



MOL **METALWORKING FLUIDS**

RELIABILITY, EFFICIENT MAINTENANCE,
TAILOR-MADE SOLUTIONS

COST-EFFECTIVE MACHINING USING MOL COOLANT-LUBRICANT FLUIDS

MOL-LUB Ltd. has more than 100 years of experience in lubricant production and application technology. Our lubrication technology engineers can help you select the best product from a wide range of premium-quality metalworking fluids, to optimise the production process and maintenance of the cooling lubricant fluid supply system. As a result, you can save on **maintenance costs and your plant will operate more efficiently and safely with these excellent quality products.**

High-performance MOL metalworking fluids provide cost-efficient production engineering operations

During the development of MOL metalworking fluids we focused on users' needs, so our products offer outstanding support for efficient machining, cost reduction and excellent product quality, as well as contributing to ensuring a healthy and safe working environment. Using MOL's fluids means:

- ♥ Tools can maintain excellently machined surface finish, thus extending tool life, minimising the need to use additional finishing operations and reducing the time and costs spent on purchasing and installing new tools
- ♥ Temporary corrosion protection properties can contribute to maintain the required product quality
- ♥ High machining speeds can be achieved, improving production efficiency
- ♥ Downtime will be reduced, leading to increased production and lower maintenance costs
- ♥ Greater biological stability allows longer fluid lifetimes, requiring lower volumes of emulsions to be consumed and lower neutralisation costs
- ♥ Improved working environment can be assured, as the composition of MOL metalworking fluids complies with EU and Hungarian regulations. The fluids contain no heavy metals, polycyclic aromatic hydrocarbons, and have no negative effects on workers' health, provided minimum health and safety procedures are complied with.

Wide range

MOL offers a wide range of metalworking fluids for chip removal processes, with a broad range of viscosity grades and composition, allowing each manufacturing company to easily find the lubricant that best fits its purpose, from grinding, honing, turning, drilling, milling, boring or gear hobbing to broaching.



MOL METALWORKING FLUIDS

WATER MISCIBLE METALWORKING FLUIDS

The special compositions of our premium high-performance products can contribute to achieve efficient and trouble-free machining operations in production engineering workshops.



MOL Emolin 400

Water miscible, semi-synthetic, bio-stable micro-emulsion, primarily for centralised coolant supply systems and CNC machines, and also grinding of cast iron, steels and various aluminium alloys.

- ✔ It provides protection against corrosion, thus ensuring **excellent product quality** when machining cast iron, steels and alloys
- ✔ The micro-emulsion's excellent microbial resistance provides a long fluid lifetime, thereby **reducing operating costs**
- ✔ Due to its outstanding low foaming tendency, it is **excellent for use in machines which have very high operating pressures.**



MOL Emolin 420

Water miscible, semi-synthetic, bio-stable micro-emulsion for machining of cast iron, steels, light and yellow metals.

- ✔ The micro-emulsion's excellent lubricity **is ideal for high-performance, heavy-duty chip removal processes, ensuring excellent product quality and low tool costs**
- ✔ It has very low foaming tendency, and thus **it is excellent for use in machines which have very high operating pressures.**
- ✔ It can be used for a wide range of machining operations, so **fewer different coolant types and lower stock volumes will be required**
- ✔ Its excellent microbial resistance properties provide **long fluid lifetimes.**



MOL Emolin 120

Water miscible, semi-synthetic, bio-stable micro-emulsion for chipping and chipping-free metalworking of cast iron, steels, aluminium and magnesium alloys and yellow metals (brasses and bronzes), including under difficult operating conditions.

- ✔ It has excellent washing capacity, so **both the work piece and the machine** will remain clean when metalworking the cast iron
- ✔ Good hard water resistant properties mean **no deposits and sticky residues are produced** on the metalworking machine or on the surface of work pieces
- ✔ It can be used for a wide range of machining operations, so **fewer different coolant types and lower stock volumes will be required**
- ✔ It has low foaming tendency, so **is also excellent for use in machines with very high operating pressures**



MOL Makromil 300

Mineral oil based, milky emulsion that can be used with no risk of stain in machining operations on steel, coloured and light metals or cast iron.

