

Enviro-Syn[®] HCR-7000 N-Hance is part of the established proprietary, eco-friendly Modified Acid[™] product portfolio with the advantage of an added encapsulated surfactant package for deeper reservoir penetration due to the slow-release emulsion. Enviro-Syn HCR-7000 N-Hance has all the advantages of a regular Enviro-Syn HCR-7000 with the additional benefit of being able to lift hydrocarbons from the mineral surface to enable improved access for the acid. Enviro-Syn HCR-7000 N-Hance is a strong modified acid that in concentrate has similar solubilizing abilities as 15% HCl.

High spent pH stability, and the calcium and iron-coordinating effects of Enviro-Syn HCR-7000 N-Hance reduces the precipitation issues prevalent with HCl. This will minimize or eliminate formation damage that can occur when using HCl as a spearhead acid and assist with effluent management.

APPLICATIONS

- ✓ Acid spearhead, stimulation and workover treatments
- ✓ Removal of downhole formation, scale, cement or mineral deposits
- ✓ Low to high temperature wellbore conditions

FEATURES & BENEFITS

- ✓ Encapsulation of surfactants slows adsorption onto the formation surface, enabling deeper penetration of the N-Hance product into the reservoir
- ✓ Compatible with crude oils, formation brines
- ✓ Uses eco-friendly, biodegradable solvents and surfactants
- ✓ Strips oils from mineral surface
- ✓ Aids prevention of sludge formation
- ✓ Ultra-low, long-term corrosion effects
- ✓ Compatible with typical elastomers used in oil and gas (e.g., Viton, Nitrile and EPDM)
- ✓ High long-term stability in solution
- ✓ Blends available up to 150°C (302°F)

TOTAL SOLUBILITY

Table 1. Total solubility of Enviro-Syn HCR-7000 N-Hance on a variety of scales.

Acid	Scale	Total Solubility (kg/m ³)	Total Solubility (lb/gal)
15% HCl	CaCO ₃	211	1.76
HCR-7000 N-Hance Concentrate	CaCO ₃	216	1.80
HCR-7000 N-Hance Concentrate	CaMg(CO ₃) ₂	190	1.59
HCR-7000 N-Hance Concentrate	FeS	170	1.42

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

PHYSICAL PROPERTIES

Appearance:	Amber liquid
Specific Gravity:	1.1
Odor:	Slight
Freezing Point:	≈ -52°C (-61.6°F) ≈ -16°C (3.2°F) at 1:2 (HCR:water)
Boiling Point:	> 100°C (212°F)
pH:	< 1.0
Salinity:	≈ 32%
Solubility:	Soluble in water
Shelf Life:	> 1 year

Outstanding HSE profile

- Non-corrosive to skin
- Low fuming*
- Biodegradable
- Non-regulated for ground transport (USDOT)

*NOTE: Reduced immediate evolution of hydrogen chloride vapor at ambient temperature

REACTION RATES

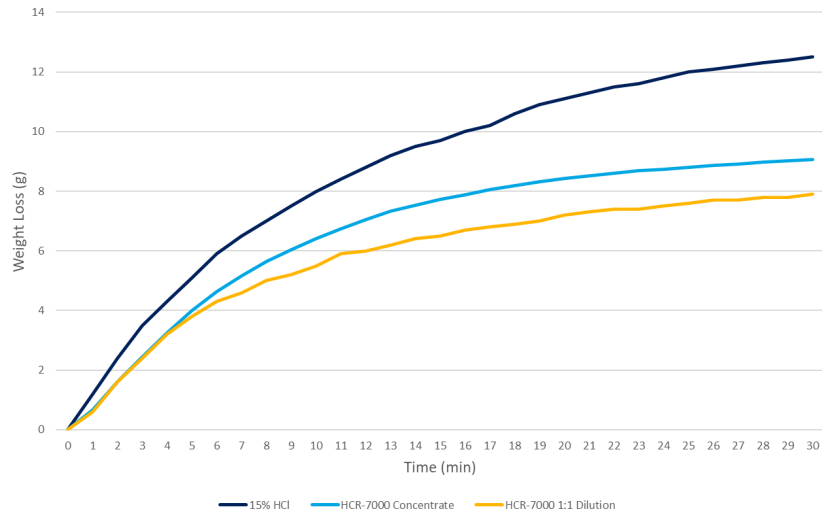


Figure 1. Reaction rate comparison of HCR-7000 N-Hance concentrate versus 15% HCl with calcium carbonate. Due to the modified nature of HCR-7000 N-Hance, the reaction rate is more controlled compared to 15% HCl. Testing was performed at 20°C (68°F).

