

Fluid[®]

TECHNICALLY ADVANCED,
ECO-FRIENDLY CHEMICAL
PRODUCTS



ONSHORE ENERGY & PETROLEUM SOLUTIONS

WE CREATE | WE COLLABORATE | WE CARE



Fluid Technology Overview

With the increased focus on key performance indicators (KPIs) related to environmental, social and corporate governance (ESG), sustainability and safety, industry is looking to new technology to improve efficiency, cost, safety and environmental factors.

Fluid is a global chemical company specializing in the development and manufacture of eco-friendly, low-hazard, technically advanced chemical systems. With over 170 granted or pending patents, Fluid is committed to innovating products that are safer, transformative and have a long-term positive impact for a wide range of industries and applications.

ENVIRO-SYN® HCR® MODIFIED ACID™ AND SYNTHETIC ACID™ TECHNOLOGY

Enviro-Syn HCR Modified and Synthetic Acid technology provides a safe, effective alternative to conventional mineral and organic acids. HCR series products greatly reduce the hazardous effects of conventional acids through unique control of reaction rates while providing high-performance and operational benefits.

HCR can be used as a functional equivalent to strong acids to provide an improved health, safety and environmental (HSE) profile, in addition to operational and cost benefits. HCR can also be used as a functional equivalent to weak acids to provide the superior performance of a strong acid.

- ✓ Outstanding HSE profile
 - Non-corrosive to skin
 - Low fuming
 - Biodegradable
 - Non-regulated for ground transport (USDOT)
- ✓ Ultra-low metal corrosion
- ✓ Methodical, controlled spend rate
- ✓ Compatible with typical elastomers used in oil and gas (e.g., Viton, Nitrile and EPDM)
- ✓ High stability in solution
- ✓ Minimal to no exothermic reaction
- ✓ Higher spent pH than strong acids
- ✓ Minimal reprecipitation of scale as pH rises

APPLICATIONS

Enviro-Syn HCR-7000®

- ✓ Acid spearhead, stimulation and workover treatments
- ✓ Removal of downhole formation, scale, cement or mineral deposits
- ✓ Low to high temperature wellbore conditions
- ✓ Blends available up to 180°C (356°F)

Enviro-Syn HCR-6000®

- ✓ Matrix stimulation / acid fracturing of carbonate formations
- ✓ Optimal acid flux and wormholing performance at lower injection rates
- ✓ Ideal for SAGD and CSS scale treatments
- ✓ Effective, broad-range scale removal and prevention
- ✓ Blends available up to 220°C (428°F)



WIRELINE COMPATIBLE ENVIRO-SYN HCR MODIFIED ACID SYSTEMS

Fluid's wireline compatible HCR series blends enable operators to spot acid with plug and perforating gun bottom hole assemblies (BHAs) saving substantial amounts of water and time in hydraulic fracturing operations.

- Reduces frac spread pumping time (average 10 – 15 min/ stage depending on well design) as acid is at perforations when fracture treatment commences
- Reduces water requirements by one hole volume per stage (average 30 – 50 m³/stage, 8,000 – 13,000 gal/stage depending on well design)
- Allows acid to be accurately spotted across all perforation clusters for optimal acid diversion and perforation efficacies
- Long-term casing and cable corrosion protection in case of delayed events
- No degradation of wireline coating or jacket





Specialty Scale Dissolvers

In addition to HCR technology, Fluid has invested in the innovation of high-performance dissolvers for challenging sulfate and sulfide scales including strontium, barium and calcium sulfate, and metal sulfides.

Enviro-Syn BSD-40E™

- ✓ Broad-range, heavy-duty descaler
- ✓ Lower pH than competing products
- ✓ Reduces size of scale particles in solution and limits reprecipitation of scale
- ✓ Non-regulated for ground transport (USDOT)

Enviro-Syn MSD-30™

- ✓ Dissolves metal sulfides without generating H_2S
- ✓ Low fuming, non-oxidizing
- ✓ Free of phosphorous and halogens
- ✓ Non-regulated for ground transport (USDOT)

APPLICATIONS

Downhole Scaling

- ✓ Near wellbore and formation damage
- ✓ Downhole tubing, equipment and pumps
- ✓ Injection and geothermal wells

Surface Scaling

- ✓ Topsides processing and production equipment
- ✓ Remediation of refineries, midstream pipelines and associated equipment
- ✓ Heat exchangers, industrial boilers, scrubbers and dehydration units
- ✓ Water cooling systems and distribution piping

