



Tiarco Chemical Europe GmbH



TRCC Europe GmbH

# Technical Data Sheet

## OCTOPOL LiB

### CHEMICAL DESCRIPTION:

Lithium Borate  
CAS: mixture  
EINECS: N/A

### PHYSICAL FORM:

Viscous, opaque, tan to amber colored liquid

### PHYSICAL PROPERTIES:

<u>Property</u>	<u>Typical</u>	<u>Method</u>
Sp. Gravity, @ 15°C	1.1061	ASTM D1298
COC flash pt., °C	225	ASTM D92
Kinematic Viscosity @ 40°C	200	ASTM D445
Copper corrosion rating, 100°C, 24 hr.	1b	ASTM D-130*, D4048**
Boron, wt. %	5.7	ASTM ICP
Calcium, wt. %	0.13	ASTM ICP
Lithium, wt. %	3.5	ASTM ICP
4-ball wear scar diameter, mm	0.60 additized, 0.73 unadditized	ASTM D2266**
4-ball weld, RT, 1770 rpm, LPL, kgf	400 additized, 126 unadditized	ASTM D2596**
SOLUBILITY	Soluble in petroleum and synthetic lubricant bases; insoluble in water	Soluble

Table notes:

\* Test sample: 5.0 wt. % Octopol LiB in ISO VG 220 lubricating base oil.

\*\* Test sample: 5.0 wt. % Octopol LiB in No.2 lithium based grease.

### PRODUCT DESCRIPTION:

Octopol LiB is an EP/antiwear additive with expected application in the automotive, trucking, and industrial lubricant industries. It is an extreme pressure (EP), anti-wear additive that when placed in lubricating oils or grease offers the secondary benefit of excellent copper corrosion resistance. Recommended treat rates for Octopol LiB in either lubricating oil or grease vary from 0.1 wt. % to 10 wt. %.

Selecting treat rates depends primarily on blending stock properties and/or desired lubricant performance. Octopol LiB is has been found to be compatible with other lubricant additives.

Octopol LiB is expected to have utility as a lubricant additive for drive train components such as manual transmissions, transfer cases, and differentials, especially where moderate to severe-duty wear is present and high equipment temperatures prevail. In industrial and commercial applications, Octopol LiB should prove valuable in

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lubricants for industrial gear cases, rolling element bearings, trolley applications, chain drives and heavy duty forms of slide or guide applications. Octopol LiB is compatible with mineral base oils of either naphthenic or paraffinic character. Octopol LiB is also compatible with synthetic oils of varying viscosity grades. The superior EP and wear prevention characteristics exemplified by Octopol LiB, coupled with its secondary benefit of excellent copper corrosion properties makes Octopol LiB a very desirable lube additive. As an additional advantage, Octopol LiB can be used in applications where potassium and sodium are undesirable.

## PERFORMANCE CHARACTER

Octopol LiB additive demonstrates superior performance in: 1) excellent copper corrosion resistance, 2) reducing part-to-part wear under boundary line loading of metal parts, and 3) reducing severe scarring where part-to-part contact demonstrates surface welding, pitting, or spalling, as often seen in heavy-duty earth moving equipment or other severely taxing lubrication applications.

Testing in our lab demonstrated the following results:

1. ASTM D130 Copper Corrosion test results:

a. Copper corrosion test conditions: 24 hours, 100°C.

2. When Octopol LiB is added at a 5% treat rate to either grease or lubricating oil, both lubricants typically produce an ASTM D130 "1b" rating.

ASTM D4172 & D2266, 4-Ball Wear test results:

a. 4-Ball Wear test instrument conditions: 40 kgf load, 1200 rpm, 75°C, 1 hour (both grease and lubricating oil).

i. Shows a 0.10 to 0.15 mm scar size reduction in 4-Ba II scar diameter, demonstrating a significant reduction in scar wear size. This occurs when either an un-additized oil or grease sample is treated with 5.0 wt. % Octopol LiB and then compared using 4-Ball wear testing.

ii. Reported findings: Our test grease that is un-additized demonstrates a scar diameter of 0.73 mm when tested by ASTM 4-Ball wear test procedure; adding 5% Octopol LiB to the same sample grease reduces the scar diameter to 0.60 mm.

3. ASTM D2783 & D2596, 4-Ball Weld (EP) test results:

a. 4-Ball EP test instrument conditions: room temperature, 1760 rpm (oil), 1770 rpm (grease), progressive kgf step loading.

i. Octopol LiB, when added at 5.0 wt. % treat rate to an un-additized grease, the grease last passing load (LPL) improves by 275 kgf. When the same 5.0 wt. % treat rate is applied to an un-additized lubricating oil, LPL improves by 215 kgf.

ii. Reported findings: The LPL of a test grease when run neat (un-additized) was found to be 126 kgf. When additized at 5.0 wt. % treat level, the grease LPL increases to 400 kgf. Performing this procedure in like manner for lubricating oil produces LPLs of 100 kgf and 315 kgf respectively.

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## STORAGE AND HANDLING:

Octopol LiB is hygroscopic and should not be stored in wet areas. It should be kept in a tightly sealed container, and used on a first-in, first-out basis. Recommended storage temperature for Octopol LiB is between 0°C and +50°C.

Users who handle Octopol LiB should wear appropriate personal protective equipment. Partial drums should be tightly sealed. Shelf life expectancy for Octopol LiB is two year from date of manufacture provided it is stored in a sealed container and within the recommended temperature range.