



RENOLIN CLP GEAR OIL RANGE

Heavy duty - EP - industrial gear oils of highest performance, outstanding extreme pressure characteristics and load carrying capacity

Description (continued on page 2)

The RENOLIN CLP products are industrial gear oils of the latest generation, having outstanding extreme pressure characteristics (EP/AW properties) and an extremely high load carrying capacity. They are industrial gear oils with excellent demulsifying properties which can be used in all types of enclosed gear drives with circulation or splash lubrication systems.

The RENOLIN CLP products offer extraordinary wear protection. They surpass the requirements in the standard FZG A/8,3/90 scuffing test as well as the more severe FZG test A/16,6/140 (double velocity - 16.6 m/s - and increased starting oil sump temperature - 140°C). The RENOLIN CLP products offer an extremely high micropitting protection (load stage "high" in the load stage test as well as the endurance test). They offer excellent wear protection for roller bearings. The wear rates in the FAG FE8 test are extremely low under these extreme test conditions (7.5 rpm, 80°C, 80 h, 80 kN). Latest additive technology guarantees excellent wear protection and excellent corrosion protection (steel and copper-containing materials) The RENOLIN CLP products have good elastomer compatibility, stressed static and dynamic elastomers are lubricated and protected from wear. The lifetime of the components is increased. RENOLIN CLP oils can improve equipment reliability and increase productivity.

Advantages/Benefits

- Excellent corrosion protection
- Low foaming, excellent air release
- Excellent demulsifying properties (water and water-containing fluids are separated fast)
- High oxidation resistance
- Extremely high load-carrying capacity, extreme pressure-, anti-wear performance
- Excellent bearing wear protection (under mixed friction conditions) – FE8
- Excellent protection from scuffing, excellent wear protection - FZG
- Excellent micropitting resistance in the load stage and endurance test
- High Brugger wear protection
- Excellent elastomer compatibility (static and dynamic)
- Good compatibility with paint materials

Specifications

The RENOLIN CLP oils meet and in many cases exceed the requirements:

- DIN 51 517-3 (2004): CLP ISO 6743-6: CKC
- ISO 12925-1: CKC AISE 224
- AGMA 9005/D94 David Brown S1
53.101

The products of the RENOLIN CLP series are approved for example by:

- A. Friedrich Flender AG, Bocholt, Germany, Flender BA 7300, 01/2007, table A
- Bosch Rexroth: Lohmann und Stolterfoht, Witten, Germany
- Müller Weingarten AG, Germany
DT 55 005, 10/2003

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Health, Safety and Environment - information is provided for products in the relevant Safety Data Sheet. This provides guidance on potential hazards, precautions and first-aid measures, together with environmental effects and disposal of used products.

While the information and figures given here are typical of current production and conform to specification, minor variations may occur. No warranty expressed or implied is given concerning the accuracy of the information or the suitability of the products



Application

The RENOLIN CLP oils are recommended for industrial spur-, helical- and bevel enclosed gears with circulation or splash lubrication, operating at oil temperatures up to 100°C and peaks above (up to 120°C).

The RENOLIN CLP oils can be used for all applications where lubricants of the CLP type according to DIN 51 517-3 are recommended by the gear manufacturer. These products meet and in many cases exceed the new requirements of

well-known gearbox and bearing manufacturers. The RENOLIN CLP oils are particularly suited for gear sets working under heavy load or shock load. They also can be used in non-gear applications including highly loaded, low-speed plain and rolling contact bearings. These mineral oil-based products are designed to provide high quality, latest additive technology of industrial gear oil formulation. They meet the latest industrial standards of well-known OEMs. RENOLIN CLP is approved by company Flender.



