

Enviro-Syn<sup>®</sup> HCR-7000FRAC+<sup>®</sup> WL is part of the proprietary, eco-friendly Modified Acid<sup>™</sup> product portfolio that minimizes the corrosion rates and specific negative HSE properties of hydrochloric acid (HCl), while maintaining the positive aspects of solubilizing ability and reactivity rates. Enviro-Syn HCR-7000FRAC+ WL is a strong modified acid that in concentrate has similar solubilizing abilities as 28% HCl and can be enhanced through the addition of conventional oilfield chemistry.

Fluid's wireline compatible blends enable operators to spot acid with perforating bottom hole assemblies (BHAs) saving substantial amounts of water and time in hydraulic fracturing operations (patented formulas and methods). Enviro-Syn HCR-7000FRAC+ WL is an effective spearhead and wireline compatible acid system at a competitive price point. It is typically deployed at 25% (1:3 HCR:water) or 50% (1:1 HCR:water) concentration to provide exceptional value and reduce transportation/storage costs.

## APPLICATIONS

- ✓ Acid spearhead, stimulation and workover treatments
- ✓ Enables spotting of spearhead acid with the perforating guns (patented formulas and methods)
- ✓ Acid injection with coil tubing
- ✓ Low to high temperature wellbore conditions

Enviro-Syn HCR-7000FRAC+ WL is compatible with all coated and uncoated wireline cables currently available and manufactured in North America.

## PHYSICAL PROPERTIES

Appearance:	Clear, colorless to yellow
Specific Gravity:	1.125 - 1.165
Odor:	Moderate
Boiling Point:	> 100°C (212°F)
pH:	< 1.0
Solubility:	Soluble in water
Shelf Life:	3 months

## SUPPORT HSE AND ESG GOALS



Biodegradable



Reduced fuming

## FEATURES & BENEFITS

- ✓ Aggressive reaction rate (spend nature) versus typical modified or synthetic acid systems for spearhead treatments
- ✓ Wireline compatible – custom blend allows spotting of acid with wireline and tools in hole
- ✓ Concentrated blend reduces transportation/storage costs
- ✓ Reduces frac spread pumping time (average 10 – 15 min/stage depending on well design) as ball and acid are at perforations
- ✓ Reduces water requirements by one hole volume per stage (average 30 – 50 m<sup>3</sup>/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 frac placement
- ✓ Adjust concentrations on the fly for zones with tougher breakdowns
- ✓ Minimal reprecipitation of scale at high pH levels
- ✓ Long-term casing and cable corrosion protection in case of delayed events
- ✓ No degradation of wireline coating or jacket
- ✓ Compatible with typical elastomers used in oil and gas (e.g., Viton, Nitrile and EPDM)
- ✓ High stability in solution
- ✓ Blends available up to 110°C (230°F)

## TOTAL SOLUBILITY

Table 1. Total solubility of Enviro-Syn HCR-7000FRAC+ WL.

Acid	Scale	Total Solubility (kg/m <sup>3</sup> )	Total Solubility (lb/gal)
HCR-7000FRAC+ WL Concentrate	CaCO <sub>3</sub>	392	3.27

NOTE: High temperature corrosion inhibitor loadings can alter total solubilizing ability.

## CORROSION RATES

With ultra-low metal corrosion properties, Enviro-Syn HCR-7000FRAC+ WL has corrosion rates well below oilfield industry accepted values on typical oilfield alloys.

Table 2. Corrosion rates of Enviro-Syn HCR-7000FRAC+ WL blends.

Coupon	Time (hrs)	Temperature (°C)	Blend (Acid:Water)	Corrosion Rate (lb/ft <sup>2</sup> )	Pitting Index
P110	6	90	1:3	0.004	0
L80	6	90	1:3	0.003	0
J55	6	90	1:3	0.003	0
QT-900	6	90	1:3	0.005	0
J55	6	110	1:3	0.024	0
P110	6	90	1:1	0.002	0
L80	6	90	1:1	0.003	0
J55	6	90	1:1	0.003	0
QT-900	6	90	1:1	0.005	0
J55	6	110	1:1	0.023	0

NOTE: Oilfield industry typically accepts a corrosion rate less than 0.050 lb/ft<sup>2</sup> at 6 hours. Coiled tubing typically accepts a corrosion rate less than 0.020 lb/ft<sup>2</sup> at 6 hours.

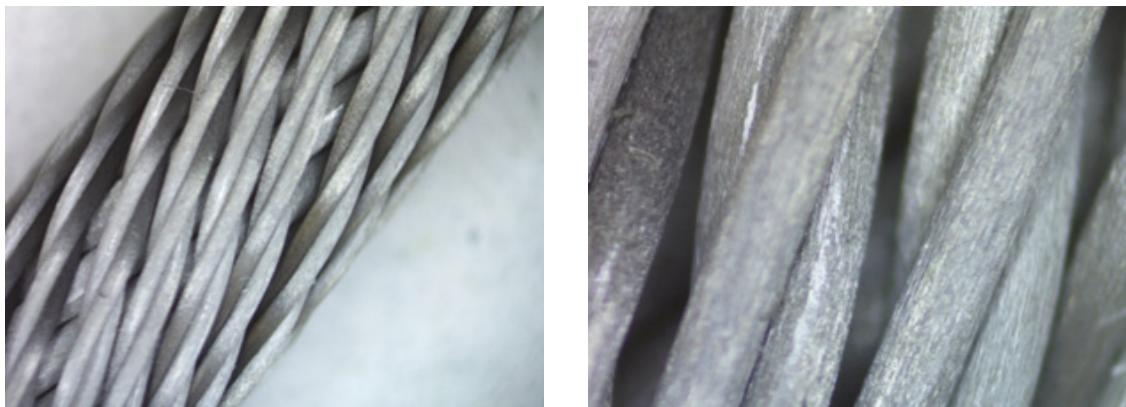


Figure 1. Magnified wireline images (left: 10x, right: 40x) after exposure to 1:3 Enviro-Syn HCR 7000 FRAC+ WL at 90°C (195°F) for 6 hours.

Table 3. Tensile breaking force of wireline treated with 1:1 & 1:3 Enviro-Syn HCR-7000FRAC+ WL blends.

Duration (hrs)	Dilution (Acid:Water)	Wireline Type	Tensile Breaking Force		
			N	lbF	% Retained
Control	-	Exterior Strands	1252 ± 55	282 ± 12	N/A
		Interior Strands	2477 ± 45	557 ± 10	N/A
6	1:3	Exterior Strands	1189 ± 90	267 ± 20	94.9
		Interior Strands	2438 ± 54	548 ± 12	98.4
24	1:3	Exterior Strands	1120 ± 23	270 ± 5	95.8
		Interior Strands	2289 ± 159	515 ± 36	92.4
6	1:1	Exterior Strands	1197 ± 51	269 ± 17	95.5
		Interior Strands	2364 ± 111	532 ± 25	95.4
24	1:1	Exterior Strands	1160 ± 73	261 ± 16	92.6
		Interior Strands	2143 ± 104	482 ± 23	86.5

## SAFETY, STORAGE & HANDLING

- ✓ Stored in sealed containers, such as plastic pails, lined drums and HDPE IBC totes
- ✓ Fittings and valves should be HDPE, brass or stainless steel
- ✓ If heating, use a stainless-steel heat exchanger or tank steam coils, keeping the temperature below 65°C (150°F)
- ✓ Shelf life of > 1 year; confirm corrosion if product sits for > 60 days
- ✓ Consult SDS for additional information and PPE requirements

**Talk to us today about our revolutionary products available globally.**  
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