

**Marine****Lubricant Condition****Normal****Equipment Information**

Company Name	UNION MARITIME LTD	Equipment Make	KEMEL
Vessel Name	CAPE SARINA	Equipment Model	DX-750
IMO Number	9490612	Machinery Unit	STERN TUBE
Report Date	18-Mar-2024	Equipment S/N	X-38961
Product Name	GULFSEA SUPERBEAR 3006	Sample Location	SEAL STAND PIPE DRAIN POINT #3

Sample Information				1	2
Sample No				24000326	24509187
Bottle No				60273104	60237077
Date Received				02-Jan-24	08-Feb-24
Sampled Date				19-Dec-23	02-Feb-24
Port of Origin				Singapore	Indonesia
Oil on Label				HYDROX BIO 100	HYDROX BIO 100
Fuel In Use (Sulphur)					
Total Machine Hours					83114
Lubricant Hours					
Lubricant Condition				Critical	Normal
Results					
Analysis					
KV@40°C [mm²/s]				137.5	114.8
Water [%wt]				0.28	0.15
Oxidation [Abs/0.1mm]				3.70	2.36
AN [mgKOH/g]				10.4	5.04
PQ Index/2ml				<10	<10
Wear Elemental Analysis [ppm]					
Aluminium (Al)				3	<1
Silver (Ag)				<1	<1
Chromium (Cr)				<1	<1
Copper (Cu)				39	17
Iron (Fe)				145	218
Lead (Pb)				<1	1
Tin (Sn)				5	4
Nickel (Ni)				1	<1
Cont. Elements [ppm]					
Boron (B)				<1	<1
Sodium (Na)				30	39
Magnesium (Mg)				5	2
Silicon (Si)				4	<1
Manganese (Mn)				1	1
Potassium (K)				<1	<1
Barium (Ba)				<1	<1
Additive Elements [ppm]					
Calcium (Ca)				112	98

Recommendations

Viscosity result is within the normal limit. Please note the increase in Acid number. Oil oxidation reaction, Hydrolysis, mix-up with another oil grade etc are the typical reasons for Acid number increase. Apart from degrading the oil quality, increased acidity can create issues on seal lips. Presence of lube oil additive metal presence in this sample is indicative of other oil grade mix up which might have been caused either by the inadequate flushing during the transition or during top up.

Elemental analysis shows significant wear rate of Iron. High Fe and low PQ results indicates corrosive wear (rust) on the ferrous components.

As the current oil in use is a Non-Gulf Marine product, therefore, the results are for REFERENCE ONLY.