

FUNCTIONAL PRODUCTS INC.

Innovative Chemistry for Lubricants

Technical Data Sheet

FUNCTIONAL GA-614H

Additive for Industrial Enclosed Gear Lubricants

APPLICATION:

FUNCTIONAL GA-614H is a high-performance additive package for industrial gear oils having EP/antiwear, corrosion inhibition, demulsification and oxidation inhibition especially suited for mineral oil based enclosed gear lubricants. **FUNCTIONAL GA-614H** is compatible in a wide range of base oils including vegetable oils, Groups I, II, and III mineral oils, synthetic esters, and PAO's.

COMPOSITION:

FUNCTIONAL GA-614H is same as **FUNCTIONAL GA-614** minus the defoamer additives and is clear.

Typical Properties	
Odor and Appearance	Mild, clear liquid
Demulsibility (D1401) at 30 minutes	39/41/0
Lbs per Gallon	8.4
Flash Point (COC)	150°C
Kinematic Viscosity at 40°C	65 cSt
Copper Strip Corrosion (D130), 3 hr/100°C	1b
Sulfur	29.3 wt%
Phosphorous	1.4 wt%

Test Results - 2.8wt% in ISO 220 Gr. II	
Turbine Oil Rust Test (D665A and B)	Pass
4-Ball Wear Scar (D4172, 20 kg)	0.33 mm
4-Ball Weld Load (D2783)	315 kg
• Load wear Index (LWI)	66
Timken OK Load (D2782)	> 60 lbs
Foam (D892), Sequence I, II, III	N/A
Oxidation Test (D2893), Viscosity change	0.28 %
• Precipitation Number	0.02 mL
FZG A/8.3/90 (D5182), Load stage	> 12

4-Ball EP Weld Load (D2596) by Treat in ISO 220+					
EP Weld Load	250 kg	315 kg	400 kg	500 kg	620 kg
wt%	1.5	2.0	3.0	4.0	5.0
<i>Use one treat level higher for high VI / polymer-thickened formulations.</i>					

TREATMENT LEVEL:

The optimum treat level will depend on the base oil type, viscosity, and the severity of the application.

- 2.0wt% **FUNCTIONAL GA-614H** meets US Steel 224 and DIN 51517 Part 3; suitable for API GL-4
- 2.8wt% is suitable for AGMA 9005 industrial gear oil
- 4.0wt% is suitable for API GL-5 gear oil

Exact performance will depend on the total formulation including: base oil VG and quality, use of viscosity modifiers; and may require extra defoamer, demulsifier, or copper corrosion inhibitor.

The formulator add defoamer when using **FUNCTIONAL GA-614H**. **FUNCTIONAL DF-400** is recommended.

HANDLING:

FUNCTIONAL GA-614H is a skin and eye irritant, and should be handled with suitable personal protection in a well-ventilated area. The maximum heating temperature is 140° F to prevent release of fumes which may cause respiratory irritation.

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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