

HOSES

FLUID COMPATIBILITY CHART

| | GOLDENSPIR® DIAMONDSPIR® SHIELDMASTER® ROCKMASTER® XTRAFLEX | ETERNITY/2 NOZONE® 2K | TRACTOR® SHIELDMASTER® ROCKMASTER® HARVESTER®/TV PILOT LYTE-FLEX® COVER | EQUATOR | ADLER ASTRO MULTITEX PUSHFIT SPIRITEX/K | POWERPLAST POWERTWIN |
|--|---|--------------------------|---|---------|---|-------------------------|
| Fluid | Wire Spiralled | | Wire Braided | | Textile Braided | TPE Wire Braided |
| STRAIGHT PETROLEUM-BASE | | | | | | |
| Agip ATF 2D Gear | G | G | C | G | C | - |
| Agip OSO 32 | G | G | F | F | F | - |
| Agip SINT 2000 | G | G | F | F | F | - |
| Agip Tec sint SLSW40 | G | G | F | F | F | - |
| Ambra Hitech 46 | G | G | F | F | F | - |
| Aral Vitam DF Top 46 | E | E | G | E | G | - |
| Aral Vitam GF 68 | E | E | E | E | E | - |
| Aral Vitam 46, 68 | E | E | G | E | G | - |
| Atlas Copco Roto H (PAO) | G | G | F | F | F | - |
| Atlas Copco Roto Inject Fluid | G | G | F | F | F | - |
| Atlas Copco Roto Inject Fluid Plus | F | F | F | F | F | - |
| Avia Syntofluid PE B 30 (PAO) | G | G | G | F | G | - |
| Bechem Hydrostar PM 46 | E | E | E | G | E | - |
| BP A 0629L/028 | G | G | G | F | G | - |
| BP Vanellus C 5 | F | F | F | F | F | - |
| Castrol Brayco 717 | G | G | G | F | F | - |
| Castrol Hyspin HDH 7000 | E | E | E | E | E | - |
| Castrol Lift oil | E | E | E | E | E | - |
| Castrol Transynd RD | G | G | G | E | G | - |
| Cepsa Hidraulico HM 46 | E | E | G | E | G | - |
| Chevron Rycon MV | G | G | F | F | G | - |
| Esso Nuto H46 | G | G | F | F | F | - |
| Esso Univis N46 | G | G | F | F | F | - |
| Exxon Dexron II (ATF fluid) | G | G | F | F | F | - |
| Fuchs OM 13 | G | G | E | E | E | - |
| Fuchs OM 65 | G | G | G | - | G | - |
| Fuchs Renolin B15 VG46 | G | G | F | - | - | - |
| Fuchs Renolin MR 520 | G | G | E | G | E | - |
| Gulf Armony AW 46 | G | G | F | F | F | - |
| Houghton Vital fluid L46AL | G | G | E | - | - | - |
| Igol Marine Fluid | G | G | G | - | - | - |
| Igol ZNS 46 | G | G | F | E | - | - |
| Komatsu KPO 10 Powertrain TO 10 | E | E | G | G | G | - |
| Mav Chemical Sint Plus 2005 ISO46 | G | G | F | F | F | - |
| Millers Millfood 32 | F | F | C | G | F | - |
| Mobil ATF fluid | E | E | F | F | F | - |
| Mobil DTE 25 | G | G | F | E | G | - |
| Mobil Delvac 13 10 10W20 | G | G | E | G | E | - |
| Mobil Jet oil II | G | G | G | F | E | - |
| Mobil SHC 524 | G | G | F | E | F | - |
| Mobil Term 605 (100°C) | G | G | G | G | G | - |
| Nyco Hydraulic oil FH3 (MIL H 46170 C-1) | E | E | G | F | G | - |
| OMD 90 | G | G | G | - | G | - |
| Pfänder Apresol | G | G | G | E | G | - |
| Pentosin CHF 11 S (ATF fluid) | G | G | F | E | F | - |
| PetroCanada Hydrex AW 46 | G | G | G | E | F | - |
| QB Handel 68 | G | G | F | E | F | - |
| QB Heller 46 | G | G | G | E | F | - |
| Shell Arctic 32 | G | G | E | E | E | - |
| Shell Astron HL 46 | E | E | G | - | - | - |
| Shell Cassida HF 46 | G | G | G | E | G | - |
| Shell Corena D | G | G | F | E | F | - |
| Shell Donax TD | E | E | E | E | G | - |
| Shell Helix Ultra 5W40 | G | G | F | G | F | - |
| Shell Rimula X | E | E | G | E | G | - |
| Shell Targon AL plus | G | G | E | - | G | - |
| Shell Tellus 46 | E | E | E | E | E | - |
| Shell Tellus S 46 | E | E | G | E | G | - |
| Shell Tellus T 32 | E | E | G | E | G | - |
| Shell Tellus T 46 | E | E | F | E | - | - |
| Shell V oil 1404 | G | G | G | G | G | - |
| Smalimann Crownpress 46 | G | G | G | F | G | - |
| Sunoco Sunvis 746 | E | E | G | E | F | - |
| Sunoco Sunvis 846 | G | G | G | E | F | - |
| Texaco HDZ 46 | E | E | F | E | F | - |
| Texaco Rando HD 46 | E | E | G | E | G | - |
| Texaco Rando HD VZ | F | F | F | F | G | - |
| Total Azolla ZS 46 | G | G | G | E | G | - |
| Total Dacnis VS 45 | G | G | F | F | F | - |
| Teboil Polar Hydraulic | G | G | E | E | F | - |
| Unil Hydro 546 | G | G | F | E | F | - |
| Unil Opal HV 46 | G | G | F | E | - | - |
| HIGHLY REFINED PETROLEUM-BASE | | | | | | |
| Aeroshell Fluid 41 | E | E | E | F | E | - |
| Castrol Aero HF 585 B | G | G | E | F | E | - |
| Chevron Hydraulic AW 46 | F | F | F | F | F | - |
| Mobil Aero HF MIL H5606 | E | E | E | C | G | - |
| Nyco Hydraulic Oil FH 51 - MIL H5606 | G | G | E | F | E | - |
| Nyco Hydraulic Oil FH 6 - MIL H6083 | G | G | E | F | E | - |
| Shell Tegula V32 | G | G | F | E | F | - |
| PHOSPHATE-ESTER OILS | | | | | | |
| Akzo Fyrquel | C | C | C | - | C | - |
| Solutia Skydroll 500 | C | C | C | C | C | - |

