


Improving Industrial and Mining Pipe Systems – Using Large PE-Xa Pipes





Why consider Plastic over metallic Pipe

Corrosion resistance

Price reduction

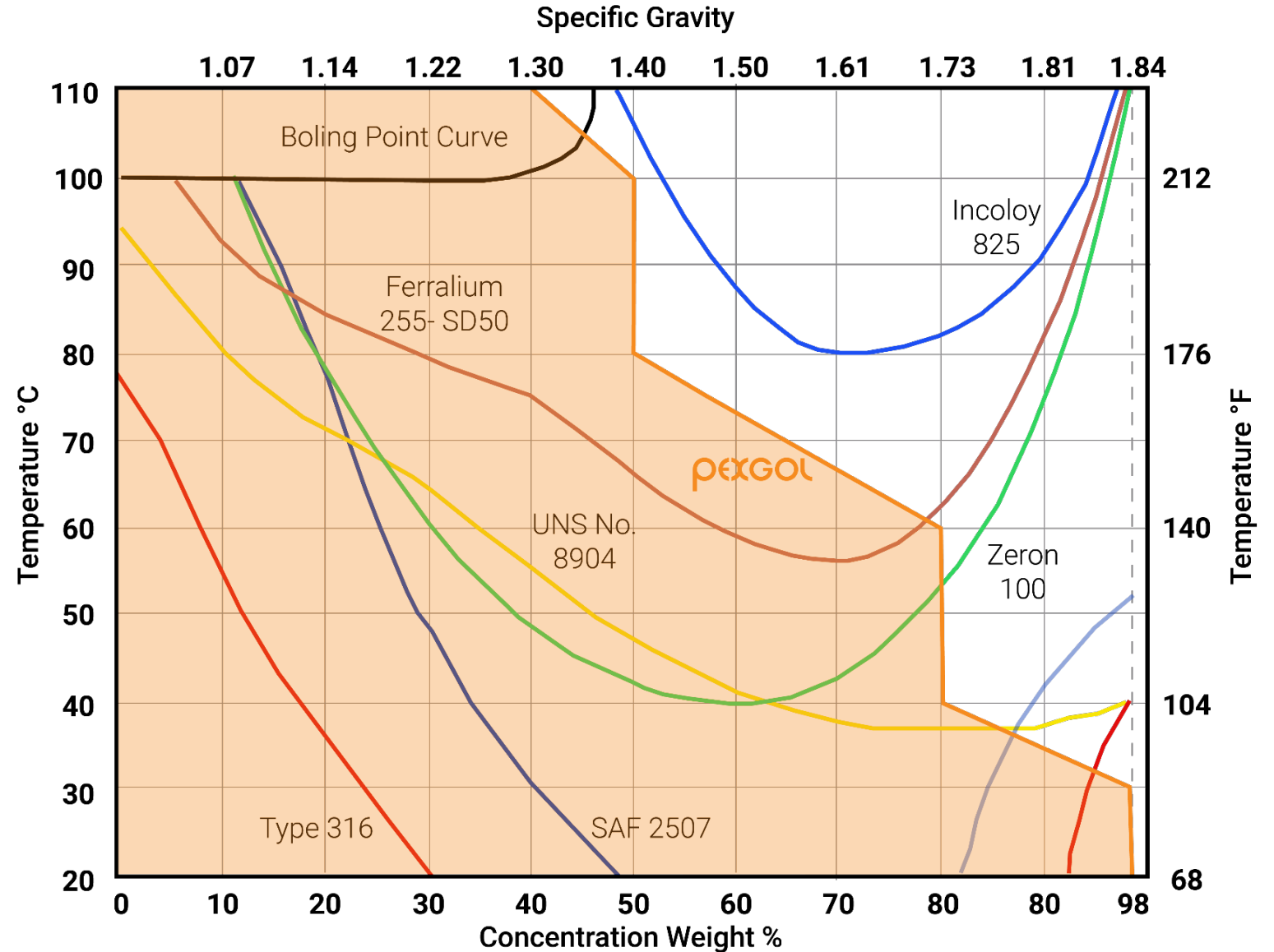
Weight reduction on structure

Improve Abrasion Resistance

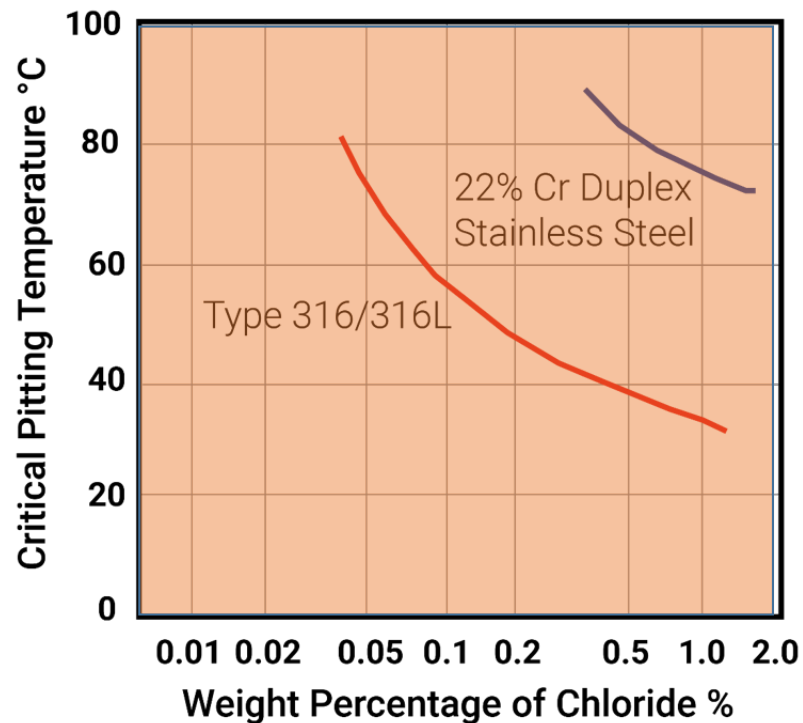
