



**SHELL
LUBRICANT
SOLUTIONS**

Shell Rhodina BBZ

A high performance, semi-synthetic grease engineered for demanding blade bearing applications

- Provides protection and lubrication for blade bearings in high-demand applications.
- Provides impressive false brinelling performance, demonstrated through bearing testing and more than 20 years in market.
- Designed for equipment operating in difficult climates, as measured by false brinelling tests under cold climate conditions.
- Provides very strong low temperature performance in very cold climates, demonstrated through testing done at Imperial College.

For more information, please visit [shell.com/wind-lubricants](https://www.shell.com/wind-lubricants)

Results substantiated via the following: Fafnir Fretting test, Four Ball Wear Scar test, Synthetic Sea Water (SSW) EMCOR test, Wet Grease testing. For further information, reach out to your Shell representative.

Shell Rhodina BBZ Can Help Reduce Downtime and Lower Maintenance Costs

Fafnir Fretting Test

Reliability Results: Shell Rhodina BBZ is able to withstand water contamination

Tested: The ability of Shell Rhodina BBZ to protect against fretting when mixed with water in service.

Method: Fafnir Fretting test, ASTM D4170

Fafnir Fretting test shows very good performance (max limit of 5mg loss). Rhodina BBZ Fafnir Fretting results are so low that they are within the repeatability of the test.*

Fafnir Fretting test results – maximum acceptable limit is 5mg

Product	mg of loss
Shell Rhodina BBZ +2% water	1.3
Shell Rhodina BBZ +1% water	1.1
Shell Rhodina BBZ +0.2% water	0.2
Shell Rhodina BBZ (without water)	0.4

Four Ball Wear Scar Test

Tested: The ability of Shell Rhodina BBZ to maintain very good anti-wear properties when mixed with water in service

Method: Four ball wear scar diameter, ASTM D2266

Four ball wear scar test shows very good performance (max limit of 0.7mm)*

Four ball wear scar test results – maximum acceptable limit of 0.7mm

Product	mm of scarring
Shell Rhodina BBZ +2% water	0.51
Shell Rhodina BBZ +1% water	0.53
Shell Rhodina BBZ +0.2% water	0.57
Shell Rhodina BBZ (without water)	0.63

Synthetic Sea Water (SSW) EMCOR Test

Tested: The ability of the grease to protect steel from corrosion

Method: SSW EMCOR test (two bearings tested per product)

Simulating exposure to sea water in EMCOR SSW test clearly demonstrates the superior performance of Shell Rhodina BBZ*

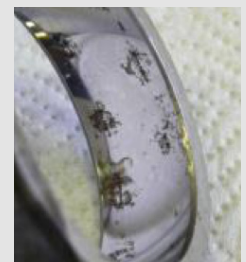
Rated on a 0-5 scale

Rating	Performance
0 = no rust	Strong
1-2 = negligible/light corrosion (up to three spots of rust)	Good
3 = medium corrosion (up to 1% rust)	Poor
4 = high corrosion (5% rust)	Bad
5 = heavy corrosion (10% rust)	Very bad

Product	SSW EMCOR Score
Shell Rhodina BBZ	0-0
Competitor M	3-3
Competitor K	3-3



Shell Rhodina BBZ
Score in the
EMCOR test: 0-0



Competitor product
Score in the
EMCOR test: 3-3

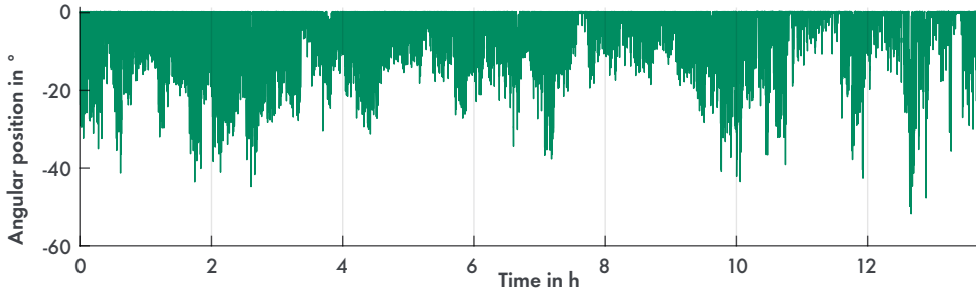
*Internal and external testing is performed and data measured according to industry standards and Shell experience, protocols, and methodology. Further information on testing and results may be requested through your Shell representative. Test results are not a guarantee of performance; no guarantees are provided.

