



Product Data

Castrol Carelube HES

Biodegradable ester based hydraulic oil

Description

The Castrol Carelube™ HES hydraulic oil range are based on carefully selected synthetic esters, which are highly biodegradable and recommended for use in situations where leakage or spillage may present a risk of harm to the environment.

Application

The Carelube HES range is used as a hydraulic oil for applications in environmentally sensitive areas such as; near or on waterways, and in the agriculture, forestry, mining and construction industries.

The range may also be used for machine tool hydraulic systems where ester based soluble cutting fluids are being utilised and minimisation of impact of contamination is required.

Carelube HES range is miscible with conventional mineral oil-based hydraulic fluids and products based on natural esters but, in order to maximise the performance benefits of these products - both physically and environmentally, either through draining or flushing to minimise residues of other lubricants is recommended.

This range is fully compatible with the elastomer materials commonly used for static and dynamic seals, such as nitrile, silicone and fluorinated (e.g. Viton) polymers.

Carelube HES is classified as follows:
ISO 6743/4 - Hydraulic Oils Type HEES

Carelube HES grades meet the requirements (for appropriate viscosity grade) of:
ISO DIS 15380
VDMA 24568
Komatsu G3/G4

Advantages

- Inherently biodegradable so ideally suited for minimising the impact to the environment should leakage occur (note: local legislation/regulations regarding the clean up of oil leakage/spills should always be followed).
- Environmentally friendly with low aquatic toxicity – rated WGK 1.
- Very high viscosity index gives reliable operation and consistent response across wide temperature ranges. Maximum component protection at cold start-up and at elevated temperatures.
- Excellent anti-wear performance and lubricity maximises component life and ensures system reliability.
- Seal, diaphragm and hose material compatibility similar to that of mineral oil, allowing easy changeover without component modification.

Typical Characteristics

Test	Method	Units	HES 15	HES 32	HES 46	HES 68
ISO Viscosity Grade	-	-	15	32	46	68
Density @ 20°C	ISO 12185/ ASTM D4052	g/ml	0.89	0.91	0.92	0.92
K.V. @ 40°C	ISO 3104/ ASTM D445	mm ² /s	15	32	46	68
K.V. @ 100°C	ISO 3104/ ASTM D445	mm ² /s	4.13	6.92	9.12	12.49
Viscosity Index	ISO 2909/ ASTM 2270	-	183	185	185	185
Flash Point, COC	ISO 2592/ ASTM D92	°C/°F	186/367	222/432	270/518	276/529
Pour Point	ISO 3016/ ASTM D97	°C/°F	-48/-54	-27/-16.6	-27/-16.6	-27/-16.6
Foam Sequence I	ISO 6247/ ASTM D892	mls	30/0	30/0	30/0	30/0
Water Separability @ 54°C	ISO 6614/ ASTM D1401	Mins	20	20	20	20
Copper Corrosion	ISO 2160/ ASTM D130	-	1a	1a	1a	1a
Rust Test (24 hrs Distilled water)	ISO 7210/ ASTM D665A	-	Pass	Pass	Pass	Pass
Rust Test (24 hrs Synthetic sea water)	ISO 7210/ ASTM D665B	-	Pass	Pass	Pass	Pass
Air Release Value @ 50°C	ISO 9120/ ASTM D3427	mls	1	6	5	11
Four Ball: Wear	ISO 20623/ IP 239	mm	0.41	0.38	0.32	0.32
FZG fail stage (A8.3/90)	ISO 14635-1/ DIN 51354	-	-	-	12+	12+
Vickers Vane Pump Test (100 hrs, 2000 psi). Ring and Vane.		mg	-	-	<50	-

Subject to usual manufacturing tolerances.

Additional Information

The Carelube HES range is miscible and compatible with nearly all mineral oil and ester type hydraulic fluids. To convert a system using these types of oils, simply drain and recharge with correct Carelube HES viscosity grade.

Biodegradability CEC-L-33-A-93 > 95 %

Biodegradability OECD 301B > 69 %

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