Reduce Scaling

Reduce Labor costs

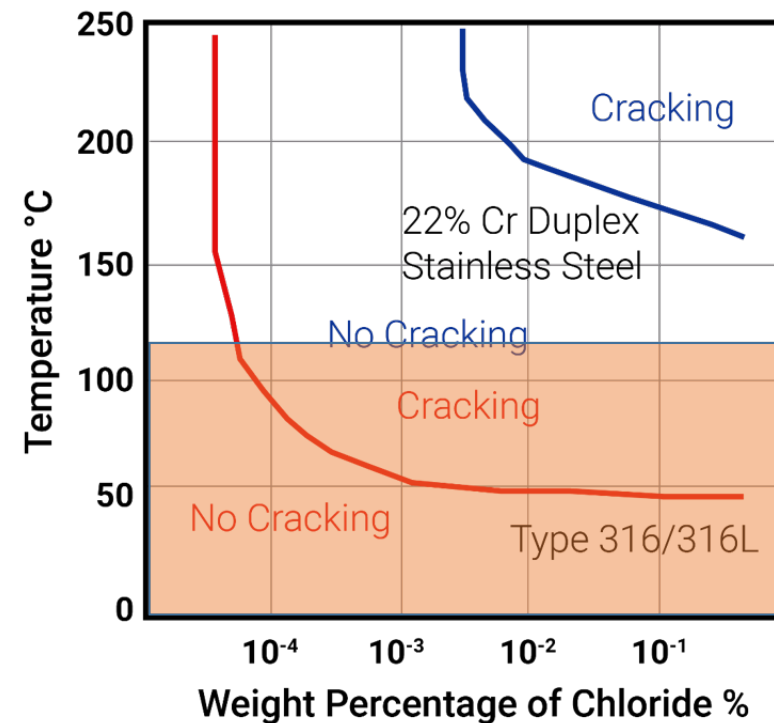
Pexgol Resistance to Sulfuric Acids Compared to Alloys



Corrosion In Presence Of Chlorides

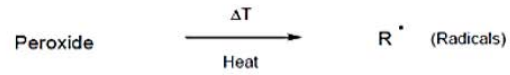


Comparison of Critical Pitting Temperature (CPT) of 22% Cr Duplex and Type 316/316L Stainless Steel.

