001 and works closely with major companies across a broad spectrum of engineering and manufacturing industries.

UKLA METALWORKING FLUID PRODUCT STEWARDSHIP
An active member

Water Soluble Fluids

The water soluble cutting fluid range has been developed with the latest available additive technology to ensure maximum productivity at minimum cost, for the widest range of machining operations. These fluids are designed to provide the optimum in tool life and cutting performance.

Grinding Fluids

Metcut Grinding Fluids provide excellent cooling properties and lubricate the individual cutting tips within the wheel matrix without attracting the adhesion of fines that can rapidly cause wheel glazing. All grades resist foam and provide outstanding corrosion protection even at high dilution rates.

Neat Cutting Oils

A comprehensive range of high performance neat cutting oils offering products for general purpose applications right through to heavy duty operations and high speed production.

Hand Applied Fluids

A range of hand applied products that include a compound, liquid and spray, providing tool protection and excellent work piece finish in a wide range of metalworking operations.

A GUIDE TO LOOKING AFTER WATER-MIX METALWORKING FLUIDS

COOLANT MAKE UP Coolants should always be prepared by adding the correct quantities of product to water in a suitable clean container with agitation. For the larger user, Morris offers a range of mixing units to enable the correct dilution ratio to be achieved. NEVER ADD WATER TO OIL CONCENTRATE.

CONCENTRATION MEASUREMENT The recommended fluid strength should be checked regularly using a hand refractometer and adjustments made to bring it back to the recommended strength if necessary. After ascertaining the refractive index, the use of a correction factor may well be necessary in order to identify the actual concentration of the emulsion or solution.

COOLANT TOP UP AND CONCENTRATION ADJUSTMENT When additions of fresh cutting fluid are required, it is essential to pre-determine the concentration level in the machine sump in order to compensate for evaporation or over dilution. Topping up with a freshly prepared mix of either a much lower or a much higher concentration, as required, will restore the machine sump to the recommended concentration level.

REMOVAL OF CONTAMINANTS The cutting fluid should always be maintained in as clean a condition as possible. To avoid premature bacterial degradation and coolant breakdown, it is essential to remove tramp oils from coolant sumps on a regular basis. Metallic swarf levels should also be kept to a minimum, by use of a suitable filtration system.

SYSTEM HYGIENE It is equally important to ensure that debris from the surrounding workplace is prevented from entering the coolant system as this can also result in premature bacterial degradation of the cutting fluid. This is particularly pertinent when food waste, sandwich crusts, etc., and coffee or tea cup dregs are accidentally deposited in sumps.

SYSTEM CLEANING Start with a clean coolant system – purged with a good systems cleaner (Superclean KD150 System Cleaner). Charge the sump with fresh coolant at the correct dilution for the operation and regularly monitor the concentration. Periodically remove metal fines and sludges by suction filtration, particularly in mixed metal machining.

WATER MIX FLUIDS TROUBLESHOOTING CHART

PROBLEM	LIKELY CAUSES		CORRECTIVE ACTION
CORROSION	Concentration	Low →	Increase
	pH	Low →	Clean with system cleaner
	Contamination	Bacterial infection present →	Find source and eliminate
	High humidity	Yes →	Protect in storage
FOAMING	Concentration	High →	Decrease
	Water hardness	Soft →	Use hardener or anti-foam
	Contamination	Present →	Remove or control
UNSTABLE EMULSION	Mixing procedure	Incorrect →	Use correct method
	Water hardness	Hard →	Use modified product or soften water
	Storage	Incorrect →	Store indoors, employ stock rotation
	Bacterial infection	High →	Clean with system cleaner
	Contamination	Present →	Remove or control
SKIN IRRITATION	Concentration	High →	Decrease
	pH	High →	Eliminate alkaline contaminants
	Bacterial infection	High →	Clean with system cleaner
	Swarf presence	Yes →	Inspect filtration
	Use of solvents or cleaners	Yes →	Use protective clothing
POOR TOOL LIFE	Concentration	Low →	Increase
	Contamination	Present →	Remove or control
	Incorrect tooling setup	Yes →	Reset tooling
	Incorrect product	Yes →	Change to a more suitable product

DOs AND DON'TS

- **Do** read manufacturers instructions
- **Do** be aware of health problems
- **Do** check compatibility of fluids
- **Do** store correctly
- **Do** ensure regular condition monitoring and keep records of checks
- **Do** top up with pre-mixed emulsion
- **Do** keep the machine clean and debris free
- **Do** keep the reservoir covered
- **Do** ensure filtration works
- **Do** minimise tramp oil leaks and report all leaks to the supervisor
- **Do** clean all pipework, machine and guards, before renewing a fluid
- **Do** dry the system if converting to neat oils
- **Do** mix the fluids just before use, try not to store pre-mixed fluid
- **Do** know the water hardness
- **Do** mix in a clean container and not galvanised
- **Do** add concentrate to water with constant stirring
- **Do** use a refractometer to check concentration
- **Do** use protective equipment, i.e. gloves and goggles
- **Do** train operatives in housekeeping and practices
- **Do** keep all guards, spray covers, etc., in good working order
- **Do** ensure correct coolant flow to avoid misting or fuming
- **Do** provide local exhaust ventilation if misting occurs
- **Do** ensure feeds and speeds are compatible with the tolls and materials used.

- **Don't** use the fluid past its effective working life. Quality, health and safety, and general environment will suffer
- **Don't** allow mist or spray to be emitted
- **Don't** use airlines to blow components clean
- **Don't** allow unnecessary contact with the hands
- **Don't** allow operatives to eat or drink around machine tools
- **Don't** add water to concentrate, it will make an invert emulsion which is useless
- **Don't** dispose of used fluid directly to the drain
- **Don't** wait for problems to arise before taking counter steps. Prevention is better than cure
- **Don't** mix in dirty or galvanised containers
- **Don't** expose fluids to temperature extremes
- **Don't** check it by feel, you will get it wrong
- **Don't** put clean fluids in dirty machines
- **Don't** use a cleaner without checking compatibility with the fluid
- **Don't** allow waste or rubbish to enter the system
- **Don't** allow overheating to occur, ensure fluid level and flow are adequate
- **Don't** allow the fluid to stagnate when not operational
- **Don't** add biocide without guidance from a specialist, and never exceed the recommended dose
- **Don't** allow tramp oil to accumulate
- **Don't** let 'in-house' lack of expertise prevent effective fluid maintenance

Please refer to the Health and Safety Executive website for the latest information and advice on working with metalworking fluids: **www.hse.gov.uk/metalworking/index.htm**

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Certificate No. FM 21756
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