# HYDRAULIC SYSTEMS

TOTAL hydraulic fluids meet the requirements of international standards and manufacturers' technical specifications.
Our ranges of products correspond to the classifications of the ISO 6743-4 standard:

- HM class: **AZOLLA**. Mineral fluids with good oxidation stability ensuring anticorrosion and anti-wear protection of the equipment.
- HV class: **EQUIVIS** and **HYDROFLO**. HM properties complemented by a high-viscosity index, for use of the fluid over a wide temperature range that permits start-ups at low temperature.
- HETG, HEES classes: **BIOHYDRAN**. Biodegradable fluids recommended for equipment used in sensitive natural areas so as to limit the impact of incidental discharges on the environment.
- HFA, HFC, HFD classes: **HYDRANSAFE**. Fluids specifically developed to limit the risks of a fire spreading in the event of a leak.

The **BLUE CONCENTRATE** is a blue dye to add in hydraulic fluid in order to detect leaks.
**TOTAL NEVASTANE** hydraulic fluids are available in HM and HV class.

## HM HYDRAULIC FLUIDS: FOR HIGH TEMPERATURES AND PRESSURES — AZOLLA / TOTAL NEVASTANE

| PRODUCT | APPLICATIONS | SPECIFIC ADVANTAGES | ISO VG | SPECIFICATIONS |
|---|---|---|---|---|
| **AZOLLA** ZS | • Hydraulic systems operating in high temperature and pressure conditions.<br>• Bearings and miscellaneous devices. | • Reinforced protection of the equipment thanks to anti-wear and anticorrosion properties.<br>• Considerable service life for the fluid and preventing deposits, ensured by thermal stability and resistance to oxidation.<br>• Filterability even in the presence of water. | 10 to 150 | ISO 11158 HM • DIN 51524-2 HLP<br>• Eaton I-286S, M-2950S<br>• Denison HF0, HF1, HF2 |
| **AZOLLA** AF | • Hydraulic systems especially sensitive to the formation of deposits and/or operating in high temperature and pressure conditions.<br>• Bearings and miscellaneous equipment. | • Formation deposits prevented due to ashless additives.<br>• Very good anti-wear and thermal stability performances.<br>• Very good filterability in service even in the presence of water.<br>• Extension of oil drain intervals. TOST = 4000 hours. | 22 to 100 | ISO 11158 HM • DIN 51524-2 HLP<br>• Eaton I-286S, M-2950S<br>• Denison HF0, HF1, HF2 |
| **AZOLLA** DZF | • All hydraulic systems, in particular when the presence of water is inevitable and the draining of water impossible.<br>• Miscellaneous devices calling for extreme-pressure properties. | • Excellent hydrolysis stability thanks to ashless additives.<br>• Detergent fluid preventing deposits in the circuits.<br>• Reinforced extreme-pressure properties. | 10 to 68 | ISO 11158 HM • ISO 12925 CKC<br>• DIN 51524-2 HLPD<br>• Müller Weingarten • MAN N698 HLPD |
| **AZOLLA** AL | • Hydraulic systems of aluminium, stainless steel or copper rolling mills. | • Synthetic oil avoids staining rolled metal in the event of a leak in the hydraulic circuit.<br>• Reduction in the formation of deposits.<br>• Anticorrosion protection even in the presence of water. | 15 to 68 | |
| **AZOLLA** VTR | • Hydrokinetic transmissions and couplings.<br>• Specially designed for turbo-transmissions, Voith Turbo gear boxes. | • Dispersant and detergent fluid limiting deposits.<br>• Very good load capacity (FZG>12) and anti-wear protection.<br>• Thermal stability. Very low foaming. | 32 | ISO 6743-4 HM • DIN 51524 HLPD Voith Turbo<br>• SNCF |
| NSF **TOTAL NEVASTANE** AW | • Hydraulic systems operating under severe conditions. | • Very good equipment protection power.<br>• Increased equipment service life.<br>• Miscibility with mineral fluids. | 22 to 68 | NSF H1 • Kosher • Halal<br>ISO 6743-4 HM • ISO 21469 |