- ✔ It has excellent water miscibility properties, making **emulsion preparation easy** even in the absence of emulsion mixing equipment.
- ✔ It can offer excellent protection against corrosion, preventing staining to copper pieces
- ✔ It can be used for a wide range of machining operations, so **fewer different coolant types and lower stock volumes will be required**

APPLICATION GUIDELINE



NON WATER-MISCIBLE METALWORKING FLUIDS

MOL Acticut metalworking fluid product family

Cutting oils primarily recommended for machining of steels and its alloys, as well as for universal machine tools, multi-spindle automatic machines and machining centres. As it contains active sulphur in its additive system that improves lubrication performance, it is not recommended for machining yellow metal parts.

MOL Polimet cutting oil product family

Cutting oils that can be used for all types of metals. In addition to steel, they can be used for metalworking of yellow metals, magnesium and aluminium alloys. These universal and all-purpose metalworking oils allow a reduction in the number of products used in the workshop, helping to reduce costs significantly.

Usage of MOL Acticut and Polimet cutting oils can ensure efficient operations:

- ✔ Excellent lubrication performance ensures improved machining productivity
- ✔ Extended tool life reduce tool costs
- ✔ Carefully balanced fluid composition can guarantee excellent machined surface quality and dimensional accuracy, giving high product quality
- ✔ Low fluid misting propensity offers a more pleasant working environment
- ✔ Excellent protection against corrosion, reduces maintenance costs of machines

Non water-miscible metalworking fluids

Remarks: ■ ■ ■ Excellent ■ ■ Good ■ Applicable

	Viscosity at 40°C, mm ² /s	Flash point, °C	4Ball Weld Load, N	4Ball Scar diameter, mm	ISO HM / DIN HLP performance	TECHNOLOGIES													MATERIALS					
						Electric Discharge Machining	Honing	Gear hobbing / Milling	Gear Grinding	Tool Grinding	Grinding	Turning / Milling / Boring	Sawing	Automatic Turning	Broaching	Deep-hole drilling	Thread Cutting / Rolling	Yellow Metals	Aluminium alloys	Steel alloys			Cast Iron (grey, nodular)	
																				Easily Machinable	Heavy Duty Machinable	Stainless		
MOL Polimet EDM 3	2,3	103	n.a.	n.a.	n.a.	■ ■ ■	■ ■				■								■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
MOL Polimet M 4	5,2	115	1400	0,66	n.a.		■ ■ ■		■ ■ ■		■ ■ ■	■	■	■					■ ■ ■	■ ■ ■	■ ■ ■	■		■
MOL Polimet ME 4	5,4	115	3200	0,34	n.a.		■ ■ ■		■ ■	■ ■ ■	■ ■ ■	■	■ ■	■ ■			■	■		■ ■ ■	■ ■	■ ■	■ ■	■ ■
MOL Polimet ME 8	9,3	144	3000	0,4	n.a.		■ ■ ■		■	■ ■ ■	■ ■ ■	■ ■	■	■ ■ ■			■	■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
MOL Polimet MFS 8	8,2	148	2200	0,69	n.a.		■ ■ ■		■	■ ■ ■	■ ■ ■	■ ■	■	■ ■ ■			■	■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
MOL Polimet ME 12	11,9	175	1800	0,55	n.a.		■		■		■ ■ ■	■ ■ ■	■ ■ ■			■	■	■		■ ■ ■	■ ■ ■	■ ■ ■	■	■
MOL Polimet ME 17	18	180	1700	0,5	n.a.		■		■ ■		■ ■	■ ■	■ ■ ■			■	■		■ ■ ■	■ ■ ■	■ ■ ■		■	
MOL Polimet ME 18	18	190	2000	0,4	n.a.		■ ■	■	■ ■ ■		■ ■ ■	■ ■	■ ■			■	■	■		■ ■ ■	■ ■	■ ■	■ ■	■
MOL Polimet ME 20	19,5	200	3800	0,4	n.a.		■	■ ■	■		■ ■ ■	■ ■ ■	■ ■ ■			■ ■	■ ■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■
MOL Polimet ME 25	26	197	4500	0,4	n.a.			■			■ ■ ■	■ ■ ■	■ ■			■ ■	■ ■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■
MOL Polimet HM 32	32	200	1400	0,5	■ ■ ■						■ ■ ■	■ ■	■ ■ ■						■ ■ ■	■ ■ ■	■ ■ ■		■	■
MOL Polimet ME 40	40	180	5000	0,48	n.a.			■ ■ ■				■ ■ ■	■ ■	■ ■	■ ■ ■			■ ■		■ ■ ■	■ ■	■ ■	■ ■	■ ■
MOL Polimet HM 46	46	210	n.a.	0,5	■ ■ ■							■ ■ ■	■ ■	■ ■ ■			■		■ ■ ■	■ ■ ■	■ ■ ■	■	■	■
MOL Polimet ES 56	56,6	230	n.a.	n.a.	n.a.			■ ■			■ ■ ■	■ ■ ■	■ ■ ■				■		■ ■ ■	■ ■ ■	■ ■ ■	■	■	■
MOL Acticut ME 10	10	120	4200	0,5	n.a.		■		■ ■ ■	■ ■ ■	■ ■ ■	■	■	■		■ ■ ■	■ ■		■ ■ ■	■ ■ ■	■ ■ ■	■	■ ■	■ ■ ■
MOL Acticut ME 15	15	120	6500	0,45	n.a.		■	■ ■				■	■	■		■ ■ ■	■ ■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■ ■
MOL Acticut ME 20	21,5	184	6500	0,35	n.a.			■ ■ ■			■ ■ ■	■ ■ ■	■ ■	■ ■ ■		■	■ ■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■ ■
MOL Acticut ME 25	26	170	7000	0,6	n.a.			■ ■ ■				■ ■ ■	■	■ ■ ■		■	■ ■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■ ■
MOL Acticut ME 32	32	200	4000	0,5	n.a.			■			■ ■ ■	■ ■ ■	■ ■ ■			■	■		■ ■ ■	■ ■	■ ■	■	■	■
MOL Acticut ME 37	37	200	4200	0,5	n.a.			■ ■			■ ■ ■	■ ■ ■	■ ■	■ ■		■ ■ ■	■ ■		■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■ ■

