

FUNCTIONAL PRODUCTS INC.

Innovative Chemistry for Lubricants

Technical Data Sheet

FUNCTIONAL V-733

INDUSTRIAL ETHYLENE-PROPYLENE OLIGOMER (EPO) – 3000 cSt

APPLICATION:

FUNCTIONAL V-733 is a pure liquid viscosity modifier and synthetic base stock with high thickening efficiency, excellent shear stability, and low temperature fluidity for high performance at lower cost per treat. **FUNCTIONAL V-733** is effective in high VI hydraulic fluids, industrial gear oils, automotive gear oils (75W), and grease.

COMPOSITION:

FUNCTIONAL V-733 is a liquid, low molecular weight ethylene-propylene copolymer with no diluent.

Typical Properties	
Appearance, Visual	Clear to Slight Haze Slight Yellow to Yellow
Color, ASTM D1500	1.0
Kinematic Viscosity, ASTM D445	3,000 cSt @ 100°C 60,000 cSt @ 40°C
Viscosity Index, ASTM D2270	310
Density (lb/gal), ASTM D1475	7.14 lb/gal
Density (g/mL) @ 20°C/68°F	0.856 g/mL
Flash Point, ASTM D92 COC	290°C (554°F)
Thickening Efficiency, 10wt% in ISO 32 Group I	14.7 cSt @ 100°C
Shear Stability Index (PSSI), ASTM D6278	0-1 SSI
20hr KRL Shear Stability, CEC L-45-A-99	20-30 SSI

TREATMENT LEVEL:

Treatment levels of 2 – 30% are typical in industrial lubricants and greases. **FUNCTIONAL V-733** can be used as either a VI improver or a shear stable base stock depending on the need. **FUNCTIONAL V-733** is compatible in most petroleum oils, synthetic oils, PAO, and esters.

Full synthetic formulas using EPO viscosity modifiers may require 5-10wt% ester for solubility.

HANDLING:

Dissolving is best accomplished with continuous agitation at temperatures of 104-140°F (40-60°C). **FUNCTIONAL V-733** may be preheated in a hot room or tank at up to 176°F (80°C) to aid in pumping but long term storage should remain below 140°F (60°C).

FUNCTIONAL V-733 is a non-hazardous material; see the current Safety Data Sheet.

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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Suggested* Treat Levels for FUNCTIONAL V-733:

Heavy-Duty Lubricants, Open Gear Lubes, and Sugar Mill:

FUNCTIONAL V-733 is used to prepare viscosity grades beyond the range of standard polybutene (PB/PIB) and ethylene-propylene oligomer (EPO) grades.

ISO VG	150	220	320	460	680	1000	3000	5000	7500	10000
wt% V-733 in 600N Group II	2.5%	7.1%	10.6%	14.6%	19.2%	24.0%	39.4%	47.8%	54.9%	60.3%
Viscosity Index	114	126	134	143	154	164	197	217	234	246

ISO VG	10K	12K	15K	18K	22K	24K	32K	46K	60K
wt% V-733 in 150 Bright Stock	50%	54%	59%	64%	69%	72%	79%	90%	100%

Treat Rates for General-Purpose Lubricants, Hydraulics, Gear Oils, Circulating Oils

ISO VG	32	46	68	100	150	220	320	460
wt% in 120N Group II	2.1	4.9	8.2	11.7	15.7	19.7	23.8	28.1
Viscosity @ 40C	32.9	46.2	67.6	99.3	149.7	221.0	322.5	461.7
Viscosity @ 100C	6.29	8.34	11.43	15.74	22.17	30.68	42.11	56.93
Viscosity Index	145	158	164	169	176	181	186	192

Full Synthetic 75W Automotive Gear in PAO:

Formula by wt%	75W-90
FUNCTIONAL V-733	11.0
PAO 6	85.0
FUNCTIONAL GA-614	4.0
4 cSt Adipate Ester	--
KV100, cSt	16.7
KV40, cSt	105.1
Viscosity Index	173
-40C Brookfield, cP	55,800
Viscosity After 20hr KRL, 100C	13.5 – 14.0 cSt

* These treat levels are approximates. Exact treat levels will require experimentation in a full formulation and will vary due to base oil and other additive packages (anti-wear, EP, corrosion inhibitors, AO, pour point depressants, etc.).

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