BIODEGRADABLE

NSF H1 suitable for incidental food contact

3H suitable for direct food contact

## HV HYDRAULIC FLUIDS: FOR LOW TEMPERATURES — EQUIVIS / HYDROFLO / TOTAL NEVASTANE

| PRODUCT | APPLICATIONS | SPECIFIC ADVANTAGES | ISO VG | SPECIFICATIONS |
|---|---|---|---|---|
| **EQUIVIS** ZS | • Hydraulic systems operating outdoors. | • Extension of oil drain intervals due to very good thermal stability and resistance to oxidation.<br>• Very good filterability even in the presence of water. | 15 to 100 | ISO 11158 HV • DIN 51524-3 HVLP Vickers • Cincinnati-Milacron • P68, P69, P70 |
| **EQUIVIS** AF | • Hydraulic systems operating outdoors. | • Extension of oil drain intervals.<br>• Improved shear stability. | 32 to 68 | ISO 11158 HV • DIN 51524 HVLP |
| HIGH EFFICIENCY **EQUIVIS** HE | • Hydraulic systems operating under high temperation and pressure conditions.<br>• Hydraulic systems operating outdoors. | • High Efficiency: Energy savings up to 5%.<br>• Extension of drain intervals due to a very good thermal stability and resistance to oxydation.<br>• Outstanding shear stability. Very good filterability. | 32<br>46<br>68 | ISO 11158 HV • DIN 51524-3 HVLP • DENISON HF0<br>DynaVis |
| **EQUIVIS** XV | • Hydraulic systems operating at low temperatures as far down as -30 °C. | • Protection of equipment due to a viscosity index > 250, ensuring limitation of cavitation phenomena in circuits during start-up phases and maintenance of lubricant film thickness at elevated temperatures. | 32<br>46 | |
| **EQUIVIS** XLT | • Hydraulic systems operating at extremely low temperatures as far down as -40 °C. | • Enhanced protection due to a viscosity index of 350.<br>• Prevention of deposits due to ashless additives.<br>• Excellent filtration properties even in the presence of water.<br>• Extended service life of the fluid. TOST = 4000 hours. | 15 to 32 | |
| **HYDROFLO** CT | • Hydraulic systems operating outdoors. | • Enhanced protection and performance of the equipment.<br>• Allows extension of oil drain intervals.<br>• Blue coloring enabling detection of possible leaks in equipment. | 46 | DIN 51524-3 HVLP • Poclain Hydraulics • Denison HF0, HF1, HF2 |
| NSF **TOTAL NEVASTANE** SH | • Hydraulic systems and particularly those operating at low temperatures. | • High performance product, due to its 100% synthetic composition.<br>• Excellent protection of equipment.<br>• Extension of oil drain intervals. | 32 to 100 | NSF H1 • Kosher • Halal • ISO 6743-4 HV • ISO 21469 |

## BIODEGRADABLE HYDRAULIC FLUIDS — BIOHYDRAN

| PRODUCT | NATURE | APPLICATIONS | SPECIFIC ADVANTAGES | ISO VG | SPECIFICATIONS |
|---|---|---|---|---|---|
| **BIOHYDRAN** TMP | Biodegradable<br>Synthetic esters | • Hydraulic systems operating outdoors.<br>• Optimal operating temperatures: -20 °C to +80 °C. | • Excellent protection against wear and corrosion.<br>• Protection and efficiency of equipment.<br>• Miscible with mineral oils. | 32 to 100 | ISO 15380 HEES<br>• European Ecolabel<br>• Swedish Standard SS 15 54 34 |
| **BIOHYDRAN** SE | Biodegradable<br>Saturated synthetic esters | • Hydraulic systems operating outdoors.<br>• Operating temperatures likely to exceed +80 °C. | • Extension of oil drain intervals due to high thermal stability.<br>• Excellent compatibility with elastomers. | 32 to 68 | ISO 15380 HEES<br>• European Ecolabel<br>• Swedish Standard SS 15 54 34<br>• DENISON HF1, HF2, HF6<br>• Sauer Danfoss |

## FIRE-RESISTANT HYDRAULIC FLUIDS — HYDRANSAFE

| PRODUCT | NATURE | APPLICATIONS | SPECIFIC ADVANTAGES | ISO VG | SPECIFICATIONS |
|---|---|---|---|---|---|
| **HYDRANSAFE** HFA E3 | Concentrate soluble in water | • Hot pressing machines and systems specially designed for low-viscosity aqueous fluids.<br>• Operating temperatures: +5 °C to +55 °C. | • Generation of a stable fire resistant emulsion.<br>• Good filtration properties.<br>• Resistant to bacterial growth. | | ISO 6743-4 HFAE • ISO 12922 |
| **HYDRANSAFE** HFA S5 | Synthetic concentrate soluble in water | • Hot pressing machines and systems specially designed for low-viscosity aqueous fluids.<br>• Operating temperatures: +5 °C to +55 °C. | • Generation of a stable fire resistant solution.<br>• Excellent filtration properties.<br>• High resistant to bacterial growth. | | ISO 6743-4 HFAS • ISO 12922 |
| **HYDRANSAFE** HFC 146 | Water-Glycol based water resistant fluid | • Operating temperatures: -20 °C to +60 °C. | • Fire resistant fluid containing a high proportion of water.<br>• Adapted to low temperatures. | 46 | ISO 6743-4 HFC<br>• Danieli • Müller Weingarten |
| **HYDRANSAFE** HFDU | Esters based fire resistant fluid | • Recommended in the event of incidental leaks into the environment. Excellent fire resistance.<br>• Operating temperature: -10 °C to +70 °C on a continuous basis, +120 °C at peak periods. | • Ultimate biodegradability (OECD 301B).<br>• Excellent anti-wear properties.<br>• Miscible with mineral oils. | 46<br>68 | ISO 6743-4 HFDU<br>• Factory Mutual |
| **HYDRANSAFE** HFDU LC 168 | Esters based fire resistant fluid | • Operating temperature: -10 °C to +70 °C on a continuous basis, +120 °C at peak periods. | • Excellent fire resistance.<br>• Anti-wear properties. | 68 | ISO 6743-4 HFDU |
| **HYDRANSAFE** FR EHC | Phosphate-esters based fire resistant fluid | • Operating temperature: -10 °C to +70 °C on a continuous basis, +150 °C at peak periods.<br>• Designed for electro hydraulic control system. | • Excellent fire resistance.<br>• Absence of deposits.<br>• Protection against corrosion. | 32<br>46 | ISO 6743-4 HFDR • ISO 12922<br>• ALSTOM • General Electric • SIEMENS |

**SERVICE PRODUCTS. BLUE CONCENTRATE:** Blue dye for hydraulic fluids and other mineral lubricants, enabling early detection of leaks.

BIODEGRADABLE

H1 suitable for incidental food contact

3H suitable for direct food contact