CORROSION RATES

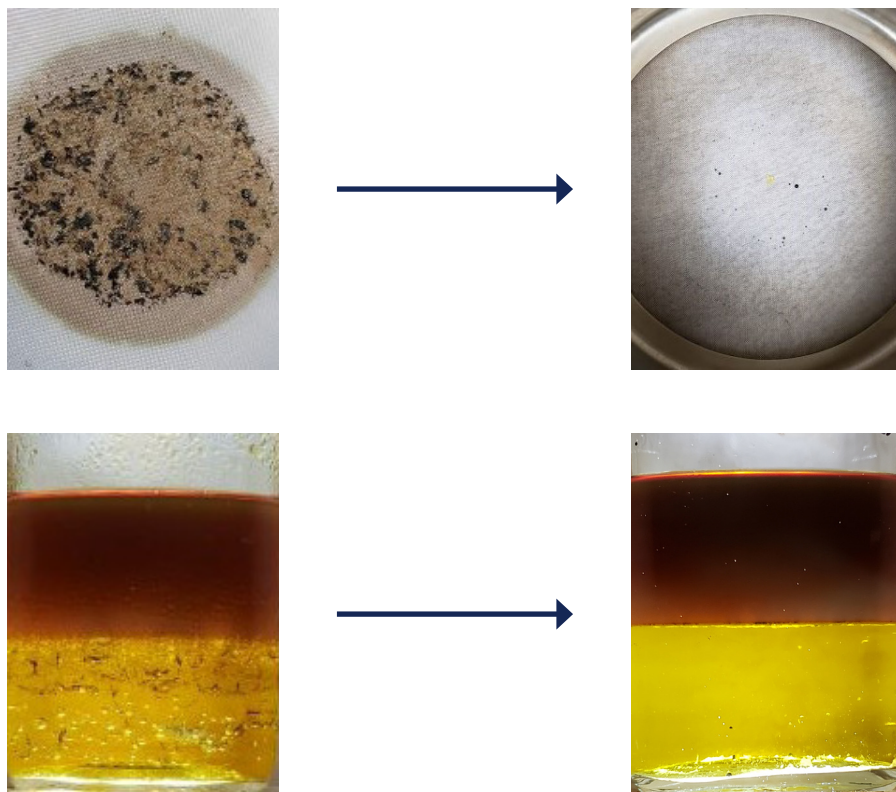
With ultra-low metal corrosion properties, Enviro-Syn HCR-7000 N-Hance has corrosion rates well below oilfield industry accepted values on typical oilfield alloys.

Table 2. Corrosion rates of Enviro-Syn HCR-7000 N-Hance blends.

Blend (HCR:water)	Temp (°C / °F)	Coupon	Time (hr)	Corrosion (mm/yr)	Corrosion (lb/ft ²)
1:1	90 / 195	L-80	6	6.255	0.007
1:1	90 / 195	N-80	6	6.015	0.007
1:1	90 / 195	J-55	6	3.465	0.005
1:1	90 / 195	P-110	6	11.792	0.013
1:1	110 / 230	QT-900	6	8.520	0.009
1:1	90 / 195	1018CS	6	6.531	0.007
1:2	120 / 250	L-80	6	17.906	0.020
1:1	120 / 250	P-110	6	27.880	0.031
1:1	150 / 300	L-80	4	37.183	0.027

NOTE: Oilfield industry typically accepts a corrosion rate less than 0.050 lb/ft² at 6 hours. Coiled tubing typically accepts a corrosion rate less than 0.020 lb/ft² at 6 hours.

HCR-7000-WL[®] with 1000ppm iron spike and Mannville crude oil; right: 2% N-Hance product added.



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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