

BIODEGRADABLE OIL (EAL) FOR STERNTUBE SEALS

<FOR SEAL TYPE AX, CX, DX>

BASE OIL	OIL MAKER	OIL BRAND	SEAL RING MATERIAL	
			FKM for ESTER BIO	FEPM / FKM for PAG BIO
PAG	KEMEL (EAGLE INDUSTRY)	BIO ST-100 (ST-83A)	-	A+
		BIO ST-120	-	A+
	SHELL	SHELL BIODEGRADABLE HYDRAULIC FLUID 68	-	A
		SHELL OMALA S3 W 100	-	A
ESTER BASE & OTHERS	BASF	ECOPRO HE 501-68	B	-
		ECOPRO HE 501-100	B	-
	BP/CASTROL	BIOBAR 68	A	-
		BIOBAR 100	A	-
		BIOSTAT 68	B	-
		BIOSTAT 100	B	-
		BIOSTAT 150	B	-
	CHEVRON	CLARITY SYNTHETIC EA HYDRAULIC OIL 68	B	-
		CLARITY SYNTHETIC EA HYDRAULIC OIL 100	B	-
		Clarity Bio EliteSyn AW 68	B	-
		Clarity Bio EliteSyn AW 100	B	-
		Clarity Bio EliteSyn AW 150	B	-
	COSMO OIL	COSMO TERRA STERN TUBE 100	B	-
	Calumet Branded Products	BIOMAX STERN TUBE EAL 100	B	-
		BIOMAX STERN TUBE EAL 150	B	-
	EXXON MOBIL	MOBIL SHC AWARE ST 100	A	-
	GULF OIL MARINE	GULFSEA BD STERNTUBE OIL 68	B	-
		GULFSEA BD STERNTUBE OIL 100	A	-
	KOREA HOUGHTON	TECTYL BIO OS 100	B	-
	KLUBER	BIO RM 2-100	A	-
		BIO RM 2-150	B	-
		BIO EG 2-68	B	-
		BIO EG 2-100	B	-
		BIO EG 2-150	B	-
		BIO RM 8-100	B	-
	KAJO	KAJO-BIO-Sterntube Oil 100	B	-
	LENOL (FUCHS)	PLANTOGear 100 S	A	-
		PLANTOGear 150 S	A	-
		PLANTOSYN 68 HVI	B	-
	NOF CORPORATION	MILLUBE ST-100S	B	-
		MILLUBE ST-100U	A	-
		MILLUBE ST-150U	B	-
	PANOLIN	STELLA MARIS 68	A	-
		STELLA MARIS 100	A	-
		STELLA MARIS 150	B	-
		HLP SYNTH 68	B	-

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ESTER BASE & OTHERS	PANOLIN	HLP SYNTH 100	B	-
		STELLA MARIS NRT 68	B	-
		STELLA MARIS NRT 100	B	-
	RSC BIO SOLUTIONS	ENVIROLOGIC HF 68 HP	B	-
		ENVIROLOGIC HF 100 HP	B	-
		ENVIROLOGIC GO 150	B	-
		FUTERRA HF 68	B	-
		FUTERRA HF 100	B	-
	SHELL	NATURELLE S4 STERN TUBE FLUID 100	A	-
		NATURELLE S4 GEAR FLUID 100	B	-
		NATURELLE S4 GEAR FLUID 150	B	-
		SHELL STERN TUBE LUBRICANT 100	B	-
		SHELL STERN TUBE LUBRICANT 150	B	-
		SHELL ECOSAFE EAL 68	B	-
	SINOPEC	EA STERNTUBE OIL 68	B	-
		EA STERNTUBE OIL 100	B	-
	SK LUBRICANTS	SK BIO ST	B	-
		SK BIO ST 150	B	-
	Total Energies Lubmarine	BIONEPTAN 100	C	-
		BIONEPTAN HT 100	A	-
	VICKERS	HYDROX BIO 68	B	-
		HYDROX BIO 100	A	-
		HYDROX BIO 150	A	-
		BIOGEAR XP 68	B	-
		BIOGEAR XP 100	B	-
		BIOGEAR XP 150	B	-
		ECOSTERN SMX 100	B	-
		ECOSURE EAF 68	B	-
		ECOSURE EAF 100	B	-

A : Good (A+ :greater than A)

B : Fair / Size limitation or application limit. Consult KEMEL for details.

C : Passing / Temperature limit & application limit. Consult KEMEL for details.

Remarks

- For FWD seal, it is strongly recommended to use the highly compatible oils of rank A.
- For AFT seal, it is strongly recommended to apply oil line to chamber between seal rings #2 and #3.
- Other than the compatibility, all properties and characteristics of the each oil; including effects of dew, water or seawater inclusion, heat, mixture with residues of other oil grades replaced or used for shaft work & flushing, paint, dirt or water in tanks & pipes in initial oil filling, oil maintenance and storage etc. are out of KEMEL's scope. For proper operation of stern tube system, obtain information / instruction on these particulars from each oil makers.
- Oils are listed as "Biodegradable" according to oil maker's information. Confirm with the oil maker if the oil meets EAL requirements by the US rule VGP 2013.
- Follow ship builder's recommendation of oil viscosity if it is specified for stern tube bearing lubrication.
- Oil list will be revised without notice.