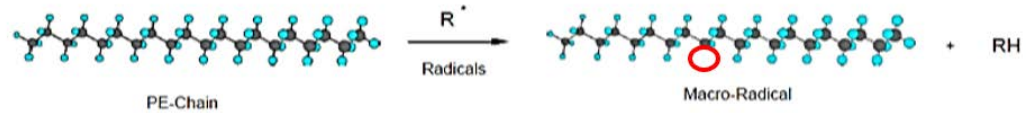


Relative Chloride Stress Corrosion Cracking Resistance of 22% Cr Duplex Stainless Steel and Type 316/316L.

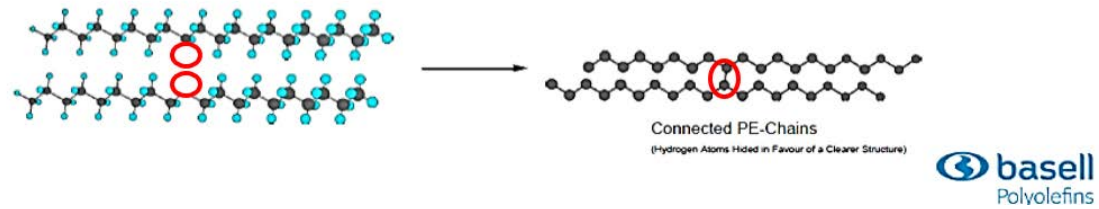
1. Peroxide Decomposition (during extrusion, in the molten state)



2. Macro-Radical Formation (during extrusion, in the molten state)



3. Crosslinking (during extrusion, in the molten state)



Cross linking process

What is Pexgol

- Pexgol is a pipe made of Peroxide Cross-Link Polyethylene material [Pe-Xa]
 - Sizes available: 25mm (1") to 710mm (28")
 - Cross-Link Level: >80%
 - Temperature operating Range: -63f to 230f
 - Resistant to Slow Crack Growth
 - Restrained Creep
 - Corrosion Resistant
 - Abrasion and Wear Resistant
 - Long life UV Stability
 - Impact resistant
 - Reduced Scaling
-

Pressure and Temperature

Temp		Class 12	Class 15	Class 19	Class 24	Class 30
		Pipe series (S)				
°C	°F	6.3	5	4	3.2	2.5
		Dimension ratio (DR)				
		13.6	11	9	7.4	6
60	140	109	138	173	218	274
71	160	96	122	153	192	241
82	180	86	106	134	170	214
88	190	80	101	128	162	204
93	200	73	95	120	153	192
99	210	62	81	103	132	164
104.5	220	50	66	81	102	127
110	230	42	55	68	86	108



