

ENVIRONMENTAL ACCEPTABLE LUBRICANT (EAL) LIST FOR SIMPLEX STERN TUBE BUSHES AND SEALS

The following list is based on the results achieved during static and dynamic testing. These tests are intended to replicate as closely as possible actual operating conditions on board. However, as the individual operating conditions of each sealing system varies from vessel to vessel, this list serves as a recommendation only. Furthermore it applies solely to SIMPLEX stern tube seal systems and not to gears, clutches, roller element bearings or other components of the propulsion system. It should be noted that not all bio oils are EALs in accordance with VGP 2013. Consequently we rely on the information provided by the oil companies both in respect of the technical data as well as the statement that the listed lubricants are EALs.

The SIMPLEX seal has to be fitted with sealing rings of Viton Pod or Viton Bio material.

We kindly ask you to inform us if you wish to use any lubricants which are not listed below. We will test these lubricants accordingly.

All listed EALs can be used for oil lubricated SIMPLEX stern tube bushes and seal systems.

Company name	Product name	Viscosity cSt. 40°C	Oil type	Viton Pod	Viton Bio
ACT					
	Neptune AW-68 ***	68	H	-	-
	Neptune 109 ***	100	G	-	-
	Neptune 159 ***	150	G	-	-
BioBlend					
	Bioflo STL 100	100	S	x	x
	Bioflo STL 150	150	S	x	x
BP / Castrol					
	BioStat 68*	68	M	x	x
	BioStat 100*	100	M	x	x
	BioStat 150*	150	M	x	x
	BioStat 220*	220	M	x	x
Chevron					
	Clarity Synthetic EA Hydraulic Oil 68	68	H	x	x
	Clarity Synthetic EA Hydraulic Oil 100	100	H	x	x
	Clarity Synthetic EA Gear Oil 100*	100	G	x	x
	Clarity Synthetic EA Gear Oil 150*	150	G	x	x
ExxonMobil					
	Mobil SHC Aware ST 100	100	S	x	x
	Mobil SHC Aware ST 220**	220	S	x	x
	Mobil SHC Aware Gear 68	68	G	x	x

SKF Marine GmbH

Hermann-Blohm-Straße 5, D-20457 Hamburg, Germany

Company name Product name	Viscosity cSt. 40°C	Oil type	Viton Pod	Viton Bio
Mobil SHC Aware Gear 100	100	G	x	x
Mobil SHC Aware Gear 150	150	G	x	x
Fuchs / Lukoil				
Plantosyn 68 HVI	68	M	X	x
Plantogear 100 S	100	M	x	x
Plantogear 150 S	150	M	x	x
Plantogear 320 S	320	M	x	x
Gulf Oil Marine Ltd.				
GulfSea BD Sterntube Oil 68**	68	S	x	x
GulfSea BD Sterntube Oil 100	100	S	x	x
GulfSea BD Sterntube Oil 220**	220	S	x	x
GulfSea BD Gear Oil 68	68	G	x	x
GulfSea BD Gear Oil 100	100	G	x	x
GulfSea BD Gear Oil 150	150	G	x	x
Klüber				
Klüberbio EG 2-68	68	G	x	x
Klüberbio EG 2-100	100	G	x	x
Klüberbio EG 2-150	150	G	x	x
Klüberbio RM2-100	100	S	x	x
Klüberbio RM2-150	150	S	x	x
Klüberbio LR9-46	46	H	x	x
Klüberbio LR9-68	68	H	x	x
MAN Diesel & Turbo SE				
PrimeServLube Bio P 1000**	100	S	x	x
Panolin				
Stella Maris 100	100	S	x	x
Stella Maris 150	150	S	x	x
Stella Maris 220	220	S	x	x
Panolin MarGear 100	100	G	-	x
Shell				
Naturelle S4 Stern Tube Fluid 100	100	S	x	x
Naturelle S4 Gear Fluid 68	68	G	x	x
Naturelle S4 Gear Fluid 100	100	G	x	x
Naturelle S4 Gear Fluid 150	150	G	x	x
SK				
SK BIO SG EP 68	68	G	x	x
SK BIO SG EP 100	100	G	x	x
SK BIO ST	100	S	x	x
SK BIO ST 150	150	S	x	x

