

Enviro-Syn[®] HCR-7000[™]

Modified Acid System

A high performance Modified Acid[™] that is a replacement for all hydrochloric acid blends with equivalent solubilizing performance without the associated hazards.

Enviro-Syn[®] HCR-7000[™] is part of the “environmentally responsible – technically advanced” Modified Acid[™] system line. HCR-7000 has superior performance properties compared to hydrochloric acid, without the extremely hazardous/negative exposure, transport, effluent, and corrosive properties.

It is a high-performance replacement for all hydrochloric acid blends and can be utilized for the same applications such as carbonate scale removal, matrix acidizing, stimulation, filter cake clean up and spearhead acid.

Enviro-Syn[®] HCR-7000[™] exhibits superior performance in matrix acidizing with greater wormholing when compared to hydrochloric acid. It significantly lowers corrosion rates particularly at high temperatures, resulting in more effective stimulation with minimal risk of damage to metal components and less hazardous exposure to personnel.

Features

- Non-corrosive to metals even at high temperatures
- Dermal friendly and low fuming
- Dissolution capability equivalent to 15% HCl with high pH when spent
- Biodegradable (OECD 301°F) > 34% 10 days

Benefits

- Greatly minimizes casing corrosion / integrity concerns
- Greatly minimizes the HSE risks compared to hydrochloric acid, which can cause irreversible lung damage, tissue damage and even death in some situations
- Can be used as replacement for HCl whilst minimizing the risk of re-precipitation when acid is spent
- Suitable for use in environmentally sensitive areas

Technical Specification

Appearance	Amber liquid
Specific Gravity	1.105
Freezing Point	~ -58°F / 33% blend (fresh water diluted): ~4°F
Boiling Point	>212°F
pH	<0.5
Odor	Slight
Salinity	Approx. 32%
Solubility	100% in water
Thermal Stability	375°F
Shelf Life	>1 year
CaMg(CO ₃) ₂ Solubility	Approx. 1.6lb/gal
CaCO ₃ Solubility	Approx. 1.8lb/gal
FeS Solubility	Approx. 1.4lb/gal



HCR-7000 Corrosion Protection

Conc. %	Temp °F	Coupon	Time (hours)	Corrosion (lb/ft ²)
50	195	1018CS	6	0.014
50	195	J-55	6	0.003
50	195	L-80	6	0.005
50	195	N-80	6	0.009
50	195	P-110	4	0.013
50	195	QT-900	6	0.003
50	248	L-80	6	0.022
50	248	P-110	6	0.024
50	302	L-80	4	0.018
50	374	L-80	2	0.026

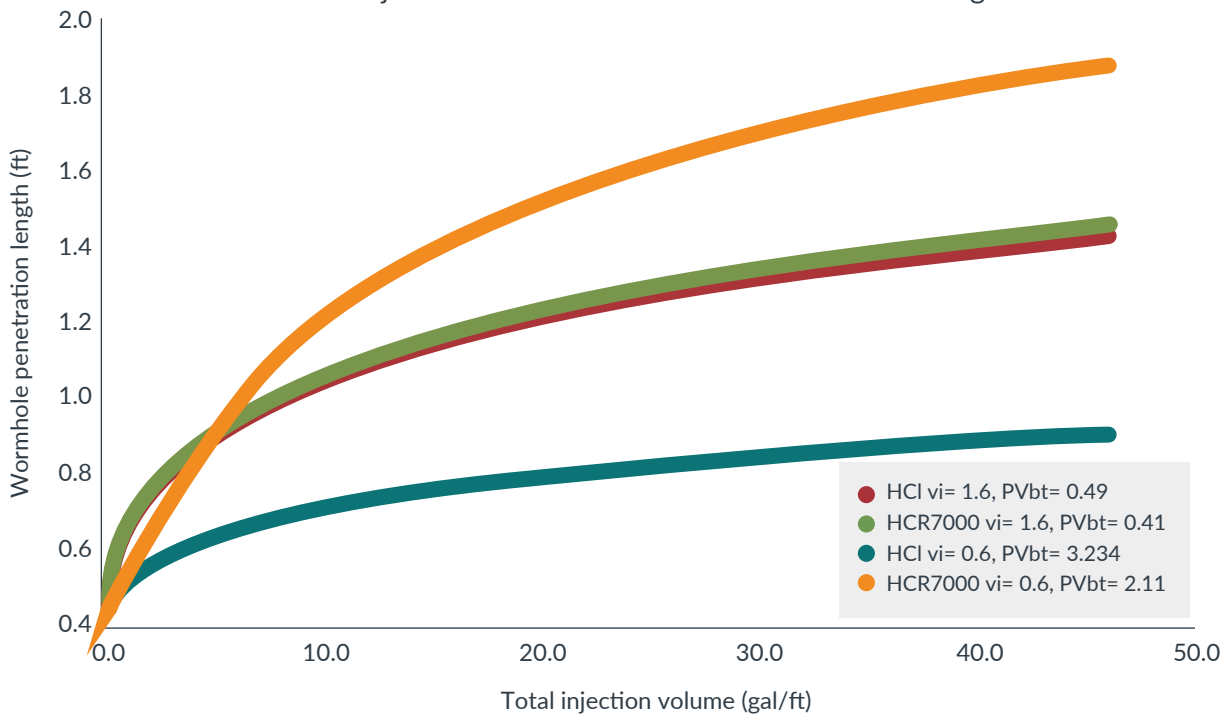


P-110 Alloy in inhibited 15% HCl 300°F Acid blend after 6 hours



P-110 in 33% HCR-7000-WL Eagleford (300°F) Modified Acid Blend after 6 hours

Total Injection Volume vs Wormhole Penetration Length



Superior wormholing penetration length when compared to Hydrochloric acid