Wet Grease test

Tested: The effect of site-specific wind conditions and individual pitch control on wear of blade bearings.*

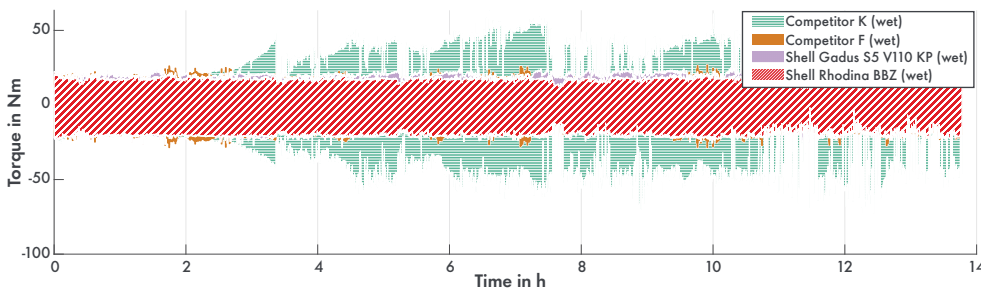
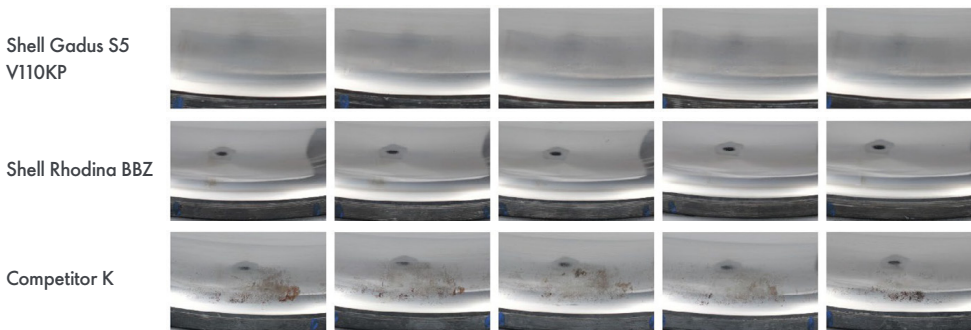
Method: Tested according to Fraunhofer Institute for Wind Energy Systems test conditions

Dynamic test profile from the field



Shell Lubricant Solutions, in collaboration with Fraunhofer Institute for Wind Energy Systems, has developed a test to model performance under water contamination. Through this rigorous and independent testing, Shell is proud to share that Shell Rhodina BBZ has demonstrated impressive performance in wet and dry conditions. The test profile chart depicts the movement angle of the bearing as it was performed over 13.7 hours, which represents common conditions in the field that blade bearings would see in the course of one year.

Test Results – Wet Grease (10% rain water)



In an independent study by Fraunhofer Institute for Wind Energy Systems of four products, Shell Rhodina BBZ showed reduced friction and no raceway damage in wet and even dry conditions, where some products showed torque increases and bearing damages.

Shell Rhodina BBZ performed well under the stress of water contamination, which is critical in on- and off-shore operating environments in the presence of water.

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Scan to see the Wet Grease study



Approvals & Compatibility

Shell Rhodina BBZ meets the grease requirements of industry leading wind turbine OEMs, bearing OEMs, and lubrication system OEMs according to specifications provided by these OEMs, component OEMs and approval documents. Official documentation of OEM approvals is available upon request. Please consult your Shell Technical Advisor to confirm suitability for use.

The grease is compatible with:

- A wide range of materials used in wind turbines, such as metals and polymers.
- Most other greases used in the industry.

Please consult your Shell Technical Advisor before replacing an existing grease with Shell Rhodina BBZ.

View disclaimers and Cautionary Note at <https://www.shell.com/investors/disclaimer-and-cautionary-note.html>



Contact Us

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