

UNIRICHNOX 1115

Low-Volatility Thioether-Functional Hindered Phenolic Antioxidant

Dual-action oxidation control for synthetic lubricants, high-temperature oils and greases.

PRODUCT OVERVIEW

UNIRICHNOX 1115 is a high-molecular-weight hindered phenolic antioxidant containing a thioether function. It combines primary antioxidant activity with peroxide-decomposition capability, helping protect synthetic lubricants and greases from thermal-oxidative degradation. Its low volatility and good solubility in ester systems support durable performance at elevated temperatures.

CHEMICAL IDENTITY

Chemical Name: Thiodiethylene bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate]

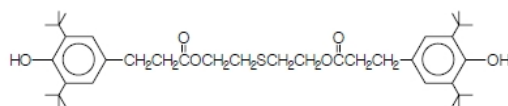
CAS No.: 41484-35-9

EC No.: 255-392-8

Trade Name: UNIRICHNOX 1115

Molecular Formula: C₃₈H₅₈O₆S

Molecular Weight: 642.9 g/mol



Representative Chemical Structure

KEY BENEFITS

- Dual-action chemistry: free-radical termination plus hydroperoxide decomposition.
- High molecular weight and low volatility support antioxidant retention at elevated temperatures.
- Helps control oxidation-derived sludge, varnish and deposits in oils and greases.
- Good thermal stability compared with many conventional low-molecular-weight phenolic antioxidants.
- Useful synergy with aminic antioxidants and metal deactivators in balanced antioxidant systems.

RECOMMENDED TREAT RATE

Typically 0.10–1.0% by mass in the finished lubricant, depending on application. Solubility in some mineral oils may be below 0.5%; therefore, confirm initial dissolution and long-term stability in the finished fluid. Final dosage should be established through formulation-specific testing.

TYPICAL CHARACTERISTICS

Values shown are typical and do not constitute a sales specification unless agreed in writing.

Property	Test Method	Typical Value
Appearance	Visual	White to slightly yellow crystalline powder
Density at 20 °C, g/cm ³	Internal method	1.01
Flash point, °C	Internal method	278
Melting onset, °C	Internal method	Approx. 70; broad range
Solubility in mineral oil, mass %	Internal method	< 0.5
Solubility in ester base stock, mass %	Internal method	> 5
Solubility in water	Internal method	Insoluble
Sulfur content, mass %	Internal method	4.9

APPLICATION GUIDE

UNIRICHNOX 1115 is intended for high-temperature antioxidant service in synthetic lubricants and greases. Typical starting ranges are 0.10–0.50% for engine/turbine oils, 0.15–0.50% for compressor oils, 0.20–0.50% for gear oils, 0.20–1.0% for chain oils and 0.10–0.50% for greases. Confirm final dosage and long-term solubility by testing.

Application	Treat Rate	Typical Base Systems	Formulation Note	Validate
Synthetic lubricants	0.10–1.0%	PAO, POE and PAG	Optimize with aminic antioxidant	Oxidation, deposits and solubility
Engine, turbine, compressor and gear oils	0.10–0.50%	Synthetic or qualified mineral-oil systems	Confirm dissolution; check mineral-oil solubility	Oxidation, deposits, seals and filterability
High-temperature chain oils and greases	0.10–1.0%	Ester and synthetic systems	Balance with aminic antioxidant	Volatility, deposits and oxidation stability

FORMULATION GUIDANCE

- Add under agitation at a temperature that ensures complete dissolution; avoid localized overheating.
- For broader oxidation control, evaluate combinations with aminic antioxidants and suitable metal deactivators.
- Confirm oxidation life, deposits, color, solubility after cooling and storage, elastomer compatibility and filterability.

PACKAGING

- 20 kg pail
- Custom OEM packaging available

STORAGE AND HANDLING

Store in tightly closed original packaging indoors or under shelter, protected from moisture, direct sunlight and contamination. If outdoor storage is unavoidable, protect containers from rain and standing water. Do not store above 60 °C; avoid freezing conditions and large temperature swings. Follow first-in, first-out inventory practice.

HEALTH, SAFETY AND ENVIRONMENT

Consult the current Safety Data Sheet (SDS) before handling. Observe the specified exposure controls, personal protective equipment, spill response, transport and disposal requirements. Avoid inhalation of dust, prolonged skin contact and release to the environment.

Disclaimer

This document is provided for general guidance only and does not constitute a warranty or contractual term. Users are responsible for determining suitability in the complete formulation and for complying with applicable laws, regulations and equipment-manufacturer requirements.

Information may be updated without prior notice.

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