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|--|---|--------------------------|--|---------|---|-------------------------|
| Fluid | Wire Spiralled | | Wire Braided | | Textile Braided | TPE Wire Braided |
| WATER EMULSION | | | | | | |
| Houghton Hydravis BC B4005 (60°C) | E | E | E | E | E | E |
| Houghton OX 40 | E | E | E | E | E | E |
| Houghton Safe 620 | E | E | E | E | E | E |
| Microcorte 530 | E | E | E | E | E | E |
| Nalco Varidos ISK 40% | E | E | E | E | E | E |
| Petrofer Ultra Safe 620 | E | E | E | E | E | E |
| Stuart Hydrocor CC44 | E | E | E | E | E | E |
| Water Glycol emulsion (50%) | E | E | E | E | E | E |
| Wisura WM3021 2.8% in H ₂ O | E | E | E | E | E | E |
| POLYGLYCOL | | | | | | |
| DOT 3 | G | G | G | G | G | G |
| DOT 4 | G | G | G | G | G | G |
| Mobil Glycol 30 | E | E | E | E | E | E |
| PAG SP 10 | E | E | E | E | E | E |
| Stuart Isocor E68 Plus | E | E | E | E | E | E |
| ESTER & POLYOL ESTER | | | | | | |
| Act Ecosafe FR | G | G | G | G | G | G |
| Anderol 497 | F | F | F | F | F | F |
| Anderol Seco 68 | C | C | C | C | C | C |
| Castrol Anvol SWX 68 | G | G | G | G | G | G |
| Castrol Icematic SW 100 | G | G | G | G | G | G |
| Dea Triton SE 55 | G | G | G | G | G | G |
| Emkarate RL 1005 | G | G | G | G | G | G |
| Fuchs Plantohyd 46 s | G | G | G | G | G | G |
| Ingersoll Rand Ultra Plus Coolant | G | G | G | G | G | G |
| Metlube HFR 220 | G | G | G | G | G | G |
| Mobil Arctic EAL 22 | E | E | E | E | E | E |
| Quaker Quintolubric 822-300 | G | G | G | G | G | G |
| Quaker Quintolubric N822-300 | G | G | G | G | G | G |
| Quaker Quintolubric 888 | G | G | G | G | G | G |
| POLYGLYCOL ESTER BLENDS | | | | | | |
| SSR Ultra coolant | E | E | G | G | G | G |
| BIOLOGICAL ESTER OILS | | | | | | |
| Agip Amica Extra Plus | G | G | G | F | G | E |
| Agip Amica Plus | E | E | E | E | E | E |
| Agip Amica S46 | E | E | E | E | E | E |
| Aral Vitam EHF 46 | E | E | E | E | E | E |
| Avia Biofluid BP 32 | G | G | G | G | G | G |
| Avia Syntofluid F 46 | E | E | E | E | E | E |
| Avia Syntofluid N 32 | G | G | G | G | G | G |
| Avia Syntofluid N 46 | E | E | E | E | E | E |
| Bremer Rivalta SBH 23 | E | E | E | E | E | E |
| Castrol Carelube HY 46 | G | G | G | G | G | G |
| Castrol Hyspin EL 46 | E | E | E | E | E | E |
| Dea Econa E 46 | E | E | E | E | E | E |
| Esso Hydraulikoel HE 46 | E | E | E | E | E | E |
| Fina Biohydran SE 46 | G | G | G | G | G | G |
| Finke Aviaticon HY HE | G | G | G | E | E | E |
| Fragol HE 46 | G | G | G | E | E | E |
| Fuchs Eco Hyd 46 S NWG | E | E | E | E | E | E |
| Fuchs Plantohyd 46 | E | E | E | E | E | E |
| Fuchs Plantosyn 3268 Eco | F | F | F | E | E | E |
| Fuchs Plantosyn 3268 | F | F | F | E | E | E |
| Fuchs Plantosyn 46 HVI | G | G | G | G | G | G |
| Houghton Cosmolubric HF 130 | G | G | G | E | E | E |
| Komatsu Genuine Bio 46 G4 | E | E | E | E | E | E |
| Mobil Hydrofluid HFDU | E | E | E | E | E | E |
| Motorex Gekosint 46 | G | G | G | E | E | E |
| Neste Biohydraul SE 46 | E | E | E | E | E | E |
| OMV Biohyd MS 46 (100°C) | G | G | G | E | E | E |
| Panolin EP Gear Synth 30 VDF | F | F | F | E | E | E |
| Panolin HLP 46 (100°C) | G | G | G | E | E | E |
| Panolin GRO Sint 46 | G | G | G | F | F | E |
| Quaker Quintolubric N852 | G | G | G | E | E | E |
| QB Holbein | E | E | E | E | E | E |
| Raisio Biosafe SE 46 | G | G | G | G | G | G |
| Shell Inus Fluid DU 68 | G | G | G | E | E | E |
| Shell Naturelle HFE 46 | G | G | G | E | E | E |
| Teboil Eco 46 | E | E | E | E | E | E |
| Texaco Hydra 46 | E | E | E | E | E | E |
| Texaco Synstar HT 68 | G | G | E | E | E | E |
| York 777 | G | G | G | F | G | E |
| BIOLOGICAL VEGETABLE OILS | | | | | | |
| Binol Hydra P ii 46 | E | E | G | - | G | - |
| BP Biohyd 46 | G | G | E | F | E | - |
| Castrol Biotech Alpin 22 | F | F | E | F | E | - |
| Castrol Carelube HTG | G | G | E | F | E | - |
| Fuchs Plantohyd 46 N | E | E | E | E | E | E |
| Fuchs Planto Hytrac | E | E | E | E | E | E |
| J. Deere Biohygard II | E | E | E | E | E | E |
| Mobil EAL 224 H | G | G | E | F | E | G |
| Quaker Greensave N 40 | G | G | G | F | G | G |
| Tamoil Green Hydro Safety 46 | E | E | E | - | E | G |
| Texaco Biostar Hydraulic 32 | G | G | E | G | E | G |
| Ukabiol HY 46 HTG | G | G | E | G | E | G |

