



MG50

Microemulsion Cutting Fluid for Magnesium Alloys

Microemulsion Fluid Engineered for Magnesium Alloys



MG50 is a microemulsion cutting fluid developed for magnesium and magnesium-alloy machining, with additional use on iron, steel, aluminum alloys and stainless steel. It combines cooling, lubricity, rust inhibition and corrosion protection while improving emulsion stability, service life and resistance to workpiece discoloration.

Sump life can exceed 1 year



Performance & Applications



- 01 Engineered for magnesium alloys
- 02 Reduced separation and oxidation discoloration
- 03 Biological stability, easy mixing and compatibility with machine-tool paint
- 04 Balanced cooling, lubricity, rust and corrosion protection

Materials

Magnesium and magnesium alloys, iron, steels, aluminum alloys and stainless steel

Operations

CNC · Turning · Milling · Tapping



Technical Data

pH	Four-ball PB value	Four-ball PD value
8.7-9.1	667 N	1590 N
	10%	10%

Product standard: GB/T 6144

Property	Value / Result
Appearance	Yellow transparent liquid
Physical stability	No sediment, separation or crystallization
Density	$0.92 \pm 0.2 \text{ g/cm}^3$
Viscosity at 40°C	48-51 mPa·s
pH	8.7-9.1
Four-ball PB value	667 N at 10%
Four-ball PD value	1590 N at 10%
Tapping torque value TTT	127 at 10%
Aluminum corrosion test	6061/6063/7075/ADC12: 5%, 55°C, 8 h, no discoloration
Rust test	45# steel single sheet: 5%, 72 h, no rust Stacked sheets: 5%, 8 h, no rust
Copper corrosion test	1A at 5%, 55°C, 8 h

Dilution & Use

Working fluid

Refractometer reading

4-12

Duty	Working-fluid reading	Mixing ratio Concentrate : water	Daily top-up
Light Duty	4-5	1:15 - 1:10	Reading 3 (1:20)
Medium Duty	5-8	1:10 - 1:7	Reading 3-5
Heavy Duty	10-12	1:6 - 1:4	Reading 7-10

Mixing & Start-Up

- 01 Clean the reservoir and piping before charging fresh fluid.
- 02 Prepare the dilution in a clean container at the operating concentration.
- 03 Fill the reservoir, circulate thoroughly and verify the refractometer reading.
- 04 For top-up, add water and the corresponding amount of concentrate.

Maintain the working fluid at a refractometer reading of 4-12. Readings below 4 can promote bacterial growth and fluid deterioration; readings above 12 can increase skin irritation.



Fluid Change & System Care

01 Drain used fluid

Use a transfer pump or wet vacuum to drain used fluid into a dedicated container.

02 Clean the system

Remove sludge, waste oil and contamination. Rinse or wipe the reservoir where practical.

03 Sanitize

For spoiled or odorous fluid, use a compatible biocide and follow its mixing and dosing instructions.

04 Circulate and recover

Circulate the cleaning fluid through the machine and piping for about 5 minutes, then recover it. Handle recovered fluid according to the biocide instructions.

05 Charge fresh fluid

Prepare fresh fluid at the operating concentration, fill the cleaned reservoir and circulate thoroughly.

06 Maintain fluid quality

Remove chips and floating oil promptly. Control way-lube leakage and prevent foreign contamination.



MG50

Formulation & Storage

Composition

Base oil, rust inhibitor, emulsifier, lubricant, extreme-pressure additive, high-performance corrosion inhibitor, auxiliaries, biocide and deionized water. The formulation contains no nitrite ions, hexavalent chromium, sodium nitrite, chlorine, sulfur or phenol.



Operating Essentials

Gradual color darkening during storage is normal and does not affect use. Do not mix with other oils. Remove magnesium chips and dust promptly under the facility fire-safety procedure.

18 L

Plastic pail

200 L

Steel drum

1 year

Shelf life

Store sealed in a cool, dry, ventilated place. Keep indoors; lay drums horizontally when stored outdoors.

Shutdown & Disposal

For shutdowns over 3 days, transfer the fluid to an operating machine, or dose a compatible biocide as instructed and circulate for 5-10 minutes. Circulate for 1-2 hours every 2-3 days. Collect used fluid separately for disposal by a licensed recycler.