

### FUNCTIONAL V-508F

#### Concentrated Versatile Thickener for Biobased and Synthetic Ester Lubricants

##### APPLICATION:

**FUNCTIONAL V-508F** is a concentrated liquid viscosity modifier for a wide range of ester lubricants including vegetable oil, blown oils, and synthetic esters. **FUNCTIONAL V-508F** performs in both saturated and unsaturated ester base fluids as an economical and stable means of achieving higher viscosity. **FUNCTIONAL V-508F** is also compatible in water insoluble and oil soluble polyalkylene glycol (PAG) fluids.

**FUNCTIONAL V-508F** is NSF HX-1 approved and listed on the Ecolabel LuSC list which meets VGP requirements.

##### COMPOSITION:

**FUNCTIONAL V-508F** is a proprietary copolymer in a low viscosity synthetic ester. **FUNCTIONAL V-508F** is readily biodegradable under all widely used standards.

Typical Properties	
Specific Gravity	0.91
Lbs per Gallon	7.58
Flash Point, ASTM D92	168°C (335°F)
Kinematic Viscosity ASTM D445	6500 – 7500 cSt at 100°C
Color, ASTM D1500	0.5
Biodegradable Content, wt%, Approximate	70%
Shear Stability Index (PSSI), ASTM D6278 (10wt% in Canola)	29 SSI
20hr KRL Shear Stability, CEC L-45-A-99 (10wt% in Canola)	84%

##### TREATMENT LEVEL:

2 – 30wt% **FUNCTIONAL V-508F** is used to prepare ISO 46 – 680 fluids for hydraulics, rock drill, bar and chain, open gear, chain lubricants, and more. Both the polymer and diluent ester in **FUNCTIONAL V-508F** are thermally and oxidatively stable which best compliments saturated synthetic esters. See next page for treat rates and variants of **FUNCTIONAL V-508F**.

##### HANDLING:

**FUNCTIONAL V-508F** may be warmed to 50°C (120°F) to facilitate pumping and handling. The base oil should be heated to 150°F to 180°F during blending to allow for good mixing. Mixing time will vary with equipment but is typically one hour. Extended storage of this or any other vegetable oil derived product at elevated temperatures is not recommended. Safe handling precautions are the same as those to be taken with synthetic esters and vegetable oils; see the current Safety Data Sheet.

Nonfood Compounds  
Program Listed  
Category Codes: HX-1 and HX-2  
Registration No. **146677**



This Technical Data Sheet and the Safety Data Sheet contain information believed to be accurate and reliable. No warranty is made, however, to information beyond the control of FUNCTIONAL PRODUCTS INC. The engineering and management personnel of the user are responsible for determining the suitability of this or any product for any specific application, and this information is offered to them for that purpose

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### FORMULATION GUIDE:

**FUNCTIONAL V-508F** is compatible in a wide range of ester base stocks including complex esters and blown oils. Starting treat rates can be based on the treat rates in canola shown below. Always check elastomer compatibility and seal swell/shrink when using new ester base fluids.

#### FUNCTIONAL V-508F Treat Rates in Canola Oil (Starting From ISO 32-36)

ISO VG	46	68	100	150	220	320	460	680	1000	1500	2200	3200	4600
wt%	2	5	8	12	15	18	23	27	31	35	39	43	47

For very low temperature performance in TMP and adipate esters, use **FUNCTIONAL V-521** (5000 cSt @ 100°C) instead for improved low temperature fluidity and pour point.

**FUNCTIONAL V-508F** has a niche application in thickening blown oils to very high viscosity grades for heavy duty gear oils or grease base fluids. High viscosity blown oils above ISO 2000 can gel or solidify after long term short or freeze/thaw cycling and may have very poor additive compatibility. **FUNCTIONAL V-508F** is a more stable alternative to prepare high viscosity blown oil replacements using lighter blown oils.

#### FUNCTIONAL V-508F in ISO 135 Blown Oil

ISO VG	150	220	320	460	680	1000
wt%	2	5	9	13	17	20

#### FUNCTIONAL V-508F in ISO 2000 Blown Oil

ISO VG	2200	3200	4600	6800	10000
wt%	8	16	23	32	40

### FUNCTIONAL '508' VARIANTS:

**FUNCTIONAL V-508F** is a highly concentrated viscosity modifier in a low viscosity synthetic ester and may not be suitable for all formulations and production facilities. A range of **508** series products are also available:

- **FUNCTIONAL V-508** – Diluted, in canola oil, 1200 cSt @ 100°C
- **FUNCTIONAL V-508M** – Concentrated, in canola oil for excellent economics, 2500 cSt @ 100°C
- **FUNCTIONAL V-508A5** – Concentrated, in 5 cSt adipate ester for full synthetic, 7000 cSt @ 100°C
- **FUNCTIONAL V-508S** – Solid pellet polymer for use in greasemaking

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