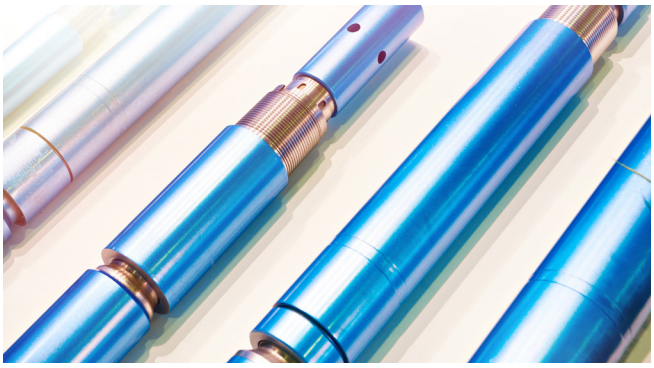
PRODUCT DATA SHEET

Enviro-Syn® HCR-3000®

Chloride Free, Chrome Safe Synthetic Acid™ System

Enviro-Syn® HCR-3000® a Dorf Ketal Technology, is a strong environmentally-friendly Synthetic Acid™ solution, designed to reduce the risks associated with exposure, corrosion, and negative HSE properties commonly linked to HCl.



APPLICATIONS

- ✔ Formation stimulation, scale removal and workover treatments
- ✔ High temperature
  - SAGD
  - CSS
  - Geothermal
- ✔ Ideal for applications where a strong acid is required and high temperatures or exotic metals are exposed
  - Chrome/chrome plating-plated
  - Aluminium
  - Copper
  - Brass

FEATURES & BENEFITS

- ✔ Chloride free
- ✔ Comparable solubilizing capabilities to 20% HCl
- ✔ Minimal reprecipitation at high pH levels (> 4)
- ✔ Blends available up to 220°C (430°F)*
- ✔ Compatible with typical oilfield elastomers (e.g., Viton, Nitrile and EPDM)
- ✔ Stable corrosion inhibitor (CI) package, free of hazardous chemicals such as formic acid and propargyl alcohol (PA)
- ✔ Non-regulated for transportation

PHYSICAL PROPERTIES

Specific Gravity:	1.2
Freezing Point:	≈ -30°C (-22°F)
Boiling Point:	> 100°C (212°F)
pH:	< 1.0
Solubility:	Soluble in water

SUPPORT HSE AND ESG GOALS

Non-corrosive to skin

Non-fuming

Biodegradable

Non-regulated for air, land and sea transport

** Temperature limitations may vary based on specific well conditions*

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TOTAL SOLUBILITY

Table 1. Total solubility of Enviro-Syn HCR-3000 on a variety of scales.

Acid	Scale	Total Solubility (kg/m³)	Total Solubility (lb/gal)
20% HCl	$CaCO_3$	253	2.1
HCR-3000 Concentrate	$CaCO_3$	280	2.3
HCR-3000 Concentrate	$CaMg(CO_3)_2$	190	1.6
HCR-3000 Concentrate	FeS	170	1.42

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

CORROSION RATES

With ultra-low metal corrosion properties, Enviro-Syn HCR-3000 has corrosion rates that are well below oilfield industry accepted values on typical oilfield alloys.

Table 2. Corrosion rates of Enviro-Syn HCR-3000 blends on oilfield alloys.

Blend (HCR:water)	Temp (°C /°F)	Coupon	Time (hr)	Corrosion (mm/yr)	Corrosion (lb/ft²)
Concentrate	90 / 195	N-80	6	0.584	0.001
Concentrate	90 / 195	QT-800	6	0.851	0.001
1:1	130 / 256	N-80	6	2.464	0.003
Concentrate	130 / 256	QT-800	6	12.392	0.014
1:1	90 / 195	N-80	6	2.692	0.003
1:1	90 / 195	QT-800	6	4.772	0.005
1:1	130 / 256	N-80	6	5.577	0.006
1:1	180 / 355	J-55	4	11.939	0.003
1:1	160 / 320	QT-900	3	28.321	0.019
1:1	150 / 302	L80	4	9.724	0.007

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.

Table 3. Corrosion rates of Enviro-Syn HCR-3000 blends on chrome alloys.

Blend (HCR:water)	Temp (°C /°F)	Coupon	Time (hr)	Corrosion (mm/yr)	Corrosion (lb/ft²)
Concentrate	60 / 140	Chrome plated 1018CS	6	0.360	0.000
Concentrate	90 / 195	Chrome plated 1018CS	6	0.291	0.000
1:1	110 / 230	Super Duplex 2507	6	0.0038	0.000
1:1	110 / 230	Duplex 2205	6	1.022	0.001
1:1	200 / 392	Duplex 2205	3	24.821	0.014

All corrosion testing was completed with fresh water.
Corrosion testing recommended with dilution water prior to treatment.

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SAFETY, STORAGE & HANDLING

- Store in sealed containers, such as plastic pails, lined drums and HDPE IBC totes
- Fittings and valves should be HDPE, brass or stainless steel
- Store out of direct sunlight
- Consult SDS for additional information and PPE requirements
- Shelf life of > 1 year; confirm corrosion if product sits for > 60 days

Talk to us today about our revolutionary products available globally.
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