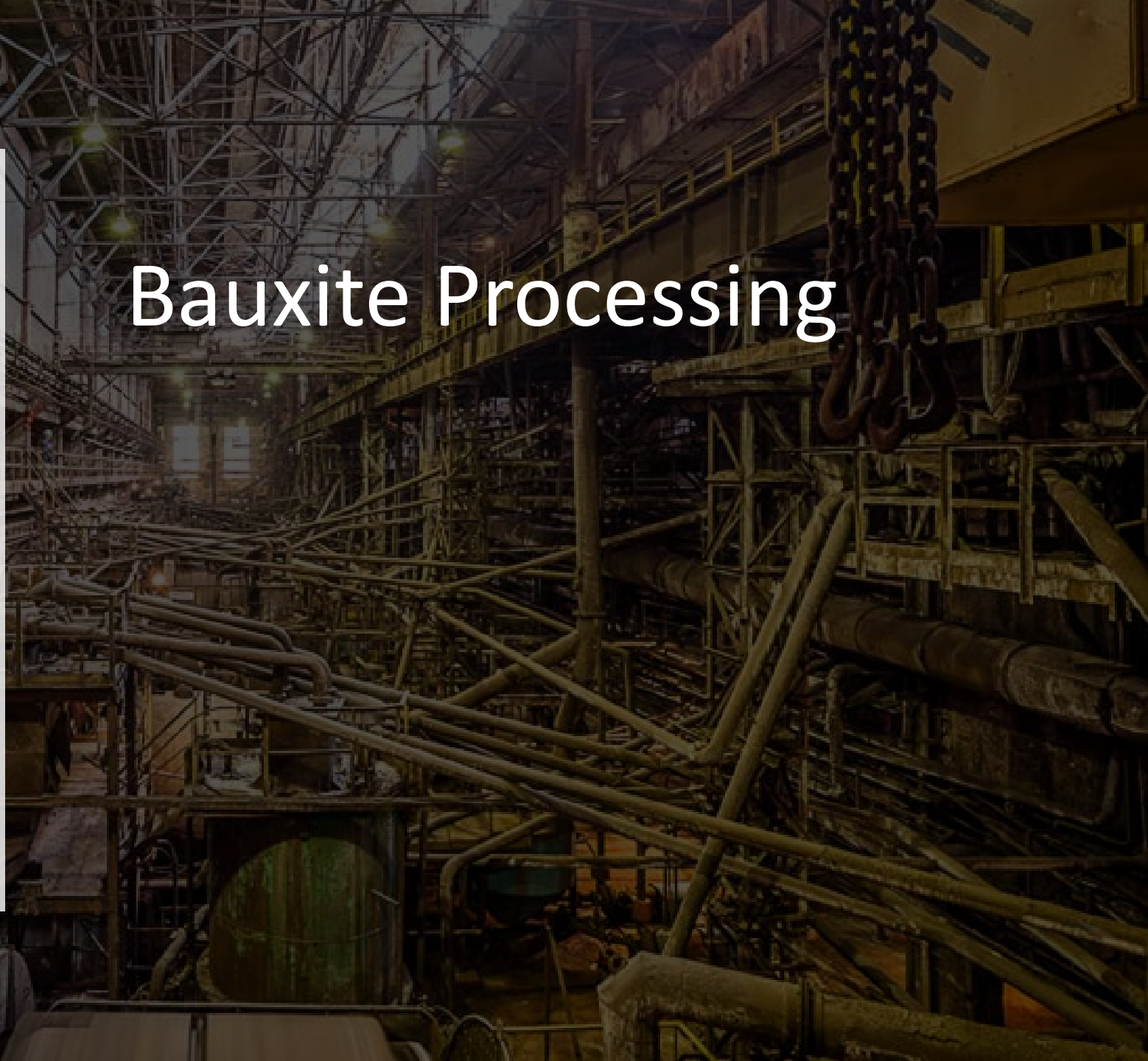
Potash Plant in Utah, US (2015)



Potash plant in
Saskatchewan



Bauxite Processing



1995

TABLE IV
COMPARISON OF WEAR RATES OF uPVC, HDPE AND PEXGOL
(SOUTH PLANT CLASSIFIED TAILINGS AT $S_m = 1,70$)

Slurry velocity (m/s)	Wear Rates in 44,35 mm internal diameter pipeline (μm per 1000 tonnes)	
	HDPE	PEXGOL
4	0,671	0,221
6	1,509	0,497
7	2,054	0,676
8	2,682	0,884

The PEXGOL sample is approximately 3 times more wear resistant than the HDPE under the same conditions i.e. slurry density, velocity and internal pipe diameter, for South Plant Classified tailings.

2016

Table VI: Volume Loss Results for the Medium Slurry

Sample	Calculated from Mass Loss Method		Dial Depth Gauge		Average Ranking Relative to Mild Steel
	Volume loss (cm^3)	Relative to Mild Steel	Volume loss (cm^3)	Relative to Mild Steel	
Pexgol #2	0.13	0.23	0.08	0.25	0.24
Pexgol Plus #2	0.07	0.12	0.02	0.07	0.09
Mild Steel #2	0.57	1.00	0.33	1.00	1.00
HDPE PE100 #2	0.31	0.55	0.27	0.83	0.69
Red Rubber #2	0.18	0.31	*	*	0.31
Blue Polyurethane #2	*	*	0.02	0.06	0.06

* These methods were not suitable for volume loss determination of these specimens.

