

FUNCTIONAL V-766

ISO 3200 'Low Temperature Polyolefin (LT-PO)' Base Stock for Naphthenic Oils

APPLICATION:

FUNCTIONAL V-766 is an ideal and convenient thickener for preparing low temperature, low viscosity fluids for bucket trucks, snow plows, and other demanding low temperature hydraulic systems based on the aviation 5606 hydraulic fluid specification for civilian and municipal use. **FUNCTIONAL V-766** is

The superior shear stability and handling viscosity of **FUNCTIONAL V-766** versus traditional polymethacrylate technology allows it to act as a high viscosity synthetic base stock at treat rates equivalent to naphthenic polymethacrylates used for 5606-type fluids for civilian use in low temperature lubricants.

COMPOSITION:

FUNCTIONAL V-766 is a proprietary mix of low temperature polyolefin in naphthenic oil.

Typical Properties	
Appearance	Yellow to Amber Liquid, Clear
Kinematic Viscosity, ASTM D445	3200 cSt @ 40°C 600 cSt @ 100°C
Viscosity Index	380
Density (lb/gal)	7.45 lb/gal
Specific Gravity	0.89 g/mL
Flashpoint, ASTM D92 COC	120°C (248°F)
Thickening Efficiency (15wt% in 30 SUS Naphthenic)	12.2 cSt @ 40°C, 4.6 cSt @ 100°C
Shear Stability Index (PSSI), ASTM D6278 (15wt%)	0 SSI
20hr KRL Shear Stability, CEC L-45-A-99 (15wt%)	< 5 SSI

TREATMENT LEVEL:

FUNCTIONAL V-766 is recommended at 10 – 20wt% in low viscosity naphthenic or paraffinic oils (100 SUS or lower) for making very low pour point 5606-type fluids. See next page for formulation details.

Due to the relatively low viscosity of the base oil, **FUNCTIONAL V-766** is not intended for high temperature applications exceeding 100°C/212°F. See Notice on next page.

HANDLING:

FUNCTIONAL V-766 handles easily; see the current Safety Data Sheet.

FUNCTIONAL V-766 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).

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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NOTICE:

FUNCTIONAL V-766 is intended for lubricants operating within temperature ranges from “average” (70-100°C / 158-212°F) to “very low” (<-34°C/-29°F) as defined in ISO 6743-6 guidelines.

FUNCTIONAL V-766 is not recommended for use in lubricants or greases operating in continuous service >120°C/248°F ("very high"). This includes engine or crankcase oils, automatic transmission fluids, clutch fluids, and other lubricants under severe thermal loads.

Very high temperature testing (methods like CEC L-60 and CEC L-37) may produce inadequate results in viscosity change and precipitation number. Testing at intermediate temperatures of 120-135°C (250-275°F), in ASTM D2893 and D2070 for example, is best when limiting total sulfur in the formulation to < 1.0wt% for 121°C and ideally < 0.50wt% for 135°C. Inactive sulfur packages are recommended where possible.

Best use is determined by the formulator and products must be tested against specification requirements.

FORMULATION GUIDE:

Contact Functional Products for custom design and formulation using your oils, additives, and packages.

Typical Performance in Low Temperature Civilian 5606-Type Hydraulic Fluid with Light Naphthenic Oil

Approach:	w/ PMA	w/ V-766				
35 SUS Naph. (Cross C35 oil)	84.25	89.25				
Naphthenic Polymethacrylate (VM)	15.0	--				
FUNCTIONAL V-766 (VM)	--	15.0	Aviation Performance Specification			
Zinc HF Package	0.75	0.75	83282D	6083	5606A	5606H
Pour Point, D97	-63C	< -65C	≤-55C	≤-59C	≤-60C	≤-60C
Viscosity Index	381	425	--	--	--	--
KV40, cSt	13.2	14.5	≥14.0	≥13.2	≥13.0	≥13.2
KV100, cSt	5.0	5.8	≥3.45	≥4.6	≥4.0	≥4.9
KV-40, cSt	478	385	≤2200	≤700	≤500	≤600
KV-54, cSt	2009	1446	--	≤3300	≤3000	≤2500
Sonic Shear Loss, D5621	15%	3%	--	--	--	≤15%

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