



UKLA METALWORKING FLUID PRODUCT STEWARDSHIP GROUP WORKING SAFELY WITH METALWORKING FLUIDS

Exposure to Metalworking Fluids (MWFs) can cause health problems in some circumstances.
These guidelines will help minimise such risks, maintain MWF quality and help prolong machine and tool life.

DO	DON'T
GENERAL	
Assess risks, refer to the Safety Data Sheet and manage MWFs properly	
Regularly check for dermatitis and respiratory problems and report symptoms promptly	Wait for outbreaks of dermatitis or respiratory problems
STORAGE	
Store packages and drums correctly	Expose to excessive heat or cold or allow rain water to accumulate on the top
MAINTENANCE OF FLUIDS AND COOLANT SYSTEMS	
Make trained personnel responsible for MWF maintenance	
Ensure regular monitoring of the MWFs including testing for bacteria and pH	*Add biocide indiscriminately
Record and act on the MWF condition monitoring results	Use any MWF beyond its useful working life
Mix MWFs and top-up sumps correctly	
Keep the machine clean	Allow the MWF to be contaminated with rubbish or food waste
Keep the MWF tank covered	
Use filters to remove swarf and fines	*Allow tramp oil to accumulate
CLEANING AND FILLING COOLANT SYSTEMS	
Thoroughly clean sump, pipework, machine and guards before re-filling with fresh MWF	Put clean MWFs in dirty machines or sumps
Use a system cleaner compatible with the MWF	Dispose of used MWFs directly into public drains or sewers
*Use a mixing valve or a clean container to prepare water-mix MWFs	*Mix MWFs in the machine sump tank
*Use drinking-quality water of the correct hardness	*Use water from fire hoses or contaminated sources
*Use a refractometer to check the MWF is at the correct dilution	*Check MWF concentration by feel
Use protective equipment (PPE) when handling MWFs and when cleaning out machines	
Avoid using compressed air, use alternatives to clean components where reasonably practicable. Carefully consider the risks, if you must use compressed air, use a low pressure and adopt suitable controls to protect health	Use high pressure air lines to blow components clean
OPERATION OF MACHINES	
Provide training and instructions for employees in the safe use of MWFs and correct use of PPE	Allow the MWF to overheat
Enclose the process where possible	*Allow stagnation of water-mix MWFs
Ensure correct MWF flow and delivery	
Provide local exhaust ventilation (LEV) where necessary	Allow mist or spray to be emitted into the machine shop
Use all machine guards and spray covers properly	
Follow correct working procedures	Require operators to put their hands into MWFs unnecessarily
Observe good personal hygiene	Eat, drink or smoke near machines
* Guidelines in blue text refer to actions when using water-mix MWFs. Black text refers to both water-mix and neat MWFs.	

These guidelines constitute good practice. Further explanation of them can be found in HSE guidance, see www.hse.gov.uk/metalworking. Not all the points are specific legal requirements, but all can help employers comply with the COSHH Regulations.

If in doubt, contact your MWF Supplier:	FUCHS Lubricants (UK) plc +44 (0) 1782 203700 contact-uk@fuchs-oil.com
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Innovative lubricants need experienced application engineers

Every lubricant change should be preceded by expert consultation on the application in question. Only then can the best lubricant system be selected. We will be glad to advise on the right lubrication for each application and also the range of support services we can offer.

Contact:



FUCHS Industrial Lubricants

Advanced Coolantology



ECO-COOL

ECOCOOL ULTRALIFE Water Soluble Coolant Technology

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TECHNOLOGY.
PEOPLE.



YOUR PERFECT PRODUCT PARTNER



FUCHS is the world's largest independent lubricant manufacturer. The Group comprises 57 operating companies with 34 production plants worldwide.

We have more than 130 years' experience of manufacturing and supplying lubricants within the UK. We believe that the perfect lubricant partner should not only supply high performance lubricants but also provide service and support to customers. Our experienced team work closely with customers from choosing the right lubricant to full condition monitoring, ensuring they receive the most from their lubricants.

