



Synthetic Fire Resistant Hydraulic

Hysyn FR Series

Full Synthetic

Full Synthetic Products

- **DSL® Series**
- **SH® Series**
- **Lubricant Coolant**
- **Supra Coolant®**
- **Supra-32**
- **AU-46**
- **Food Grade Series**
- **SH® Turbine Oils**
- **Ultima & Ultima 68**

Premium Synthetic Blend

- **PS Series**

Synthetic Blend

- **TM Series**

Additional Synthetic Lubricants for these Applications

Air, Gas & Refrigeration Compressors

Air Tools

Vacuum Pumps

Turbines

Blowers

Chain & Oven Conveyors

Heat Transfer Fluids

Barrier Fluids



**ISO 9001: 2000 & 14001
Registered**

Hysyn FR Series Benefits

- Hysyn FR Fluids are based on high quality synthetic, organic, esters and carefully selected additives achieve excellent hydraulic fluid performance
- Provides lubrication level equal to premium anti-wear hydraulic oils
- Viscosity Grades of 46 and 68, to meet all hydraulic fluid requirements
- Fire-resistant
- Self-extinguishing properties limit the spread of fire
- Factory mutual certified
- Non irritating and contains No hazardous ingredients
- Ready Biodegradable and Non Toxic to aquatic life
- Not Water Soluble
- Easily removed from collector systems by standard skimming techniques

Hysyn FR Series Products are recommended for use in the following application:

Hysyn FR Series Products are recommended for use in fire hazardous and environmentally sensitive hydraulic applications

Summit Industrial Products is recognized as an industry leader in lubricating technology. Summit is a subsidiary of Klüber Lubrication, one of the world's leading manufacturers of specialized high performance greases, oils, pastes and coatings.

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PRODUCTS	HYSYN FR-46	HYSYN FR-68
Appearance	Yellow to Amber fluid	Yellow to Amber fluid
Kinematic viscosity at 40°C at 100°C	46 mm ² /s or cSt 10 mm ² /s or cSt	68 mm ² /s or cSt 14 mm ² /s or cSt
Viscosity index	220	215
Density at 15°C	0.90 g/cm ³	0.91 g/cm ³
Acid number	2.0 mg KOH/g	1.5 mg KOH/g
Pour point	<-20°C (<-4°F)	<-20°C (<-4°F)
Foam test	50-0 ml	50-0 ml
Corrosion protection	Pass Pass	Pass Pass
Flash point	275°C (527°F)	275°C (527°F)
Fire point	325°C (617°F)	325°C (617°F)
Auto ignition temperature	450°C (842°F)	450°C (842°F)
Fire resistance - Factory Mutual	Pass	Pass
Pump test - ASTM D2882	< 5 mg wear	<5mg wear
Gear lubrication	> 12 FZG load stage	> 12 FZG load stage
Demulsibility	41-39-0 (15) ml-ml-ml (min.)	42-38-0 (30) ml-ml-ml (min.)

NOTE: The information shown here is the result of careful testing in our laboratories, complemented by selected literature. It does not in any way constitute a guarantee, nor does it serve as a license to operate any patent. Due to widely varying conditions of product use, which are beyond our control, it is strongly recommended that the product be tested for suitability. Product typical properties in this publication are current as of January 14, 2005.

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Hysyn FR Series

Material Compatibility

Elastomers

The chart contains our recommendations regarding the use of Hysyn FR Series with commonly used elastomers. Three categories of elastomer applications are listed. "Static" refers to trapped nonmoving seals such as O-rings in valve subplates and rigid, low pressure hose connections. "Mild-Dynamic" applications include accumulator bladders and hose linings where the hoses are exposed to high pressure and light flexing. "Dynamic" refers to cylinder rod seals, pump shaft seals and constantly flexing hydraulic hose.

Elastomer Compatibility

ISO 1629	Description	Static	Mild-Dynamic	Dynamic
NBR	Medium to high nitrile rubber (Buna N, >30% acrylonitrile)	C	C	C
NBR	Low nitrile rubber (Buna N, <30% acrylonitrile)	S	N	N
FPM	Fluoroelastomer (Viton®)	C	C	C
CR	Neoprene	S	S	S
IRR	Butyl rubber	S	N	N
EPDM	Ethylene propylene rubber	N	N	N
AU	Polyurethane	C	C	C
PTFE	Teflon®	C	C	C

C = Compatible

S = Okay for short-term use, but replace with a completely compatible elastomer is recommended at the earliest convenience

N = Not compatible

Metals

HYSYN FR Series is compatible with iron and steel alloys and most nonferrous metals and their alloys. HYSYN FR Series is not compatible with lead, cadmium, zinc, and alloys containing high levels of these metals. Suitable substitutes for these materials are available and should be used.

Paints and coatings

HYSYN FR Series is compatible with multicomponent epoxy coatings. HYSYN FR Series is not compatible with zinc-based coatings. Specific coating and application recommendations can be obtained from coating manufacturers or directly from Summit Industrial Products.

Conversion Procedures

Mineral oil-based fluids

HYSYN FR Series fluids are miscible and compatible with nearly all mineral oil-type hydraulic fluids. To convert a system using these types of fluids, simply drain and recharge with HYSYN FR Series. For proper fire resistance, at least 95% of the oil-based fluid should be removed.

Water glycol (HFC) and invert emulsions (HFB)

HYSYN FR Series fluids are not miscible or compatible with water-containing fluids and these fluids must be removed from the system. Remove most of the fluid by draining the reservoir and lines. Remove residual fluid by circulating HYSYN FR Series and draining. Refill with fresh fluid. Repeat until residual fluid is less than 1% of system volume.

Phosphate ester

HYSYN FR Series fluids are compatible with some, but not all phosphate esters. Testing prior to conversion is recommended. Please contact Summit Industrial Products for testing and conversion recommendations.