Water miscible metalworking fluids

Remarks: ■ ■ ■ Excellent ■ ■ Good ■ Applicable

	Mineral oil content, %	Boric / Amine content	pH, 5 vol%	Reichert test (5 vol%, 20 DH° water)		Refractometer factor	TECHNOLOGIES							MATERIALS										
				Wear, mm ²			Grinding	Turning / Milling / Boring	Sawing	Reaming	Deep-hole drilling	Thread Cutting / Rolling	Yellow Metals	Aluminium alloys	Steel alloys			Cast Iron (grey, nodular)						
															Easily Machinable	Heavy Duty Machinable	Stainless							
MOL Emolin 400	37	B/A	9,3	22,7	1,1	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	
MOL Emolin 420	30	B/A	9,3	20,6	1,9	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
MOL Emolin 120	40	B/A	9,1	23,4	1,1	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■ ■
MOL Makromil 300	77	A	9,4	24,6	0,9	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■ ■	■	■ ■	■ ■	■ ■ ■
MOL Makromil 200	70	A	9,3	24,2	1	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■ ■	■	■ ■	■ ■	■ ■
MOL Makromil 100 Special	80	A	8,8	23,6	1		■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■ ■	■	■ ■	■ ■	■
MOL Synaxol 250	0	B	9,3	18,1	1,7	■ ■ ■	■								■ ■ ■	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	
MOL Synaxol 200	0	B/A	9,4	25,2	1,2	■ ■ ■	■								■ ■	■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■ ■	
MOL Synaxol 240	0	B/A	9,8	13,7	2,5		■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	
MOL Synaxol 100	0	A	8,5	21,4	2,5		■	■	■	■	■	■	■	■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	



TIPS FOR ROUTINE AND SPECIAL MANAGEMENT OF EMULSIONS

The lifetime of emulsions can be extended and maximum performance achieved with careful fluid monitoring and treatment. If the metalworking fluids are maintained in a good condition, tool wear rates can be reduced, as can the frequency of defects in machined parts.

Tips for proper application:

- ✔ When preparing an emulsion, always add the concentrate to the water
- ✔ Make sure that dirty or highly salty water is never used
- ✔ If possible, use emulsion mixing equipment (available from MOL), and never use a galvanised bucket or tank
- ✔ Never store emulsion once mixed; prepare emulsions for immediate use
- ✔ Regularly check the emulsion concentration and pH value, and record the data in a table or graph, preferably stored on a computer or laptop
- ✔ If any corrective action is required, do it immediately
- ✔ If any slideway lubricant, gear oil, hydraulic fluid or other lubricating oil gets into the emulsion tank, remove it immediately, if possible, to eliminate any further contamination or impurity
- ✔ A professional clean-up of the coolant system is required when changing emulsion. Always use a system cleaning fluid for this process
- ✔ The condition of emulsion that is kept for a long time in the tank of an idle machine may deteriorate, particularly if it is contaminated with slideway lubricant or other lubricating oils. Pay special attention to check the fluid condition, skim-off the floating oil, switch on the coolant circulation and adjust the concentration and fluid level
- ✔ Always use stock solution emulsion and never use pure water for re-filling!