We research, develop and manufacture bespoke lubricants, technology that is approved for use by leading manufacturers and available globally via the FUCHS organisation. Different lubricant products can help reduce maintenance costs, increase fuel life and improve downtime.

In addition to products developed for industry in the UK, we have access to more than 2,500 industrial FUCHS products from all over the world. Customers can make use of FUCHS's technical expertise and product availability on a global scale, providing access to international fluid technology.

QUALITY IS OUR WAY OF LIFE



UK machining companies operate in a highly competitive market, characterised by increasing pressure to reduce costs, improve productivity and maintain high levels of quality and service.

To add to these concerns, the Health and Safety Executive (HSE) is now monitoring manufacturers to ensure they are fulfilling their duty of care to employees. This follows a serious outbreak of respiratory illness caused by the inhalation of, and reaction to, bacteria in the mist generated by used water soluble metalworking fluids.

For many years, FUCHS has been a trusted partner in supplying high-quality fluids and providing first class after-sales service to machining companies of all sizes. We maintain our position at the forefront of coolant development by working closely with leading manufacturers, as well as having our own extensive research and development facilities that test for compatibility and machining performance.

Dedicated to Research and Development

The **ECOOCOOL ULTRALIFE** range is a testament to our knowledge and experience and meets all of the demands faced by today's metalworking industry. It has been specifically designed to offer superb machining performance under increased feed and speed rates. It also provides increased resistance to bacterial growth and exceptionally clean machining performance with low foaming characteristics.

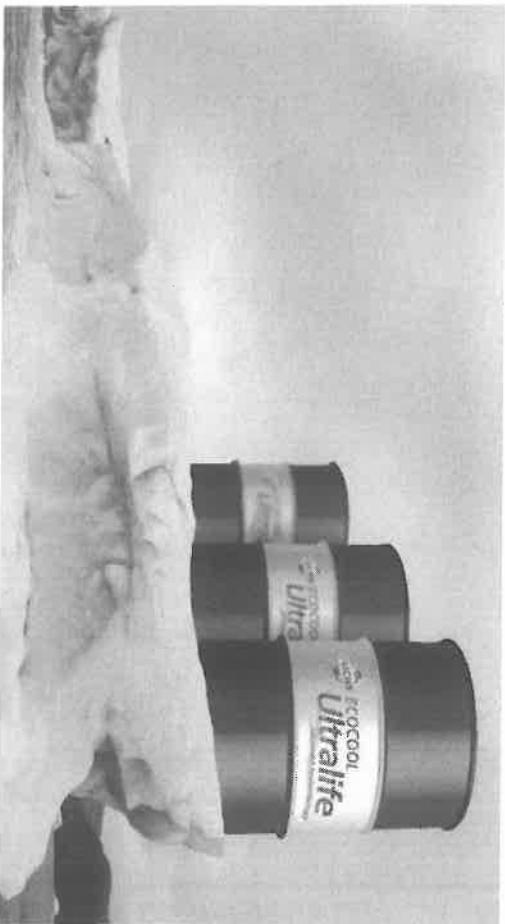
As one of the world's leading manufacturers of coolants, we are

committed to developing and manufacturing innovative, high quality products that are safer to use, more ecologically acceptable and superior in their technical performance.

We are also members of the UKLA Metalworking Fluid Product Stewardship Committee, a group of companies that put health, safety and environmental issues at the forefront of the development and supply of their products.



ADVANCED COOLANTOLOGY



COST SAVING OPPORTUNITIES

The Fluid That Works Harder - So You Don't Have To! Compared to other types of lubricants, metalworking fluids need extra care and attention to maintain their effectiveness. Contamination can have a detrimental effect on the coolant. Bacteria can degrade the technical performance properties of water soluble oils, causing the coolant to separate, lose its lubricant characteristics and reduce its service life.