Energy & Petroleum Acid Portfolio Overview

Product	Applications							Features					Specifications		Description
	Spearhead ¹	Compatible with Wireline ¹	Acid Fracturing ¹	Production ¹	Injection Wells	Thermal (SAGD, CSS)	Remedial Work	Low Corrosion Rate ²	Non-corrosive to Skin	Low Fuming ³	Biodegradable	Non-regulated for Ground Transport (USA)	HCl Solubilizing Equivalency (%) ⁴	Maximum Temperature (°C / °F)	
HALOGEN FREE, CHROME SAFE SYNTHETIC ACID															Extremely effective, chloride-free oilfield stimulation acid and scale dissolver compatible with chrome alloys.
HCR-3000®	✓			✓	✓		✓	✓	✓	✓	✓	✓	20	220/430	Liquid acid replacement stable at ultra-high temperatures.
HCR-4000		✓					✓	✓		✓	✓	✓	7 ⁴	110/230	Dry acid replacement. Recommended maximum strength of 30% concentration.
HIGH TEMPERATURE MODIFIED ACID															High solubilizing ability and controlled reaction rate vs. HCl for improved scale penetration. Reduced precipitation issues with ultra-low, long-term corrosion rates.
HCR-6000®			✓			✓		✓	✓	✓	✓	✓	15	220/430	Controlled reaction rates for more efficient wormholing at lower stimulation rates and volumes. Stable at ultra-high temperatures.
HCR-7000®	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	15	150/302	Increased reaction rate vs. HCR-6000 systems.
HCR-7000-WL®	✓	✓		✓	✓			✓	✓	✓	✓	✓	15	130/270	Long-term wireline and casing corrosion protection allowing the spotting of acid with plug-and-perf during wireline pump down operations.
HCR-7000FRACWL-90	✓	✓						✓		✓	✓		20	100/212	Higher solubilizing capability up to 100°C/212°F.
HCR-7000FRACWL-110	✓	✓						✓		✓	✓		20	120/248	Higher solubilizing capability up to 120°C/248°F.
HCR-7000FRAC+® WL	✓	✓						✓			✓		28	110/230	Highest solubilizing capability with immediate acid spend.
HCR-8000™	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15	180/356	Optimized acid flux vs. HCR-7000. Stable at high temperatures.

¹Typical dilutions

Spearhead: 33% and 50%

Acid Fracturing and Production: 50% – 90%

²Working concentration corrosion rates <0.05 lb/ft² at 6 hours

³100% concentrate.

⁴30% dilution

Sustainable, Technically Advanced Chemical Products

Fluid is a global chemical company specializing in the development and manufacture of eco-friendly, low-hazard, technically advanced chemical systems.



Headquartered in Calgary, Alberta, Canada in 2011, Fluid has manufacturing facilities and partnerships strategically positioned in key markets around the world.

Founded on the principle of researching and developing safer, eco-friendly chemical technologies, the Fluid team is composed of PhD scientists, master's degree chemists, engineers and operational experts committed to a better, cleaner future.

At more than 130,000 square feet, the corporate research and manufacturing facilities are a hub of innovation and superior quality manufacturing. High standards of quality are evidenced by facility design, detailed operational procedures, optimization of production, QA/QC, and post-sale customer care commitment.

At Fluid, we are driven to solve problems identified by the market and our customers, and our mission is to create products that are effective, technically advanced and minimize impact to our environment, while providing the highest levels of quality and safety.

PRODUCT PORTFOLIO

Broad portfolio includes a range of proprietary, high-performance, eco-friendly chemistries.

MODIFIED & SYNTHETIC ACIDS

Product family includes fit-for-purpose, safe and effective alternatives to organic and inorganic acids.

MODIFIED SODIUM HYDROXIDE

Product family has comparable abilities to caustic solutions while reducing hazardous exposure.

DISSOLVERS

Products formulated with safer solvents to provide eco-friendly options with an improved HSE profile.

CORROSION INHIBITORS

Formulations with superior corrosion protection suitable for ultra high-temperature, offshore and industrial applications.

INDUSTRIAL CLEANING

Eco-friendly cleaning formulations for clean-in-place, scale removal, corrosion protection, microorganism and odor control, and more.

Global Presence

Fluid operates over 130,000 sq/ft of company owned technology production and R&D sites as well as maintains strategic partnerships with third-party production and packaging sites around the world to serve an international customer base.



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