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|--|---|--------------------------|---|---------|--|-------------------------|
| Fluid | Wire Spiralled | | Wire Braided | | Textile Braided | TPE Wire Braided |
| A Acetaldehyde | F | F | F | F | F | - |
| Acetic Acid, 10% | F | F | F | F | F | F |
| Acetic Acid, 25% 100°C | F | F | F | F | F | F |
| Acetic Acid glacial | F | F | F | F | F | F |
| Acetone | F | F | F | F | F | F |
| Air (80°C) | F | F | F | F | F | F |
| Air (100°C) | F | F | F | F | F | F |
| Air (150°C) | F | F | F | F | F | F |
| Ammonia, gaseous | F | F | F | F | F | F |
| Ammonia, liquid | F | F | F | F | F | F |
| Ammonium Hydroxide, 10% | F | F | F | F | F | F |
| Ammonium Hydroxide, conc | F | F | F | F | F | F |
| Ammonium nitrate (aqueous solutions) | F | F | F | F | F | F |
| Ammonium phosphate, mon-di-tri basic (aq. Sol) | F | F | F | F | F | F |
| Ammonium sulphate (aqueous solution) | F | F | F | F | F | F |
| Aniline | F | F | F | F | F | F |
| Aqua regia | F | F | F | F | F | F |
| ASTM oil n°1, 100°C | F | F | F | F | F | F |
| ASTM oil n°2, 100°C | F | F | F | F | F | F |
| ASTM oil n°3, 100°C | F | F | F | F | F | F |
| B Benzene | F | F | F | F | F | F |
| Boric acid 10% 100°C | F | F | F | F | F | F |
| Brake fluid (SAE J 1703d) | F | F | F | F | F | F |
| Butanol | F | F | F | F | F | F |
| C Calcium bicarbonate | F | F | F | F | F | F |
| Calcium hydroxide (Aqueous suspensions) | F | F | F | F | F | F |
| Carbonic anhydride | F | F | F | F | F | F |
| Chlorine | F | F | F | F | F | F |
| Chloroform | F | F | F | F | F | F |
| Citric Acid, 33% | F | F | F | F | F | F |
| Crude oil | F | F | F | F | F | F |
| D Dibenzyl ether | F | F | F | F | F | F |
| Dibutyl phthalate (DBP) | F | F | F | F | F | F |
| Diesel fuel (70°C) | F | F | F | F | F | F |
| Diesel fuel Bio RME | F | F | F | F | F | F |
| E Epichlorohydrine | F | F | F | F | F | F |
| Ethyl acetate | F | F | F | F | F | F |
| Ethyl alcohol | F | F | F | F | F | F |
| Ethyl ether (70°C) | F | F | F | F | F | F |
| Ethylene | F | F | F | F | F | F |
| Ethylene glycole | F | F | F | F | F | F |
| Ethylene glycole (100°C) | F | F | F | F | F | F |
| F Formaldehyde | F | F | F | F | F | F |
| Formic acid 23°C (saturated solution) | F | F | F | F | F | F |
| Formic acid 75°C (saturated solution) | F | F | F | F | F | F |
| Fuel A (iso-octane) | F | F | F | F | F | F |
| Fuel B (70% iso-octane, 30% toluene) | F | F | F | F | F | F |
| Fuel C (50% iso-octane, 50% toluene) | F | F | F | F | F | F |
| G Glycerine | F | F | F | F | F | F |
| H Heptane | F | F | F | F | F | F |
| Hydraulic oils (see detailed table) | F | F | F | F | F | F |
| Hydrochloric acid, 10% | F | F | F | F | F | F |
| Hydrochloric acid, 37% | F | F | F | F | F | F |
| Hydrochloric acid, 37% 70°C | F | F | F | F | F | F |
| Hydrocyanic acid 20% | F | F | F | F | F | F |
| Hydrogen sulphide | F | F | F | F | F | F |
| I Isobutyl alcohol | F | F | F | F | F | F |
| Isopropyl alcohol | F | F | F | F | F | F |
| Iso-octane | F | F | F | F | F | F |
| K Kerosene (aromatics 40%max, 70°C) | F | F | F | F | F | F |
| L Lead free petrol | F | F | F | F | F | F |
| M Magnesium hydroxide (aqueous solutions) | F | F | F | F | F | F |
| Mercury | F | F | F | F | F | F |
| Methanol | F | F | F | F | F | F |
| Methyl methacrylate | F | F | F | F | F | F |
| Methylethylketone (MEK) | F | F | F | F | F | F |
| N Nitric acid, concentrated 65% | F | F | F | F | F | F |
| Nitric acid, diluted 10% 50°C | F | F | F | F | F | F |
| Nitric acid fuming | F | F | F | F | F | F |
| Nitrogen | F | F | F | F | F | F |
| O Oleic acid | F | F | F | F | F | F |
| Oleum | F | F | F | F | F | F |
| Oxalic acid 25% 80°C | F | F | F | F | F | F |
| Oxygen (80°C) | F | F | F | F | F | F |

