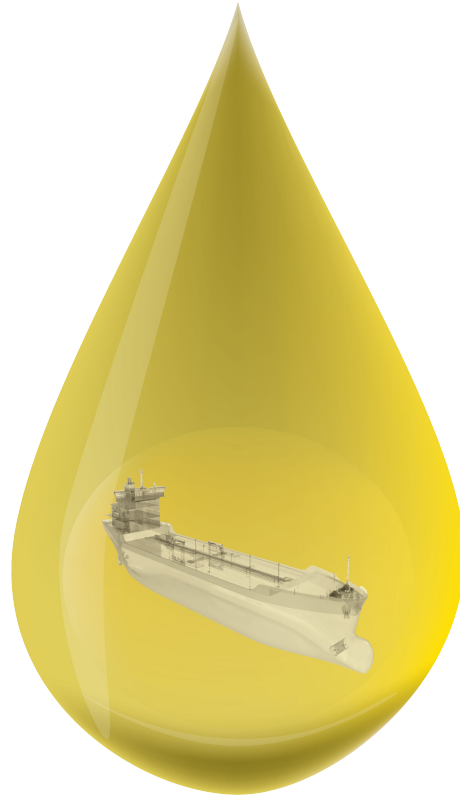


Damcos™ Choice of Mineral Hydraulic Oil

Oil Requirements (non-extreme Conditions)



Description

Hydraulic oil provides the hydraulic working processes with energy. In Damcos connection this means energy for valve motions. The viscosity of the different kinds of oil varies according to the temperature; i.e. high temperature renders a low viscosity and vice versa. Some hydraulic oil types vary more than others. The oil viscosity is an indication of "how sluggish" the oil is. If you change the viscosity, you also change the lubricating characteristics of the oil, especially the adhesion that normally results in the well known dilemma - to choose a suitable hydraulic oil, which implies oil with suitable viscosity at the present temperature conditions.

To decrease operating time and to reduce the power loss in pipes, connections and various components (solenoid valves etc.), in which the oil is to pass on its way to the actuator, the lowest possible viscosity is preferred, whereas the "highest possible" viscosity is preferable in order to protect pumps, solenoid valves and other movable mechanisms.

There are naturally technically and scientifically other conditions than the viscosity (e.g. the vapour pressure) that determine the lubricating characteristics of the oil and minimizes the risk of pump cavitation. Based on experience a viscosity within the range 15 cSt (min.) and 200 cSt can comply with the above-mentioned conditions. The choice of oil is not only a choice of viscosity, but also an estimation of how cold and warm the oil can get during normal operation under different ambient temperatures (arctic versus tropical conditions). The choice of oil type is customer's responsibility as the oil is dependent on various conditions, such as pressure and temperature.

Hydraulic Mineral Oil

The following list describes the minimum requirements for Hydraulic Oil to be used in Damcos Products.

Category	Test Method / Description	Requirement
Viscosity Grade	Oil viscosity rating according to ISO 3448	15 - 46 cSt
Viscosity Limits	Oil viscosity at working temperatures on board	15 - 200 cSt
Oil Type	Fluid Type according to ISO 11158	HV or HM
	Oil type according to DIN 51524-2 and -3	HLP or HVLP
Seal Compatibility	Nitrile, Viton, Silicone	Required
Metal Compatibility	Rust Test, 24hr, Distilled Water according to ISO 7210	Pass
	Rust Test, 24hr, Synthetic Sea Water according to ISO 7210	Pass
	Copper Strip Corrosion according to ASTM D130	1a or 1b (max)
Flushing Cleanliness	According to ISO 4406	17 / 15 / 12

The following table shows some examples of oils meeting the requirements.

Brand	Viscosity Grade	Type
BP	15 - 46	Energol HLP-HM (15 - 46)
Castrol	22 - 46	Hyspin AWS (22 - 46) SDS
Chevron	32 - 46	Rando HDZ (32 - 46)
	22 - 46	Rando HD (22 - 46)
Esso/Exxon/Mobil	32 - 46	Univis N (32 - 46)
	32 - 46	Nuto H (32 - 46)
Shell	32 - 46	Tellus S2 V (32 - 46)
	32 - 46	Tellus S2 VE (32 - 46)
Texaco	22 - 46	Rando HD (22 - 46)

Oil Requirements

Minimum Requirements

The oil should meet the requirements of the most sensitive component in the system at all expected temperatures. If nothing else is specified the viscosity shall remain between **15 and 200 cSt**. The oil must be either **HLP or HVLP** according to DIN 51524-2 and -3, alternatively **HV or HM** according to ISO 6743-4.

Cleanliness

In general, the system must be flushed down to 2 grades below the requirements for the most sensitive component in the system. The reason for this is that when the piping is connected to the components, there will inevitably be introduced some dirt. See also flushing instruction SI 8000-00-001-05 Flushing, Remote Valve Control System.

When filling oil into the system cleanliness should be observed and the oil be filtered before / when pumping it into the system.

Oils from different brands should not be mixed, as the differing additives might interact in suboptimal ways.

For more information: [Emerson.com/Marine](https://www.emerson.com/Marine)

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