



PrisorineTM isostearic acid

A versatile fatty acid building block for metalworking fluid formulations

Supporting formulation stability, lubrication, and performance balance

Metalworking fluid formulators continuously balance lubrication performance, corrosion protection, formulation stability, and system durability. Ingredient selection plays a key role in achieving these objectives across oil based and water miscible systems.

Isostearic Acid (ISAC) is a plant based, renewable fatty acid commonly used in lubricant formulations where structural stability and formulation robustness are desired. Its saturated, branched structure differentiates it from conventional straight chain fatty acids and makes it a valuable component for formulators.



Why Consider ISAC in Metalworking Fluid Formulations?



Structure driven stability

The saturated structure of ISAC affords greater oxidative stability compared to unsaturated fatty acids.



Lubrication support

ISAC can contribute to boundary lubrication and is often used to support friction and wear management in metalworking applications.



Corrosion management potential

When neutralised with suitable amines, the resulting salts can provide corrosion inhibition for ferrous and non-ferrous metals.



Low temperature handling

High branching levels and low cloud point characteristics support improved low temperature fluidity and handling.

What is isostearic acid?

Isostearic Acid is a branched, saturated fatty acid derived from renewable plant sources. Unlike unsaturated fatty acids such as oleic acid, ISAC contains no double bonds – providing improved resistance to oxidation and thermal degradation.

ISAC is widely used as a functional component in lubricant, emulsifier, and additive systems, and is suitable for both oil based and water based metalworking fluid formulations.

Functional roles in metalworking fluid formulations



Application Example:

Aluminum can-making & cleaning systems

In aluminum can making operations, cleaners and process fluids must support high-throughput while maintaining surface cleanliness and system stability.

In acidic cleaner formulations, ISAC can be used to:

- Act as a surfactant or wetting aid, supporting uniform surface contact
- Assist in emulsification and dispersion of forming lubricants
- Help manage foam behavior, depending on formulation design

Lubricity

ISAC contributes lubricity when used as part of a balanced formulation, supporting surface interaction and friction management.

Corrosion inhibition support

In amine neutralized systems, ISAC is commonly used as part of corrosion inhibition strategies for mixed metal protection.

Emulsification support

In water miscible systems, ISAC can function as a co emulsifier, supporting oil in water emulsion formation and stability.

Formulation stability

The branched structure of ISAC may help reduce sensitivity to temperature variation and the saturated nature provides resistance to oxidative stress.

Cargill™ ISAC Solutions

Cargill offers two ISAC grades for metalworking applications, with different levels of processing. To identify the most suitable option for your formulation, please consult your sales representative.

Product name	Chemistry	Region	Kinematic viscosity at 40°C (mm ² /s) [ASTM D7042]	Kinematic viscosity at 100°C (mm ² /s) [ASTM D7042]	Viscosity index [ASTM D2270]	Pour point (°C) [ASTM D97]	Acid value (mgKOH/g)	Iodine value (gI/100g) [ASTM D5554]	Bio-based carbon content** (%)
Prisorine™ 3503	Isostearic, fatty acid	Global	33.66	6.11	130.3	-30	190	6	100
Prisorine™ 3505	Isostearic, fatty acid	Global	33.31	6.11	132.6	-15	190	2	100

** Calculated based on product formulation and molecular composition



Learn more at cargill.com/bioindustrial/prisorine or email energy_technologies@cargill.com



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