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**Operating Solutions**  
**North America**

PRODUCT	TECHNOLOGY	BENEFITS
<b>FIRE-RESISTANT HYDRAULIC FLUIDS</b>		
HFA (High-Water Fluids)		
QH HYDROLUBRIC™ 120 B	Full Solution Synthetic	HFA or high water content fluids (HWCF's) are hydraulic fluids that combine the excellent fire resistant properties of water with lubrication and corrosion protection from an additive concentrate. Because water is the major component (90% or more) of an HFA fluid, hydraulic equipment using this type of fluid must be capable of operating with a low viscosity fluid.
QH HYDROLUBRIC™ 123 B	Full Solution Synthetic	HFA concentrates lubricate valves, improve seal life, inhibit corrosion in components and piping, and control bacterial and fungal growth in the system.
HFC (Water-Glycol Fluids)		
QH HOUGHTOSAFE™ 419 R	High-Performance Water Glycol FM Approved	HFC or water glycol fluids are the most widely used fire resistant hydraulic fluids because of their price-quality and their combination of fire resistant properties with good lubrication performance. Our HFC fluids are formulated to provide best-in-class lubrication properties, excellent shear stability and exceptional corrosion inhibition.
QH HOUGHTOSAFE™ 620	Premium Water Glycol FM Approved	The water glycol fire resistant hydraulic fluids supplied by Quaker Houghton are endorsed by original hydraulic component and equipment manufacturers. The global comparable unique performance of our HFC Fire Resistant Hydraulic Fluids combines reliability and safety worldwide.
HFDu (Synthetic Fluids)		
QUINTOLUBRIC® 888 46	ISO VG 46 Synthetic Polyol Ester FM Approved	Quaker Houghton is the global market leader in ester-based fire resistant hydraulic fluid technology. We have more than 50 years experience with the application of these fluids at leading companies in the steel, aluminium, mining, automotive and power generation industries.
QUINTOLUBRIC® 888 68	ISO VG 68 Synthetic Polyol Ester FM Approved	Quaker Houghton HFDu fire resistant hydraulic fluids are designed to replace anti-wear, mineral oil-based hydraulic fluids used in applications where fire hazards exist. They can also be used in environmentally sensitive hydraulic applications without compromising the overall hydraulic system operations. These fluids do not contain water, mineral oil, or phosphate ester. They are based on high-quality, synthetic, organic esters and carefully selected additives to achieve excellent and reliable hydraulic fluid performance.
QH COSMOLUBRIC™ B 220	ISO VG 46 Natural Ester FM Approved	
QH COSMOLUBRIC™ B 230	ISO VG 68 Natural Ester FM Approved	Quaker Houghton HFDu fire resistant hydraulic fluids feature excellent lubricity and shear stability as well as high biodegradability.

# Operating Solutions



PRODUCT	TECHNOLOGY	BENEFITS
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## PREMIUM INDUSTRIAL LUBRICANTS

AW Hydraulic Oils	Mineral Oil Anti-Wear	Fully inhibited for service in piston, vane, or gear pumps operating at pressures >1,000 psi and/or speeds >1,200 rpm.
Ashless Hydraulic Oils	Zinc Free	Formulated with advanced additive package to provide lubricity, oxidation stability, hydrolytic stability and anti-corrosion.
Gear Oils	Lead-Free, High EP	Formulated with a complete additive package featuring extreme pressure agents to provide excellent lubricity
Turbine and Hydraulic Oils (R&O)	Rust and Oxidation Inhibited	Corrosion and oxidation inhibited oils for turbines, machine tools, air compressors, and low pressure/low speed hydraulic systems
Circulating Oils	High Demulsibility Fluids	Formulated to meet or exceed the Morgan Morgoil "super demulsibility" advanced lubricant specification.
Way Oils	Friction Modified Fluids	Formulated with friction modifying additives that provide smooth slidable movement or anti stick-slip on sliding machine ways
Spindle Oils	High-Speed Lubricating Oils	Corrosion and oxidation inhibited oils with high demulsibility intended for use in high speed spinning and twister spindle bearings.

## QUAKERTEK™ PREMIUM GREASES

		TEMPERATURE	WATER RESISTANCE	SHEAR STABILITY
Aluminum Complex (AX)	High Water Resistance	● ● ●	● ● ● ●	● ● ●
Calcium Sulfonate (CS)	High Water Resistance/ High EP	● ● ● ●	● ● ●	● ● ● ●
Lithium (L)	Multipurpose Application	● ●	● ●	● ● ●
Lithium Complex (LX)	High-Performance Multipurpose	● ● ● ●	● ● ● ●	● ● ● ● ●
Polyurea (UX)	Extreme Temperature Stability	● ● ● ● ●	● ● ●	● ● ● ●

● = poor ● ● = okay ● ● ● = good ● ● ● ● = better ● ● ● ● ● = best

## SERVICE OFFERING

Technical Support
QH FLUID INTELLIGENCE™
On-Site Training
Site Surveys
Dedicated Laboratory and Fluid Analysis