Ask for help from MOL's lubricant service, with many years of experience in emulsion management, at the following link: lubtechdesk@mol.hu

OUR SERVICES FROM PLANS TO MAINTENANCE

Lubrication technology consulting

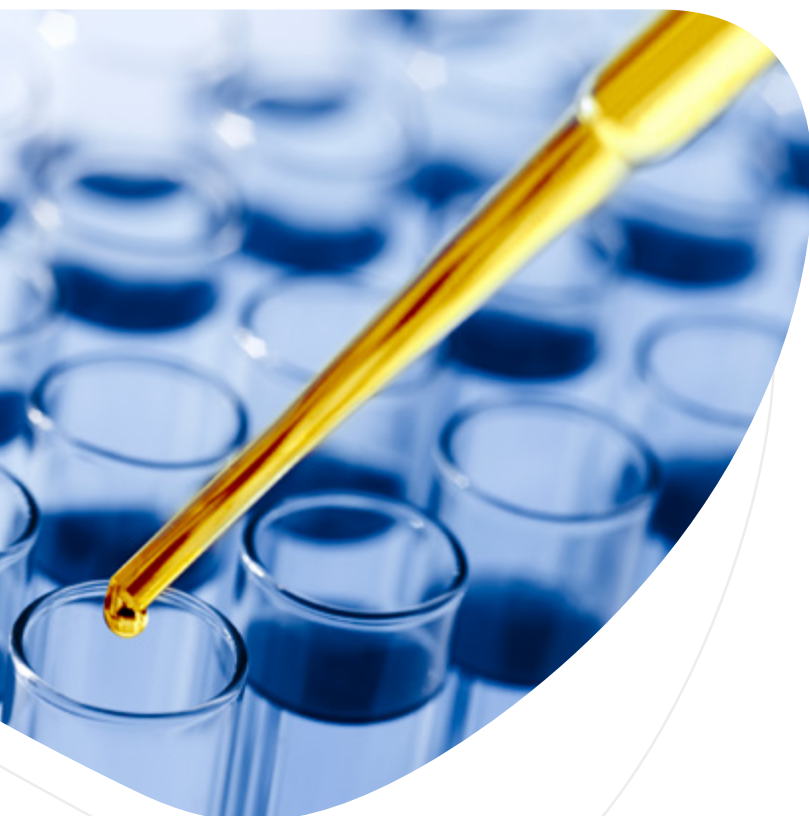
Our team of experts will be pleased to help you with any questions or issues related to lubrication. With many years of experience, we will be able to advise you in relation to all phases of the application of metalworking fluids, including the selection of the best product for a specific technology or a technical problem. We will test the selected products under actual operating conditions and our development laboratory will then adjust the product parameters to your individual needs.

Use the services of our comprehensive lubrication management system! Our comprehensive fluid management system will ensure complex management and maintenance for all fluids. Using this system can extend the lifetime of your lubricants and machines.

LubCheck oil and machine diagnostics

Prevent malfunctions to your machines and extend the lifetime of your lubricants! LubCheck diagnostics is a worldwide applied process for lubricant analysis that helps to accurately determine the degree of deterioration of the lubricant and any damage to the machines, well before any potentially significant loss of production. The benefits of using LubCheck include:

- ♥ Unexpected breakdowns can be identified at an early stage
- ♥ Hidden deterioration in and malfunctions of machines can be assessed
- ♥ Downtime can be reduced or eliminated
- ♥ Maintenance costs can be reduced
- ♥ Preventative maintenance can be planned better and become more accurate
- ♥ Oil change intervals can be optimised
- ♥ Machine reliability can be improved



Our LubCheck service is covered in separate brochure.

Our lubricant services:

- ✔ Lubrication technology consulting
- ✔ LubCheck oil and machine diagnostics
- ✔ On-site lubricant maintenance
- ✔ Lubrication assessment
- ✔ Lubrication technology audit
- ✔ Fluid management
- ✔ Training courses

YOUR PARTNER:

