ADDINOL
THE ART OF OIL • SINCE 1936

Reliable operation in sensitive areas

Your practical benefits

Biodegradable hydraulic fluid

ADDINOL NatureProof HLP S are biodegradable hydraulic fluids based on saturated esters in combination with a high-performance, zinc-free additive technology. NatureProof HLP S was developed for applications in ecologically sensitive areas such as water protection areas, agriculture, forestry and municipal services. It is available in the viscosity grades 15 to 68.

Highest ageing stability

ADDINOL NatureProof HLP S is based on saturated synthetic ester oils. Their performance clearly exceeds that of mineral hydraulic oils. They are temperature- and oxidation-stable and thus ensure reliable pressure build-up and short reaction times of the hydraulic system over long operating intervals. Even thermal loads, which are mainly due to compact designs, high pressures, reduced oil volumes and shorter retention times, are easily mastered. Premature oil ageing and the formation of deposits is prevented.

High shear stability

ADDINOL NatureProof HLP S achieves a high viscosity index without the addition of viscosity index improvers, which are strongly sheared under high pressure load. This would be causing a thinner lubricating oil and an unstable lubricating film over time. When using NatureProof HLP S, the lubricating film does not break off even under high pressure load, reliable operation is ensured.

Environmental standards

- Biodegradability according to OECD 301 B: > 60%
- Fulfils toxicity requirements according to DIN ISO 15380
- Water hazard class 1: very suitable for use in water protection areas

Specifications

- VDMA standard sheet 24568 (HEES)
- DIN ISO 15380

Tested and approved

- Bosch Rexroth Fluid Rating List RDE 90245

Water separation capacity

During the operation of mobile hydraulics, the ingress of water due to weather conditions cannot be completely prevented. In addition, temperature variations cause condensation water, which can get into the lubricant. To prevent corrosion on the components and to ensure a stable lubricating film even under the influence of water, the reliable separation of water is very important. Compared to biodegradable fluids based on rapeseed oil and conventional unsaturated oleic acid esters, ADDINOL NatureProof HLP S based on saturated ester oils achieves best technical stability.

Cost reduction

High technical safety

ADDINOL NatureProof HLP S was developed for demanding applications in stationary and mobile hydraulic systems. Its technical stability has been proven by tests such as the Bosch Rexroth pump test (RFT-APU-CL), the most severe test procedure under realistic operating conditions.

Long operating intervals

High-quality synthetic base oils and an outstanding zinc-free combination of additives ensure high thermal-oxidative stability and high ageing protection. Even under high loads long service intervals are achieved.

Reduced environmental impact

The careful selection of base oil and additive components ensures biodegradability for use in ecologically sensitive areas and reduces the environmental impact compared to conventional lubricants.

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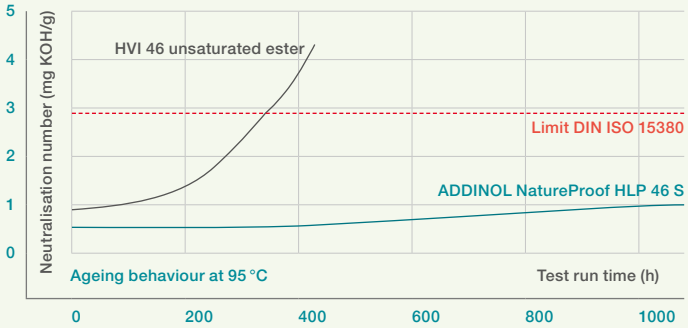
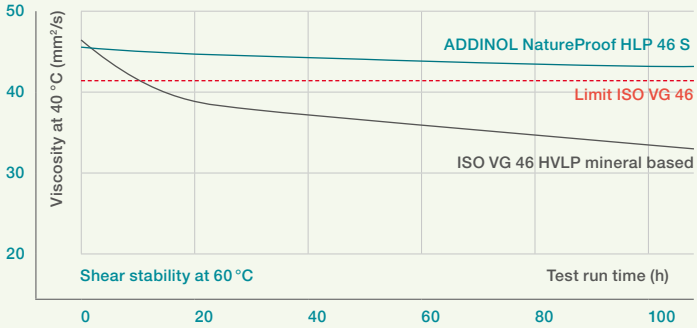
Tailored
to high loads and long application intervals

Increase in the neutralisation number of **ADDINOL NatureProof HLP 46 S** in comparison to hydraulic oils based on unsaturated esters



Development of viscosity of **ADDINOL NatureProof HLP 46 S** in comparison to mineral based hydraulic oil



Best protection against ageing

Oxidation stability under high pressure load plays an important role for long-term use and is simulated using the dry TOST test in accordance with DIN EN ISO 4263-3.
A significant increase in ageing products indicates when a reduced service life is to be expected.

- Long service life: lower increase in oil acidification compared to products based on unsaturated esters
- No thickening: long-term stability of viscosity ensures reliable operation
- No deposits due to ageing products: no impairment of functionality

Best protection under high loads

In contrast to mineral products, high-quality saturated esters have a high native viscosity index. The addition of VI improvers, which are sheared under high loads, is not necessary. The shear stability is determined by means of the tapered roller bearing test (KRL) in accordance with DIN 51350-6 and documented by the drop in viscosity.

- Shear stability and stay-in-grade over a long period of time for reliable operation
- Stable lubricating film even under high pressure loads

Load test passed

Safe operation under high loads

In order to realise high performance in modern, small units, these operate at above-average pressures. Whereas 140 to 170 bar was considered typical not so long ago, 450 to 750 bar is not uncommon in high-pressure pumps today. The components of the hydraulic systems must be reliably protected against fatigue reactions and wear in order to ensure stable operation.

Although there is a pump test for environmentally friendly hydraulic oils in DIN ISO 15380, this only reflects minimum requirements and not the higher requirements resulting from technological progress. Bosch Rexroth, one of the leading manufacturers, has developed its own motor and pump tests. Fluids are tested for their durability.

ADDINOL NatureProof HLP 32 S, 46 S and **68 S** have passed these fluid rating tests and proven their performance.

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