Comparative Abrasion Test

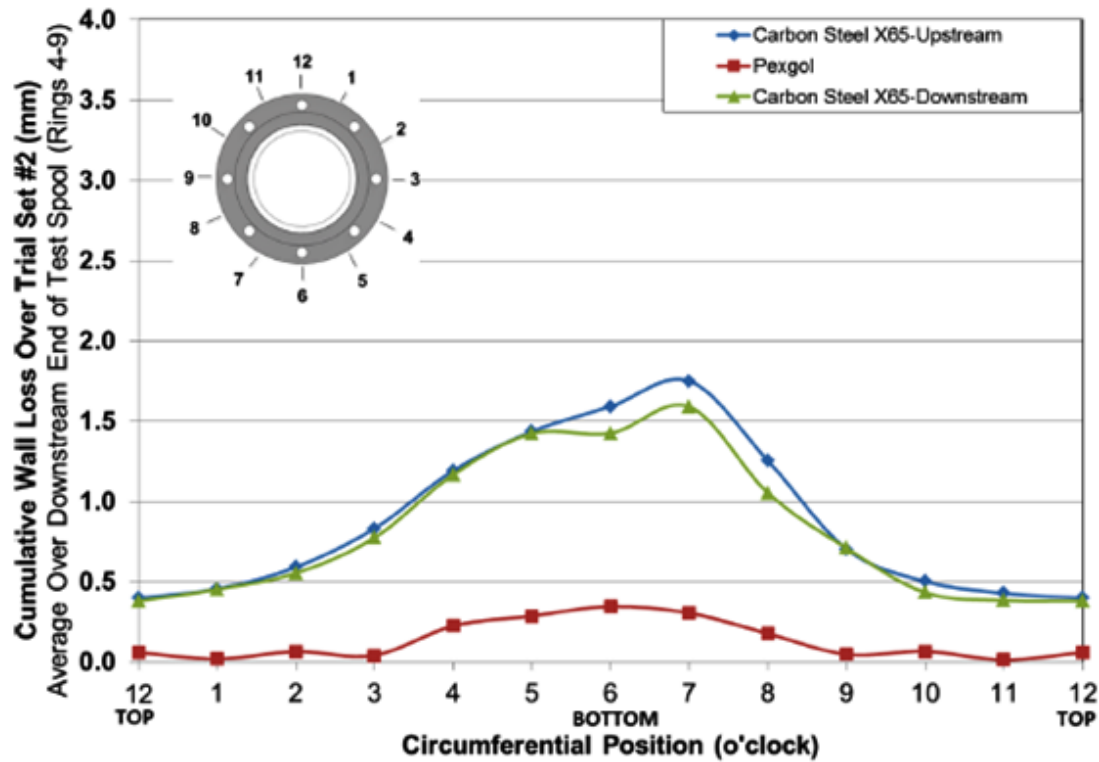


Figure 9: Average wall loss observed by manual UT test spools after Trial Set #2

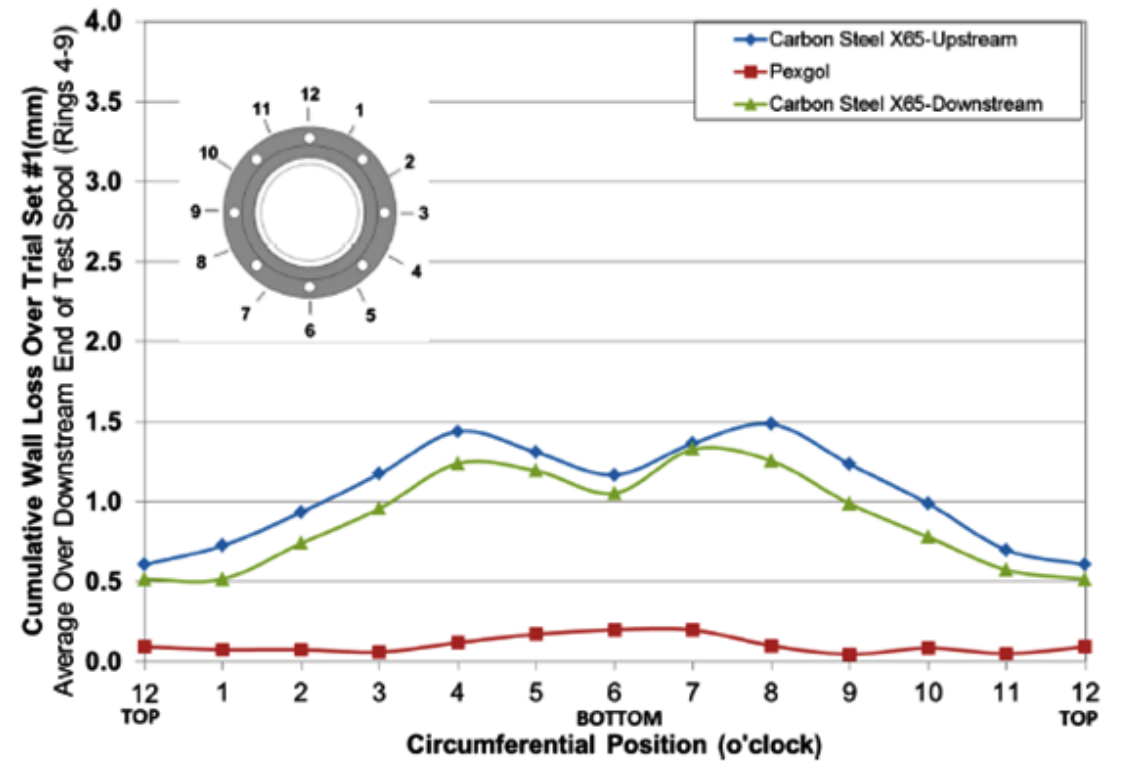


Figure 8: Average wall loss observed by manual UT test spools after Trial Set #1

