

FUNCTIONAL MG-1860

PAO-Based Polymethacrylate Viscosity Modifier

APPLICATION:

FUNCTIONAL MG-1860 is a liquid-form polyalkylmethacrylate viscosity modifier with excellent shear stability diluted in low NOACK polyalphaolefin base fluid. **FUNCTIONAL MG-1860** contains no Group I/II/III mineral oils and is ideal for 100% synthetic or 'full PAO' applications requiring no residual mineral oil content. **FUNCTIONAL MG-1860** has been formulated to provide high VI, improved cold flow, demulsibility, and pour point depressancy.

FUNCTIONAL MG-1860 is a versatile full synthetic viscosity modifier compatible in a wide range of synthetic base fluids including: low viscosity PAO with polybutenes and mPAO, WS/OS PAG, and many synthetic esters.

COMPOSITION:

FUNCTIONAL MG-1860 is a blend of polyalkylmethacrylates in polyalphaolefin.

Typical Properties	
Lbs per Gallon (ASTM D 1475)	7.8
Specific Gravity	0.93
Kinematic Viscosity (ASTM D 445)	900 cSt at 100°C 27000 cSt at 40°C
Thickening Efficiency (10wt% in oil)	ISO 32 Gr. I: 9.1 cSt at 100 °C, VI 168 PAO 6 Gr. IV: 9.0 cSt at 100 °C, VI 188
PSSI (5% in 150N, ASTM D6278)	0%
KRL Shear Stability(20hr, CEC L-45-A-99)	30%
Flash Point (ASTM D 92)	>150°C
Color (ASTM D 1500)	< 2.0

TREATMENT LEVEL:

Typical treatment level for methacrylate-based viscosity modifiers ranges from 5 to 10% for hydraulic fluids and 10% to 30% for gear oils requiring exceptional stability and performance.

wt% FUNCTIONAL MG-1860 in PAO

ISO VG=	22	32	46	68	100	150
PAO 4	3%	12%	21%	27%	33%	39%
PAO 6	-	2%	13%	20%	26%	32%

HANDLING:

FUNCTIONAL MG-1860 should be warmed to about 50°C (120°F) to facilitate pumping and handling. The base oil should be heated to 60-80°C (140-180°F) during blending to allow for good mixing. Mixing time will vary with equipment but is typically at least one hour. Safe handling precautions are the same as those to be taken with base oil; 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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FUNCTIONAL PRODUCTS INC.

Innovative Chemistry for Lubricants

Technical Data Sheet

FORMULATION GUIDE:

FUNCTIONAL MG-1860 is best suited for Group IV PAO or Group V blends that require no residual mineral oil from viscosity modifiers or other additives. Consult Functional Products Inc. for formulation guidance and cost-performance optimization.

Hydraulic Fluids:

For DIN 51524-3 HVLP hydraulics, **FUNCTIONAL MG-1860** may typically be used to raise the ISO VG by two grades (ISO 32 → ISO 68) and meet < 15% viscosity loss by DIN 51350-6 (also known as 20 hr KRL or CEC L-45-99-A).

	Treat Rate in PAO4		
	KV40	KV100	VI
10wt%	26.4	6.20	198
20wt%	44.7	10.19	225
30wt%	83.7	16.75	217
40wt%	156.7	27.53	215

Automotive Gear Oils:

FUNCTIONAL MG-1860 can easily prepare very high viscosity automotive gear oils (75W-140) with excellent low temperature fluidity and clarity.

Full PAO Automotive Gear	75W-140
FUNCTIONAL MG-1860	10%
mPAO 100	15%
2500 MW Polybutene	15%
PAO 4	40%
GL-5 Gear Oil Package	10%
Ditridecyl Adipate (DTDA)	10%
KV100	26.6
KV40	177.1
Viscosity Index	186
Brookfield @ -40C (D2983)	75,100 cP

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