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|--|---|--------------------------|---|---------|---|-------------------------|
| | Wire Spiralled | | Wire Braided | | Textile Braided | TPE Wire Braided |
| P Paraffin | E | E | E | E | E | E |
| Pentane | F | F | E | F | E | E |
| Petrol | F | F | E | F | E | E |
| Petroleum, 70°C | G | G | E | F | E | E |
| Phenol | F | F | C | F | C | C |
| Phosphoric acid 20% | F | F | G | F | G | - |
| Phosphoric acid 60% 50°C | C | C | F | C | F | - |
| Phosphoric acid 85% | C | C | F | C | F | - |
| Phosphorous tri-chloride | C | C | C | C | C | - |
| Picric acid 10% 100°C | F | F | F | G | F | - |
| Potassium chloride (aqueous solution) | E | E | E | E | E | - |
| Potassium hydroxide 70°C (medium high conc.) | G | G | G | E | G | E |
| Potassium sulphate (aqueous solution) | E | E | E | E | E | - |
| S Sea water | E | E | E | F | E | E |
| Soaps | G | G | E | G | E | E |
| Soda | G | G | G | G | G | G |
| Sodium bicarbonate | E | E | E | E | E | G |
| Sodium chloride (aqueous solution) | E | E | E | E | E | E |
| Sodium hydroxide | G | G | F | G | F | E |
| Sodium hydroxide 70°C (medium high conc.) | G | G | F | G | F | E |
| Sodium hypochlorite (aqueous solutions) | G | G | F | G | F | E |
| Sodium silicate (aqueous solutions) | E | E | E | E | E | - |
| Sodium sulphate (aqueous solution) | E | E | E | E | E | - |
| Sodium sulphide | E | E | E | E | E | - |
| Stearic acid | E | E | E | E | E | E |
| Sulphur | G | G | G | G | G | - |
| Sulphur dioxide | C | C | C | C | C | - |
| Sulphuric acid (hot concentrated 96°C) | C | C | C | C | C | C |
| Sulphuric acid (diluted 20%) | C | C | C | F | C | E |
| Sulphuric anhydride | F | F | C | F | C | - |
| Sulphurous acid | C | C | C | F | C | C |
| T Tannic acid | G | G | F | G | F | E |
| Tannin | E | E | E | E | E | E |
| Tartaric acid 20% | G | G | E | G | E | - |
| Tetraethyl lead | G | G | G | F | G | - |
| Toluene | C | C | F | C | F | E |
| Turpentine | C | C | G | C | G | - |
| U Urea | E | E | E | G | E | - |
| V Vinyl acetate | E | E | E | E | E | - |
| Vinyl chloride | C | C | C | C | C | - |
| W Water | E | E | E | F | E | E |
| X Xylene | C | C | F | C | F | G |
| Z Zinc chloride (aqueous solutions) | E | E | E | E | E | E |
| Zinc sulphate (aqueous solutions) | E | E | E | E | E | - |