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Company name Product name	Viscosity cSt. 40°C	Oil type	Viton Pod	Viton Bio
TOTAL LUBMARINE				
Bioneptan 100 HT	100	M	x	x
Bioneptan 100	100	M	x	x
Bioneptan 150	150	M	x	x
TOTAL INDUSTRIE				
Biohydran 100	100	H	x	x
RSC Bio Solution				
RSC EnviroLogic HF 68 HP	68	H	x	x
RSC EnviroLogic HF 110 HP	100	H	x	x
RSC EnviroLogic GO 100*	100	G	x	x
RSC EnviroLogic GO 150*	150	G	x	x
RSC Futera HF 68	68	H	x	x
RSC Futera HF 100	100	H	x	x
Vickers Leeds				
Biogear XP 68	68	G	x	x
Biogear XP 100	100	G	x	x
Biogear XP 150	150	G	x	x
Hydrox Bio 68**	68	S	x	x
Hydrox Bio 100	100	S	x	x
Hydrox Bio 150	150	S	x	x
Hydrox Bio 220**	220	S	x	x

x Approved

- not approved / not tested

pending Approval to be confirmed

* Oil with general limited application temperature, 60° C

** Oil not suitable for SIMPLEX Airspace seals

*** The application of this lubricant is limited. It should be used in consultation with SKF Marine only.

Oil type: G =Gear oil, H = Hydraulic oil, M = Multipurpose oil, S = specific Stern tube oil

NOTICE

The new VGP 2013 rules issued by the EPA require certain vessel operating conditions/limits in general unless technically infeasible. Amongst others, all oil to sea interfaces must use EAL unless technically infeasible. Depending on the individual seal system, the chosen EAL and the bearing load of the respective vessel, special operating conditions e.g. limits in temperatures, water content, etc., may apply and additional equipment might be considered.

Wherever an EAL is used our special FKM (Viton Pod or Viton Bio) sealing material must be installed. If Viton Bio is already installed, it is not necessary to change the seals when switching to EAL. All other seal materials require the seals to be changed when switching to EAL. If an Airspace seal is installed, an EAL is not required.

In order to achieve an operating life of 5 years when using EALs, please follow our maintenance instructions.

Maintenance instructions for SIMPLEX standard seals with approved EALs for 5 years service interval:

- flush and change the oil of the AFT seal according to the manual
- change the oil of the FWD seal according to the manual
- ensure the following operational limits:

	SC2 Viton Pod	SC3 Viton Pod/ Viton Bio
Operating temperature AFT stern tube bearing	55°C	None under normal operating conditions
Alarm temperature AFT stern tube bearing	60°C	
Operating oil temperature FWD seal	60°C	None under normal operating conditions

Maintenance instructions for SIMPLEX Airspace seals with approved EALs for 5 years service interval:

- maintain the stern tube bearing and seal-system according to the standard manual
- no additional operational limits

Important note:

EAL means lubricants that are biodegradable, non-bio accumulative, and minimally toxic. They must meet EPA's EAL definition and shall be approved by labelling programmes such as Blue Angel, European Ecolabel, Nordic Swan, the Swedish Standards SS 155434 and 155470, OSPAR, EPA's DfE or self-certified by the maker. It is the responsibility of the oil product manufacturer to meet the EPA's EAL definition. Vessel operators have to note that not every bio-oil is an EAL.

Environmentally acceptable lubricants in combination with SIMPLEX lip ring seals require the use of Viton Pod or Viton Bio as the sealing ring material.

For further information please get in contact with your local sales agent. Please ask SKF Marine GmbH for approval before use of an EAL to achieve reliable operation with your individual sealing system.

This EAL list is subject to the update service. The current version can be downloaded online at <http://www.skf-simplex.com/pdfs/EALOilList.pdf>.

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Hermann-Blohm-Straße 5, D-20457 Hamburg, Germany