The FUCHS **ECOCOOL ULTRALIFE** range has been specifically designed to resist bacterial growth, meaning that the fluid requires less maintenance and monitoring. It also increases sump life, reduces fluid consumption, reduces waste and disposal, as well as lowers the risk of operator health issues. All of these benefits provide significant commercial advantages to users.

The **ECOCOOL ULTRALIFE** range also offers industry-leading tramp oil rejection rates, which helps to maintain the condition of the fluid for even longer. Tramp oil, which is residue oil that has leaked from machine tool lubrication (slideway, hydraulics, etc.) into the coolant system, is the single largest contamination problem faced by manufacturers.

Tramp oil has a lower specific gravity than the coolant, meaning it floats on top and seals off the system from air. This provides the perfect conditions to enable bacteria to multiply rapidly and causes the coolant to degrade through oxygen deprivation.

ECOCOOL ULTRALIFE products are compatible with process and machining fluids, such as machine tool lubricants, and enable tramp oil to be easily removed.

Proven Performance Benefits

The **ECOCOOL ULTRALIFE** products provide a more stable emulsion when mixed with water, helping to reduce premature tool wear and extend tool life. The range has been designed to lubricate and cool effectively, even with coated tooling types. Ultimately it brings better performance in terms of component rejection rates.

Most importantly, the **ECOCOOL ULTRALIFE** range offers "Best in Class" coolant technology, in terms of machining performance. Benchmarking against competitor products, using a specially adapted "Torque Tapping Test", the products showed "Best in Class" performance, requiring less torque to machine various types of metal blocks.

The FUCHS **ECOCOOL ULTRALIFE** range of coolants is the key to profitable machining! Ask for case study documentation.

The FUCHS **ECOCOOL ULTRALIFE** range of premium water soluble metalworking fluids is the result of hard work by our project team of chemists and application engineers. Their aim was to re-examine the key performance criteria for water soluble cutting fluids and develop a market-focused "Best in Class" range of products, taking into account the current and future implications of HSE directives, biocide regulations and waste disposal issues.

The result is "Advanced Coolantology", a range of coolants designed to offer optimum machining performance and surface finish, exceptional long life performance and the ultimate in machine cleanliness for an improved working environment.

The **ECOCOOL ULTRALIFE** range contains six variants designed to provide a suitable fluid, regardless of machining application, workpiece material or water type.

The products give remarkably fine cutting performance and enhanced surface finish, especially when used with modern multi-tool CNC machines. Easily emulsified, they have been designed to provide excellent machine cleanliness during operation, a low propensity to foam and an improved working environment.

Each product offers the optimum performance for the operation and material type. The range includes semi-synthetic and fully synthetic versions and has the capability to adapt to modern manufacturing techniques, including coated tooling and more exotic metals.

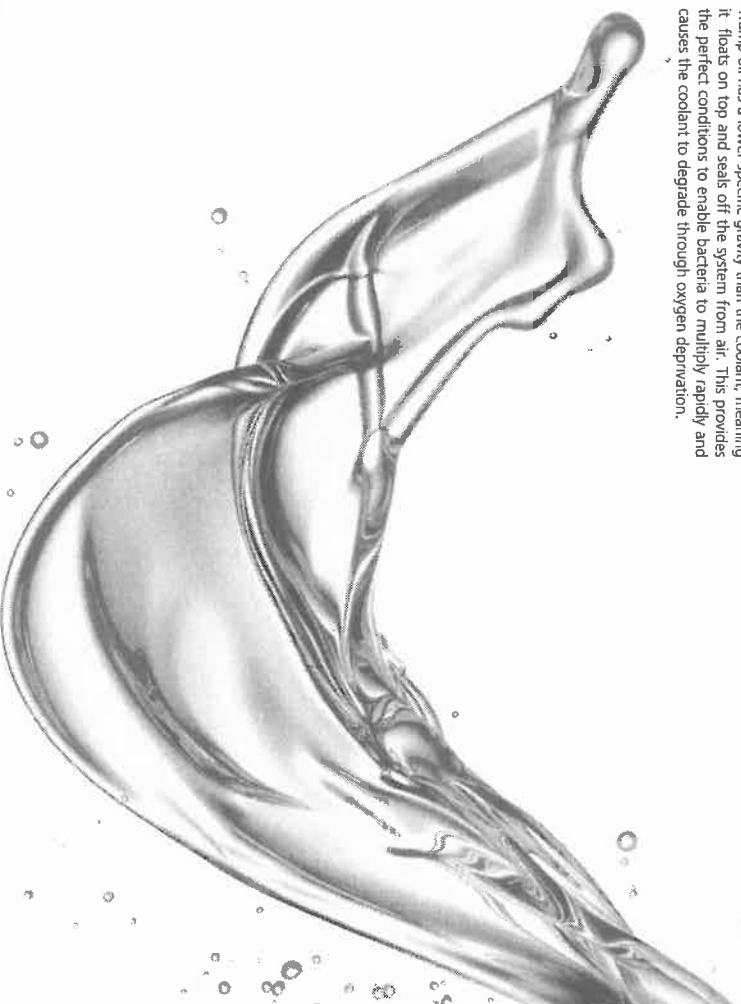
Advanced Coolant Technology for the Future

