



# Shell Morlina S2 BA 460

- Long Oil Life
- Excellent Corrosion Protection
- Outstanding System Efficiency
- Excellent Wear Protection

## Special Application Bearing & Circulating Oils

Shell Morlina S2 BA oils are high performance oils designed to provide excellent lubrication and protection for challenging industrial bearing and circulating applications such as those found in the steel mill environment, especially No-Twist<sup>®</sup> Rod Mill Systems. Morlina S2 BA meets the requirements of OEMs such as Morgan and Danieli.

## DESIGNED TO MEET CHALLENGES

### Performance, Features & Benefits

#### • Excellent Wear, Rust & Corrosion Protection

Shell Morlina S2 BA oils help prolong the life of bearings and circulating systems through:

- Enhanced water separation ensuring critical oil films are retained even in systems with high levels of water contamination.
- Robust protection against corrosion even in the presence of water.
- Reduction of bearing wear during mill operation.

#### • Long Oil Life – Maintenance Saving

Shell Morlina S2 BA oils are formulated with an ashless rust and oxidation inhibitor package that helps provide consistent performance and protection throughout the maintenance interval and mitigates the formation of acidic oxidative by-products and deposits.

#### • Outstanding System Efficiency

Shell Morlina S2 BA oils are blended with high quality, solvent refined base oils that promote water separation and air release to ensure the efficient lubrication of the machines and systems. Strong demulsibility properties ensure that Morlina S2 BA will withstand harsh mill process water contamination. The air release properties help to minimize cavitation and associated damage to circulating pumps.

Shell Morlina S2 BA oils are also suitable for use with high beta ratio filtration applied in rod mill systems to help ensure effective contaminant free lubrication to critical machine parts.

### Main Applications



#### • Morgan (Primetals) Rod Mill Systems & Roughing Mill Stands

Shell Morlina S2 BA oils meet the demanding requirements for the lubrication of Morgan (Primetals) No-Twist<sup>®</sup> Mill Systems where a single lubricant is required to protect highly loaded roller and plain bearings operating at high speeds and subjected to contamination from cooling water and iron oxides of the mill. The ISO 460 viscosity grade may also have specific application in the Roughing Mill Stands of non-ferrous mills. (Note – Morgan is now part of Primetals Technologies.)

#### • General industrial bearing and circulating systems

Shell Morlina S2 BA oils are also suitable for use in many general industrial lubrication systems where an anti-wear lubricant with mild EP properties are required.

#### • Enclosed Industrial Gear Systems

Low or moderately loaded enclosed gears where mild EP performance (regular load) is sufficient.

### Specifications, Approvals & Recommendations

- Morgan Non-Ferrous Mills (Spec MMC40009)
- Danieli 'Type 21-24 N 0.000.001 BVG No-Twist<sup>®</sup> Stand Block Lubricant (Rev. 14)
- ISO 12925-1 – types CKB and CKC
- DIN 51517-1, 2, 3 – types C, CL, and CLP

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

## Compatibility & Miscibility

- **Paint Compatibility**

Shell Morlina S2 BA oils are compatible with seal materials and paints normally specified for use with mineral oils.

## Typical Physical Characteristics

Properties			Method	Morlina S2 BA 460
ISO Viscosity Grade			ISO 3448	460
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D445	460
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ASTM D445	31.3
Density	@15°C	kg/l	ISO 12185	0.901
Viscosity Index			ISO 2909	>95
Flash Point (COC)		°C	ISO 2592	>250
Pour Point		°C	ISO 3016	-12
Rust, Salt Water			ASTM D665B	Pass
Water Separability (time to no more than 3 ml emulsion) @ 82°C		minutes	ASTM D1401	20
FZG Load Stage			ASTM D1582	12 Pass
Oxidation Control Test: RPVOT		minutes	ASTM D2272	475
Oxidation Control Test: TOST		hours	ASTM D943	1500
4-ball Load Wear Index		kgf	ASTM D2783	42
4-ball Load Weld Load		kgf	ASTM D2783	200

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

## Health, Safety & Environment

- Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

- **Protect the Environment**

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

## Additional Information

- **Advice**

Advice on applications not covered here may be obtained from your Shell representative.

# Viscosity - Temperature Diagram for Shell Morlina S2 BA

