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Extremely biodegradable high performance hydraulic oils with the environmental label "Blue Angel"

RIVOLTA S.B.H. 11 and S.B.H. 23 are synthetic environmentally friendly high performance hydraulic oils. The combination of extremely biodegradable synthetic base oils with a brand-new additive technology will give a performance spectrum to our products which is superior to conventional HLP- or HVLP-hydraulic oils. Our additive package increases the good aging, corrosion and wear characteristics of the base oils. Especially the wearing protection is of outstanding importance. Because of lack of wearing protection of conventional oils, increased wear is created at the contact area "sealing element – metal surface". This is followed by leakage and oil loss. RIVOLTA S.B.H. 11 and S.B.H. 23 with their special additive package avoid wear in an effective way and with this leakage of the system.

The property

- **extremely biodegradable**
- **minimal wear and friction**
- **operative temperature range from
-40°C up to +90°C (S.B.H. 11)
-35°C up to +100°C (S.B.H. 23)
high viscosity index**
- **aging- and oxidation-resistance**
- **good compatibility with seals,
good miscibility with mineral oils**
- **no classification necessary according to the German hazardous substances ordinance**

will give the following benefits

- safety in situations where the lubricant can get into the environment. The biodegradability is higher than 95% (S.B.H. 11) respectively 97% (S.B.H. 23) by weight according to CEC-L-33.
- prevents leakage of the system, raised economy by reduced consumption of energy and extended life-time of machines and facilities
- guarantees operativeness of the hydraulic system at low and high temperatures. Fast and safe start is possible within a wide temperature range.
- long-term use of the lubricant, extended service intervals, reduced maintenance, reduced labour costs
- minimal efforts when changing from mineral to synthetic lubricants
- S.B.H. 11 and S.B.H. 23 stand for a maximum of personal protection. The appropriate use of S.B.H. 11 and S.B.H. 23 does not create any risks for the workers' health. S.B.H. 11 and S.B.H. 23 can also be used in the food industry according to German regulations.

**Rivolta S.B.H. 11 and S.B.H. 23
hydraulic oils that set standards**



**Extremely biodegradable
high performance hydraulic oils
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synthetic extremely biodegradable ester oils with anti-wear, anti-ageing and anti-corrosion additives				
Colour: yellowish-transparent		Odour: characteristic		
Technical data	Unit of measurement	Norm	S.B.H. 11	S.B.H. 23
Density	g/ml	DIN 51757	0.896	0.920
ISO viscosity grade	-	DIN 51519	22	46
Viscosity at 20°C	mm ² /s	DIN 51562	37	105
Viscosity at 40°C	mm ² /s	DIN 51562	22	46
Viscosity at 100°C	mm ² /s	DIN 51562	7.5	9
Viscosity index	-	DIN ISO 2909	>200	>180
Flash point	°C	DIN EN ISO 2592	180	240
Pour point	°C	DIN ISO 3016	-42	-40
Operative temperature range	°C		-40/+90	-35/+100
Corrosion protection to steel	-	DIN 51355	0-A	0-A
Corrosion protection to copper	-	DIN EN ISO 2160	1	1
Air release	min	DIN ISO 9120	2	3
Demulsifying characteristic	min	DIN 51599	<20	<20
F.Z.G.-Test 8.3/90	-	DIN 51354	>12	>12
Mechanic test in the vane pump		DIN 51389/2		
weight loss ring	mg		<3	<1
vane	mg		<7	<3
total	mg		<10	<4
Behaviour against sealing material SRE-NBR1		DIN ISO 1817 (after 168 h at 100°C)		
• relative volume change	% by volume		+10	+8
• change of hardness (shore A)			-5	-5
Ecological data				
Mammal toxicity	mg/kg	OECD Guidelines No. 401	>5000	>5000
Fish toxicity	g/l	DIN 38412/15	>3.5	>3.5
Biodegradability	% by weight	CEC-L-33	>95	>97

Application:
hydraulic systems

- for all kinds of hydraulic systems and hydraulic motors. S.B.H. 11 and S.B.H. 23 top the demands of DIN 51524 for hydraulic oils with specifications HLP and HVLP, except DIN 51587 (tost-test).

Compatibility:

- compatible with seals resistant to mineral oils
- mixable with mineral and ester oils. Do not mix with polyethylene glycol

Preparing of lubrication point:

The following steps have to be carried out before new filling with S.B.H. 11 resp. S.B.H. 23:

- Leave off the old product. If the system was filled with a mixable product, a special flushing is not necessary. However, for the purposes of purity of grades we recommend a flushing with the hydraulic oil which shall be used.
- If the system was filled with a product which is not mixable a flushing must be included.

This text contains facts and statements and is determined with our best knowledge and will be checked continuously. These statements are depending - among other reasons - on experiences gained in the industry. We only pass them on without liability. Before using our products you should test the applicability and you should convince yourself about the satisfactory performance. Our application examples and suggestions should not request to violate patent rights.