Choosing the most appropriate fluid is not straightforward and simply opting for the cheapest product is the road to false economy. Accuracy, finish, cycle time, up time, productivity and overall component cost will be affected by the fluid in use, so please seek the advice of an expert.

FUCHS offers a free service to review a manufacturer's cutting fluid usage and advise on how costs can be reduced, by extending the life of the coolant, increasing tool life or reducing consumption.

With the development of the **ECOCOOL ULTRALIFE** range, FUCHS has once again been at the forefront of metalworking fluid technology. With extensive knowledge and experience, investment in high-tech laboratory equipment and a worldwide information sharing scheme, we are able to maintain our position as a leading supplier of coolants.

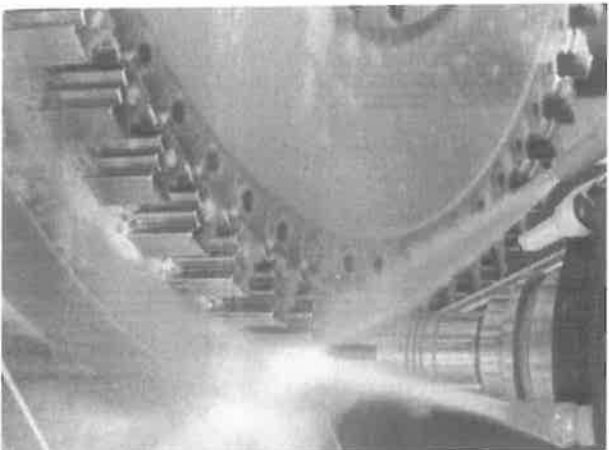
FUCHS ECOCOOL
UltraLife
...advanced coolantology



REGULATION & LEGISLATION

Legal Implications for Manufacturers

Working in close proximity to metalworking fluids can be dangerous. Manufacturers face increasing demands from EU legislation, forcing them to consider the health and safety issues related to their operations. It is important for companies to be aware of their legal duty of care regarding the protection of their work force.



The associated health risks were highlighted by the Health and Safety Executive's (HSE) investigation into an outbreak of respiratory disease at Powertrain Ltd, Birmingham. There were more than 100 confirmed cases of occupational asthma and extrinsic allergic alveolitis, both of which cause long-term breathing difficulties.

The HSE's findings linked these diseases to bacteria growth in water soluble metalworking fluids, inhaled via the mist generated during machining. The investigation also indicated that the outbreak appeared to develop and peak while exposure to mist was at, near or below HSE good practice guidance levels. As a result of this, the HSE withdrew their guidance limits, recognising the potential risk from exposure to even low levels of mist.

Occupational asthma is a serious and growing problem. The HSE estimates that up to 3 000 new cases are diagnosed each year, costing the industry approximately £1.1 billion over 10 years.