CHARACTERISTICS: RENOLIN CLP GEAR OIL RANGE

RENOLIN CLP		68	100	150	220	
Characteristics	Unit					Test Method
ISO VG	-	68	100	150	220	DIN 51 519
AGMA Grade	-	2EP	3EP	4EP	5EP	DIN 51 519
Kinematic Viscosity	at 40°C	68	100	150	220	DIN EN ISO 3104
	at 100°C	8.7	11.3	14.5	18.9	
Viscosity Index	-	99	98	94	96	DIN ISO 2909
Density at 15°C	kg/m ³	882	886	891	896	DIN 51 757
Colour	ASTM	1.0	1.5	3.0	3.5	DIN ISO 2049
Flashpoint	°C	236	250	254	260	DIN ISO 2592
Pourpoint	°C	-24	-18	-18	-24	DIN ISO 3016
Neutralization number	mgKOH/g	0.6	0.6	0.6	0.6	DIN 51 558-1
Demulsibility at 54°C	min.	10	10	-	-	DIN ISO 6614
Demulsibility at 82°C	min.	-	-	15	15	DIN ISO 6614
Copper corrosion 3h, 100°C (100 A3)	Degree of corrosion	1	1	1	1	DIN EN ISO 2160
Corrosion protection – steel procedure A: dist. water	Degree of corrosion	0	0	0	0	DIN ISO 7120
procedure B: sea water		0	0	0	0	
Foaming						ASTM D 892
Seq. I	ml	0/0	0/0	0/0	0/0	
Seq. II	ml	0/0	0/0	0/0	0/0	
Seq. III	ml	0/0	0/0	0/0	0/0	

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RENOLIN CLP		68	100	150	220	
Characteristics	Unit					Test Method
FZG A/8,3/90 gear test rig Start temperature: 90°C	failure load stage	>12	>12	>12	>14	DIN ISO 14635-1
FZG A/16,6/140 gear test rig Start temperature: 140°C	failure load stage	>12	>12	>12	>12	DIN ISO 14635-1
FZG-GFT* test GT-C/8,3/90 Load stage test	GF Class	GFT high	GFT high	GFT high	GFT high	FVA-Information Sheet No. 54/I-IV
FZG-GFT* test GT-C/8,3/90 Endurance test	GF Class	GFT high	GFT high	GFT high	GFT high	FVA-Information Sheet No. 54/I-IV
FE8 wear test, D7,5/80-80 Roller wear	mg	<5	<5	<5	<5	DIN 51 819-3
Testing in mixed friction area according to Brugger	N/mm ²	≥ 50	≥ 50	≥ 50	≥ 50	DIN 51 347-2
Timken OK load	lbs	85	95	95	95	ASTM D 2782
4-Ball EP test	N			≥2400		DIN 51 350-2
Weld load	kg			≥250		ASTM D 2783-88
Elastomer compatibility - dynamic and static:						Fuchs In-house Test according to DIN ISO 1817 and according to Flender
72NBR902 (1000 h, 80°C – dynamic)				pass		
75FPM585 (1000 h, 90°C – dynamic)				pass		
75FKM17055 (1000 h, 90°C – dynamic)				pass		
SRE-NBR 28/SX according to DIN ISO 13226 (100°C, 7 d – static)				pass		DIN ISO 1817

* GFT = Micropitting test (grey discoloration test)



CHARACTERISTICS: RENOLIN CLP GEAR OIL RANGE

RENOLIN CLP		320	460	680	1000**	
Characteristics	Unit					Test Method
ISO VG	-	320	460	680	1000	DIN 51 519
AGMA Grade	-	6EP	7EP	8EP	-	DIN 51 519
Kinematic Viscosity	at 40°C	320	460	680	1000	DIN EN ISO 3104
	at 100°C	24	30.4	36.8	59.3	
Viscosity Index	-	95	95	88	94	DIN ISO 2909
Density at 15°C	kg/m ³	900	901	918	925	DIN 51 757
Colour	ASTM	4.5	5.5	8.0	8.0	DIN ISO 2049
Flashpoint	°C	255	270	270	270	DIN ISO 2592
Pourpoint	°C	-14	-12	-10	-9	DIN ISO 3016
Neutralization number	mgKOH/g	0.6	0.6	0.6	0.6	DIN 51 558-1
Demulsibility at 54°C	min.	-	-	-	-	DIN ISO 6614
Demulsibility at 82°C	min.	20	25	30	30	DIN ISO 6614
Copper corrosion 3h, 100°C (100 A3)	Degree of corrosion	1	1	1	1	DIN EN ISO 2160
Corrosion protection – steel procedure A: dist. water	Degree of corrosion	0	0	0	0	DIN ISO 7120
procedure B: sea water		0	0	0	0	
Foaming						ASTM D 892
Seq. I	ml	0/0	0/0	0/0	0/0	
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** ISO VG 1000 grade only available in the UK



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75FKM17055 (1000 h, 90°C – dynamic)				pass		
SRE-NBR 28/SX according to DIN ISO 13226 (100°C, 7 d – static)				pass		DIN ISO 1817

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