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From the desk of G. A. Aaker, Jr., PE.

Selection Criteria for Corrosion Resistant Material for Wet Sour Service

Partial Pressure H2S (psi)	Total Pressure (psi)	Partial Pressure CO2	Operat-ing Temp. Limits	Chloride Conc. (ppm)	Material
>0.05	> 65	<7psi	600 °F max	NA	Carbon Steel
>0.05	> 65	<7psi No pH restriction	600 °F max	NA	HIC Carbon Steel
0.05 to 1.5	> 65	< 35Psi pH>3.5	400 °F	Unrestricted	13% Cr (410 SS)
0.05 to 15	> 65	unrestricted	140 °F max	Cl⁻ region of Curve, Figure 1	Austenitic Stainless (316 L)
0.05 to 1.5	> 65	Unrestricted	300 °F max	1000	Austenitic Stainless (316)
0.05 to 1.0	> 65	Unrestricted pH >3.5	450 °F max	5,000	Duplex 2205
0.05 to 1.5	> 65	Unrestricted pH > 3.0*	450 °F max	50,000	Duplex 2507
Unrestricted	> 65	Unrestricted	450 °F	Unrestricted	Inconel 600, and Inconel 625 Monel 400
Unrestricted	> 65	Unrestricted	500 °F	Unrestricted	Hastelloy C-276
0.05-75 psi	>65	Unrestricted	450 °F	50,000	Alloy 825

*2 psi H2S pH of 5

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FIGURE 1

Chloride Stress Cracking Region for Austenitic TP 304 & TP 316 Stainless Steel