

BioRail® LF HIGH PERFORMANCE RAIL LUBRICANT

BioRail® LF is first and foremost a high performance rail curve grease. It is also biodegradable.

In wayside systems BioRail® LF forms a vertical bead that is easily picked up. It carries through multiple curves and forms a coating on the gage face that is clearly visible for ease of inspection. In many cases the use of BioRail® LF will result in reduced grease consumption.

BioRail® LF empties evenly from the holding tank, without slumping down to form a "V". This minimizes pump cavitation. Unlike some vegetable based products, BioRail® LF will not gel over time. It remains pumpable and does not plug ports.

BioRail® LF has been extensively tested on Class 1 freight railroads in the United States, which represent the most severely loaded conditions anywhere in the world. Field experience has shown that the carry down, coating of the rail, and level of wear protection are equal to Whitmore's non-biodegradable rail curve greases.

BENEFITS:

- BioResponsible™ - BioRail® LF passes the Modified MITI (OECD 301C) test for ready biodegradability.
- WATER-RESISTANT - resists washing off the rail during heavy rainstorms.
- NOISE REDUCTION - especially valuable in urban areas to lower noise pollution.
- ADHESIVE AND COHESIVE - excellent track carry down, reducing the number of wayside lubricators.
- WIDE TEMPERATURE RANGE – in most climates the need for seasonal product grade changes is eliminated.

APPLICATIONS:

BioRail® LF NLGI 1 is suitable for use in wayside and vehicle-borne (Hi-Rail) lubrication systems. BioRail® LF NLGI 00 is suitable for spray systems.

ASTM #	Grade	TYPICAL CHARACTERISTICS			
		1	1.5	2	
D-217	Penetration (Worked)	310-340	290-310	265-295	
D-2265	Dropping Point, °F (°C)	365 (185)	395 (202)	398 (203)	
D-445	Kinematic Viscosity (Base Oil)				
		cSt @ 40°C	51.34	52.44	52.68
		cSt @ 100°C	10.32	10.53	10.63
D-2270	Viscosity Index (Base Oil)	195	196	197	
Gardener Method	Density, lb/gal @ 60°F (15.5°C)	7.84	7.84	7.86	
	Specific Gravity, g/cc @ 60°F (15.5°C)	0.9416	0.9416	0.9416	
D-2596	Four Ball EP Weld Point, kg	400	400	400	
D-2266	Four Ball Wear Wear Scar, mm	0.47	0.49	0.49	
D-4049	Water Spray-Off, % Loss	41.0	38.5	35.6	
D-1264	Water Washout, % Loss	3.20	3.99	3.99	
FTM 321.2	Screen Bleed, %	4.2	2.2	2.1	
	Thickener Type	Lithium	Lithium	Lithium	
OEM Standard	Low Temperature Pumpability Lincoln Ventmeter @ 400 psi, °F (°C)	-10 (-23)	8 (-13)	25 (-4)	

The above are average values. Minor variations which do not affect product performance are to be expected in normal manufacturing.

PACKAGING

Shuttle Tanks	Nonreturnable Totes	Drums	Kegs	Pails with liner bags
---------------	---------------------	-------	------	-----------------------

930 Whitmore Drive • Rockwall, Texas 75087 • USA • (972) 771-1000 • 800-699-6318
An ISO 9001 and ISO 14001 registered company • www.whitmores.com

LIMITED WARRANTY: The Whitmore Manufacturing Company makes the Limited Express Warranty that at the date of delivery, its goods shall be free from defects in Whitmore's materials and workmanship and shall meet the express written statements of quality, if any, made by Whitmore in connection with the sale of the goods. Other than such Limited Express Warranty, there are no express warranties made with respect to the sale of goods and all implied warranties existing under the law are expressly disclaimed and negated, particularly, Whitmore NEGATES AND DISCLAIMS THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. All other liability, either in contract or tort, including without limitation, strict liability found in Section 402A of the Restatement of Torts or otherwise, is negated and disclaimed. The sole remedy for Whitmore's breach of such Limited Express Warranty shall be a refund of the purchase price of its goods, and Whitmore shall have no responsibility for incidental or consequential damages sustained as a result of the use of the goods, whether sustained to the goods themselves or to other property. Data listed are subject to usual manufacturing variations.