Twin HCR OG

HYDROCHLORIC ACID REPLACEMENT

TWIN HCR OG

Twin HCR OG is part of the "Environmentally Responsible" Modified Acid product line that minimizes the hazardous exposure levels, corrosion rates and negative HS&E properties of HCl while maintaining the positive aspects of solubilizing ability and reactivity rates

Twin HCR OG is a powerful, low fuming Modified Acid™ that has similar solubilizing abilities of 15% HCl (concentrate) and can be enhanced through the addition of conventional oilfield chemistry.

APPLICATIONS

Twin HCR OG can be utilized in acid spearhead applications, stimulations and HT scale treatments where more aggressive removal of formation, scale or mineral deposits is required and can safely be used in place of HCl.

Due to its immediate and aggressive spending nature Twin HCR OG is an extremely effective oilfield stimulation product and can be utilized for aggressive spearhead/scale applications at low to ultra-high temperatures.

TYPICAL PHYSICAL PROPERTIES

Appearance	Amber Liquid
Specific Gravity	1.105
Freezing Point	-58°F (33% Dilution: -4°F)
Boiling Point	>212°F
pH	<0.5
Odor	Slight
Salinity	32%
Solubility in Water	Complete
Thermal Stability	375°F
Shelf Life	>1 Year
$CaMg(CO3)2$ Solubility	1.6 lbs./gal
$CaCO3$ Solubility	1.8 lbs./gal
FeS	1.4 lbs./gal

FEATURES AND BENEFITS

- Non-corrosive to skin tissue (concentrate) (3rd party testing)
- Ultra-low long term corrosion effects
- Clear: ultra-low fuming/vapor pressure
- Aggressive reaction rates vs typical modified or synthetic acid systems for spearheads, stimulations and workovers
- Compatible with typical elastomers used in oil and gas
- Class 1 acid package
- Adjust concentrations on the fly to target optimal pay zones
- High thermal stability to ~375°F

HEALTH, SAFETY, & ENVIROMENT

- Low vapor pressure (fuming)
- Non-corrosive to skin tissue (concentrate)
- Low oral toxicity (calculated LD50 rat test)
- Lower bio accumulative effect
- Biodegradable (OECD 301F) >34%, 10 days

TWIN SPECIALTIES CORP.

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CORROSION

With inherently low metal corrosion properties, Twin HCR OG is able to achieve corrosion rates on any typical oilfield grade steel well below traditional acid systems.

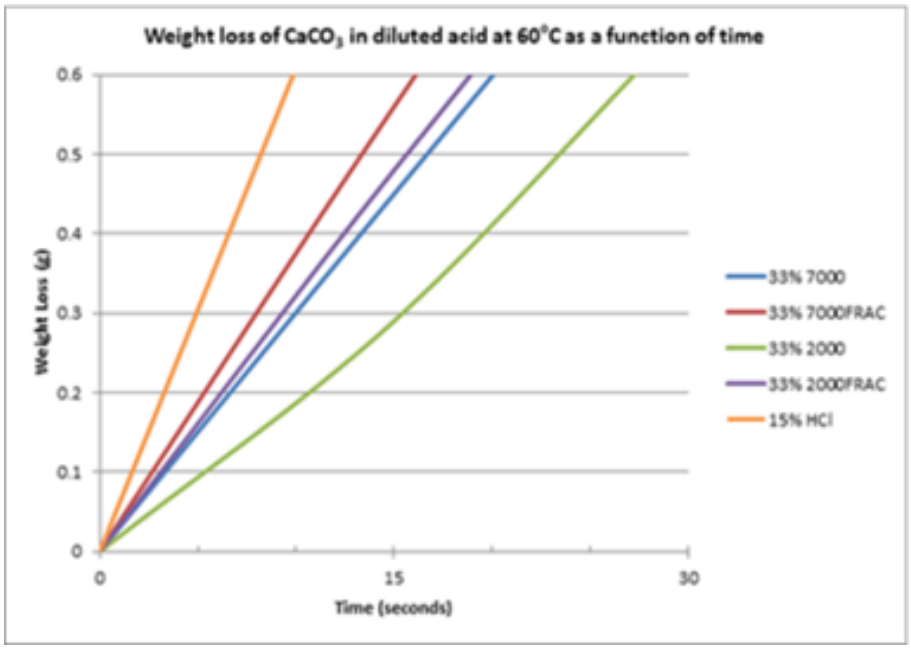
Blend	Temp	Coupon	Time	Corrosion
50% HCR-7000	195°F	L-80	6 hours	0.005
50% HCR-7000	195°F	N-80	6 hours	0.009
50% HCR-7000	195°F	J-55	6 hours	0.003
50% HCR-7000	195°F	P110	6 hours	0.013
50% HCR-7000	195°F	QT-900	6 hours	0.003
50% HCR-7000	195°F	1018CS	6 hours	0.014
50% HCR-7000FRAC	195°F	P-110	72 hours	0.012
33% HCR-7000	250°F	L-80	6 hours	0.022
33% HCR-7000	250°F	P-110	6 hours	0.024
50% HCR-7000	265°F	L-80	6 hours	0.014
50% HCR-7000	300°F	L-80	4 hours	0.018
50% HCR-7000	375°F	L-80	2 hours	0.026

Verify metals/temps with CI loadings prior to deployment

NOTE: Oilfield industry typically accepts a corrosion rate less than 0.05 lbs./ft² @ 6 hours
* Coiled tubing typically accepts a corrosion rate less than 0.02 lbs./ft² @ 6 hours

REACTION RATES

Twin HCR OG has a more aggressive reaction rate (spend nature) than other Twin HCR Series systems and will provide you with superior injections rate pressure reductions at times very comparable to HCl without the HS&E hazards and corrosion rates



Time to Consume 0.4g Calcium Carbonate

15% HCl	8 seconds
HCR OG FRAC 33%	10 seconds
HCR OG 33%	13 seconds
HCR-2000FRAC 33%	13 seconds
HCR-2000 33%	20 seconds

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STORAGE

Twin HCR OG should be stored long-term in sealed drums or IBC totes. Fittings and valves should be HDPE, brass, or stainless steel.

If heating of the product is required it is suggested to utilize a stainless-steel heat exchanger or tank steam coils if equipped and kept below 150°F.

NOTE: Shelf life can vary based on specific blend additives. 1 year for the base standard blend.

SAFETY REQUIREMENTS

Even though there are lower exposure risks associated with Twin HCR OG compared to 15% HCl you should utilize similar operational procedures. With the corrosive to eyes rating of the product it is required to ensure there is access to an eye wash bottle station and/or shower unit for every operation and enclosed eye protection utilized.

Twin HCR OG is an acid, therefore appropriate chemical handling PPE is always recommended, as well as an operational risk assessment for each situation.

SHIPPING & HANDLING

As Twin HCR OG has a pH of less than one, acid approved fittings, hoses and pumping equipment should always be utilized.

Twin HCR OG is considered not regulated as per exemption 49CFR 173.154 (d)

Twin HCR OG can be shipped in IBC tote containers, or by bulk container methods, and has a storage life of over one year – keep container closed when not in use.

As with all chemical products and materials take care as to how you handle and where you store them. Personal protective equipment (PPE) is required for use when handling this product. Consult SDS for complete handling instructions.

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