

### FUNCTIONAL V-731

#### INDUSTRIAL ETHYLENE-PROPYLENE OLIGOMER (EPO) – 1100 cSt

#### APPLICATION:

**FUNCTIONAL V-731** 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-731** is effective in high VI hydraulic fluids, industrial gear oils, automotive gear oils (75W), and grease.

#### COMPOSITION:

**FUNCTIONAL V-731** 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	1,100 cSt @ 100°C 19,000 cSt @ 40°C
Viscosity Index, ASTM D2270	270
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	280°C (536°F)
Thickening Efficiency, 10wt% in ISO 32 Group I	12.1 cSt @ 100°C
Shear Stability Index (PSSI), ASTM D6278	0 SSI
20hr KRL Shear Stability, CEC L-45-A-99	12 SSI

#### TREATMENT LEVEL:

Treatment levels of 2 – 30% are typical in industrial lubricants and greases. **FUNCTIONAL V-731** can be used as either a VI improver or a shear stable base stock depending on the need. **FUNCTIONAL V-731** 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-731** 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-731** 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-731:

#### Hydraulic Fluids:

To obtain specific viscosity grades from an ISO VG 22 base oil:

ISO VG	Treat Level (wt%)	40°C Viscosity	100°C Viscosity	VI
ISO 22	0.0%	20.0 cSt	4.2 cSt	114
ISO 32	5.0%	31.3 cSt	6.4 cSt	162
ISO 46	9.7%	46.0 cSt	9.0 cSt	181
ISO 68	14.3%	68.0 cSt	12.7 cSt	190

#### Automotive Gear:

Grade	75W Grade Gear Formulations		
	75W90	75W90	75W140
<b>FUNCTIONAL V-731</b>	18.2	14.8	21.5
4 cSt Group III	67.3	--	--
6 cSt Group IV	--	81.2	64.5
<b>FUNCTIONAL GA-614</b>	4	4	4
<b>FUNCTIONAL PD-630</b>	0.5	--	--
4 cSt Adipate Ester	10	--	10
KV100, cSt	17.3	17.3	25.2
KV40, cSt	102	111.7	168.6
VI	186	170	184
-40C Brookfield, cP	120,200	83,000	130,800

\* 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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