Alberta Innovates Wear Test



Long Exposure in Harsh Environment

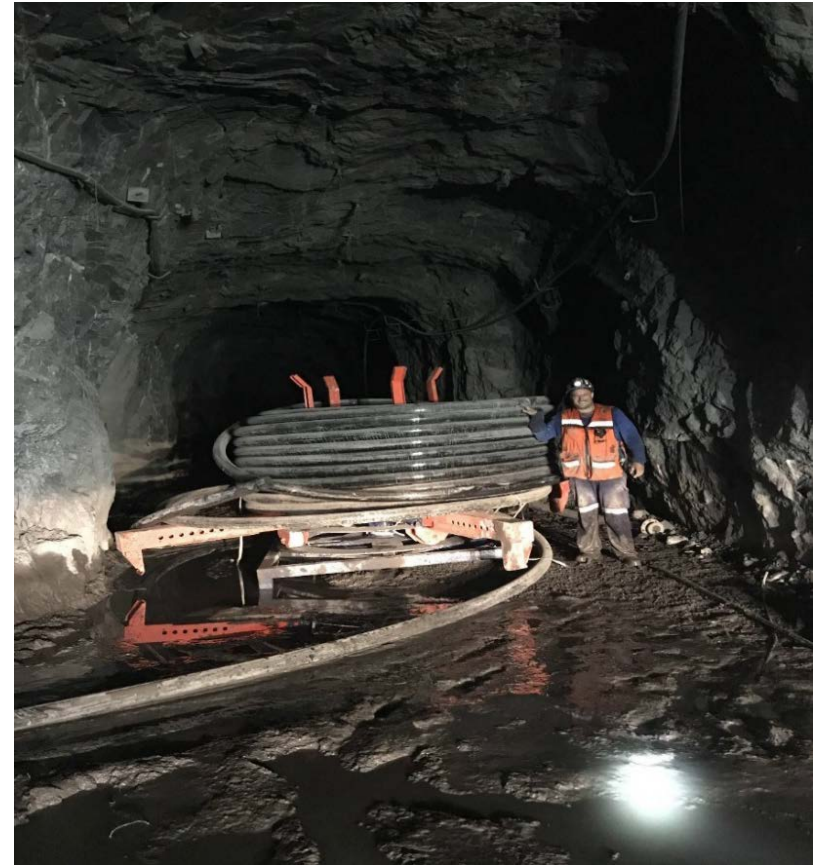


Corrosive Wells – one pipe system

Finite creep Application



Open Pit Dewatering



Underground Dewatering



Connections
