

FUNCTIONAL GA-360M

Low Treat Zinc-Free EP Industrial Gear Package with Micropitting Agent

APPLICATION:

FUNCTIONAL GA-360M is an additive package used at low treat rates to produce a range of economical EP industrial oils and wireline fluids/greases in petroleum oils.

FUNCTIONAL GA-360M includes an industry standard micropitting agent for AGMA 9005 top tier gear oils. For only US Steel 224 or downhole lubricants, use the standard **FUNCTIONAL GA-360**.

COMPOSITION:

FUNCTIONAL GA-360M contains AW/EP, inhibitors, defoamer/demulsifier, AO, and micropitting agent.

Typical Properties	
Appearance	Orange, Haze
Color – ASTM D1500	≤ 4.0
Odor	Aromatic
Lbs per Gallon	8.1
Flash Point – ASTM D92	>150°C / 302°F
Viscosity – ASTM D445	22 cSt @ 40°C
Elemental Analysis	11.4wt% S, 1.9wt% Ca, 0.27wt% P

TREATMENT LEVEL:

FUNCTIONAL GA-360M is a fully blended additive package with defoamers and demulsifiers optimized for heavy Group I/II and paraffinic bright stocks.

- 2.0wt% for US Steel 224 and AGMA 9005 industrial gear (250 kgf weld)
- 4.0wt% for API GL-5 EP performance (400 kgf weld)

When testing in new oils always check ASTM D1401 demulsibility and ASTM D892 Sequence I/II/III foam. Use **FUNCTIONAL DF-400** defoamer and **FUNCTIONAL DM-240** demulsifier when needed.

See next page for performance details.

HANDLING:

Store indoors at 20-40°C (68-104°F). In its concentrated form, **FUNCTIONAL GA-360M** may cause skin irritation and should be handled with suitable personal protection. See the Safety Data Sheet. **FUNCTIONAL GA-360M** adds no hazards at recommend treat.

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:

EP Industrial Gear Oils:

Use **FUNCTIONAL GA-360M** at 2.0 or 4.0wt% for industrial and heavy duty EP lubricants. Pour point depressant **FUNCTIONAL PD-610** is recommended at 0.1 – 0.5wt% for low temperature fluidity and winterizing the oil in heavy Group I/II and naphthenic oils.

Typical Performance in 150BS Paraffinic Bright Stock (ISO 460)	
Treat Rate, wt%	2.0%
Weld Load, D2783	250 kgf
Weld Scar one stage before weld, D2783	1.83 mm
US Steel Wear (20kg, 54C, 1800rpm)	< 0.30 mm
Turbine Oil Rust, ASTM D665A	Pass
Copper Strip Corrosion, ASTM D130, 3hrs 100°C	1b
Demulsibility, 180°F, D1401	15 minutes
Foam Stability, D892 – I / II / III	0/0, 20/0, 0/0
Wet Foam, D892mod (4vol% water) – I / II / III	0/0, 20/0, 0/0
Suitable For	US Steel 224, AGMA 9005

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