*These notes shall be intended only as a guide to chemical compatibility with the internal fluid; other combined factors in working operations, as pressure, temperature, vibrations and so on, may impact on the service life.

Estas notas deben ser interpretadas solo como una guía de la compatibilidad química con el fluido interno; otros factores combinados en operaciones de trabajo, como presión, temperatura, vibraciones, etc. Pueden impactar en la vida de servicio.

- E** – Excellent - Small or negligible change of compound properties: no problem for use.
Excelente - Cambio insignificante de las propiedades del compuesto: ningún problema de uso.
- G** – Good - Minor changes of compound properties: product certification according to standard qualification tests needed.
Bueno - Cambios menores de las propiedades del compuesto: certificación del producto de acuerdo con las pruebas de calificación estándar necesarias.
- F** – Fair - Significant changes of some compound properties: product validation under simulated or actual working conditions required.
Regular - Cambios significativos en algunas propiedades del compuesto: validación de producto bajo condiciones de trabajo simuladas o actuales requeridas.
- C** – Conditional - Significant change of some compound properties: use is not recommended unless an hose validation availability.
Condicional - Cambios relevantes de algunas propiedades del compuesto: su uso no está recomendado a menos que exista validación de la manguera.

The hydraulic hoses of the Manuli product range are not designed for immersion in the service fluid. This type of special applications should be avoided or carefully studied with additional external protections for the hoses, selection of special hose types, e.g. with thermoplastic cover and validation on the specific application. The turbulence of the fluid, the high temperature and nature of the fluid as well as other elements may impact the properties or integrity of the hose cover material (the cover compound of the hose is designed to resist to oil drops and external agents, not immersion in the service fluid).

For more detailed information contact Manuli Rubber Industries

La gama de productos de las mangueras hidráulicas Manuli no están diseñadas para la inmersión en el fluido de servicio. Este tipo de aplicaciones especiales debe evitarse o estudiarse cuidadosamente con protecciones adicionales externas para las mangueras, la selección de mangueras especiales, por ejemplo con cubierta termoplástica y aprobada para la aplicación específica. La turbulencia del fluido, la alta temperatura y la naturaleza del fluido así como otros elementos pueden impactar las propiedades o integridad de la cubierta de la manguera (el compuesto de la cubierta de la manguera está diseñada para resistir aceites y agentes externos, pero no la inmersión en el fluido de servicio).

Para más información contacte con Manuli Rubber Industries.