

BUILDING

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Solvents in Metalworking Fluids

Why is the role of solvents essential?

Solvents: The Scientific Backbone of Metalworking Fluids

Solvents are fundamental to the formulation and performance of metalworking fluids (MWF), which are indispensable in modern manufacturing and metal processing. MWFs serve multiple critical functions: they provide lubrication between metal surfaces and cutting tools, minimizing friction and wear during machining, shaping, or cutting operations. This lubrication is vital for extending tool life and ensuring precision in metalworking processes.

Beyond lubrication, MWFs—thanks to their solvent components—efficiently dissipate heat generated during high-speed cutting or shaping. This thermal management prevents overheating, which could otherwise lead to tool failure, dimensional inaccuracies, or undesirable changes in the metal's microstructure. Solvents also facilitate the removal of metal fines and chips from the cutting area, maintaining a clean workspace and reducing the risk of surface defects.

Corrosion protection is another key benefit. Solvents in MWFs form a protective barrier on metal surfaces and equipment, inhibiting oxidation and rust formation. This is especially important in environments where moisture and reactive chemicals are present.

From a chemical perspective, glycol ethers solvents are commonly used in MWFs either as primary ingredients or as intermediates. Glycol ethers offer excellent solvency, low volatility, and compatibility with both aqueous and oil-based systems, making them ideal for stable emulsions and effective cleaning.

SPOT ON



Diethylene glycol butyl ether (DEGBE – CAS: 112-34-5 – EC: 203-961-6)

Ethylene glycol monobutyl ether (EGBE – CAS: 111-76-2 – 203-905-0)

Propylene glycol butyl ether (PGBE – CAS: 5131-66-8 – EC: 225-878-4)

Phenyl glycol ethers (EGPhE & PGPhE)



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The selection and balance of solvents in MWFs are guided by rigorous scientific principles, including considerations of toxicity, biodegradability, and environmental impact. Advances in solvent chemistry have led to formulations that are safer for workers, more sustainable, and compliant with increasingly stringent regulatory standards.

In summary, solvents are not just additives—they are scientifically engineered components that enable MWFs to deliver lubrication, cooling, cleaning, and corrosion protection, all of which are essential for efficient, safe, and sustainable metalworking operations.

INDUSTRIAL USE

Benefit Green Deal

Longer lasting products that can be repaired, recycled and re-used



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