The responsibility for worker protection lies with the employer. Those failing to comply with HSE guidelines risk fines and even closure. HSE guidelines state that good coolant control must include:

- Risk assessments that deal with the potential risk of respiratory disease
- Prevention and control of mist exposure
- Direct means of monitoring and controlling bacterial contamination in metalworking fluids

Protecting Your Workforce and Profitability

The **ECOCCOOL ULTRALIFE** range has been developed in direct response to these pressures and has been thoroughly researched and tested by FUCHS chemists.

The **ECOCCOOL ULTRALIFE** range uses a unique combination of safe, but powerful biocides to dramatically reduce the rate of bacterial growth in machine sumps. Test results for the **ECOCCOOL ULTRALIFE** range show the products to be biologically harder than traditional water soluble cutting fluids, while still maintaining high cutting performance. This reduces the need for tank side additions, maintenance and fluid monitoring, and significantly lowers the risk of employees developing occupational lung disease.

The range makes it easier for companies to comply with other regulations, such as REACH (Registration, Evaluation and Authorisation of Chemicals) and COSHH (Control of Substances Hazardous to Health) by reducing the number of hazardous products and chemicals, such as biocides, on site.

Manufacturers have a corporate responsibility to protect their workforce. They can do this by working with a credible metalworking fluid supplier, such as FUCHS, who understands and is prepared for the latest regulatory demands.

HIGH PERFORMANCE COOLANTS

All of the products in the **ECOCCOOL ULTRALIFE** range provide prolonged fluid life, good machine cleanliness and maximised sump life, optimised surface finish and tooling performance. They also have excellent EP, corrosion protection and low foaming properties.



Low Oil Content			
ECOCCOOL ULTRALIFE L	Multi-functional, semi-synthetic fluid for general machining and grinding operations. Specifically designed for use on cast iron and low tensile steel, as well as other ferrous and non-ferrous materials.	pH @ 5% 9.2 - 9.4	Recommended Concentration 3 - 8%
Medium Oil Content			
ECOCCOOL ULTRALIFE M	Semi-synthetic fluid, with lubricity additives, for use in general machining and some grinding operations. Specifically designed for use on a wide variety of ferrous and non-ferrous materials, including medium to high tensile steels.	pH @ 5% 9.0 - 9.2%	Recommended Concentration 3 - 6%
Aluminium Applications			
ECOCCOOL ULTRALIFE A	Semi-synthetic fluid, with a high oil content and EP additives, for use in general machining and heavy duty operations. Specifically designed for use on aluminium alloys, stainless steels and automotive aluminium castings.	pH @ 5% 8.9 - 9.2	Recommended Concentration 5 - 8%
Multi-Metal Capability			
ECOCCOOL ULTRALIFE MM	Semi-synthetic cutting fluid designed for multi-metal capability (including brasses). Specially engineered to provide exceptional cleanliness, particularly when machining materials such as SG Iron. Provides the optimum balance between lubricity and cleanliness.	pH @ 5% 8.9 - 9.2	Recommended Concentration 5 - 8%
Heavy Duty Applications			
ECOCCOOL ULTRALIFE EP	Semi-synthetic fluid, with a high oil content and EP additives, for use in general machining and heavy duty operations. Specially designed for arduous machining applications on steel, stainless steel, nitronics and titanium materials.	pH @ 5% 8.9 - 9.1	Recommended Concentration 5 - 12%
Renewable Resource Technology			
ECOCCOOL ULTRALIFE RR	Fully synthetic, ester based fluid for use in general machining operations. Can also be used in some grinding, drilling and tapping applications. Specifically designed for machining medium to high tensile steels, including alloyed steels, stainless steel and aluminium, as well as non-ferrous metals, such as copper and brass.	pH @ 5% 8.9 - 9.2	Recommended Concentration 5 - 7%

Our trained metalworking fluid specialists are able to assist with choosing the right product for your application through consultation and site visits.