

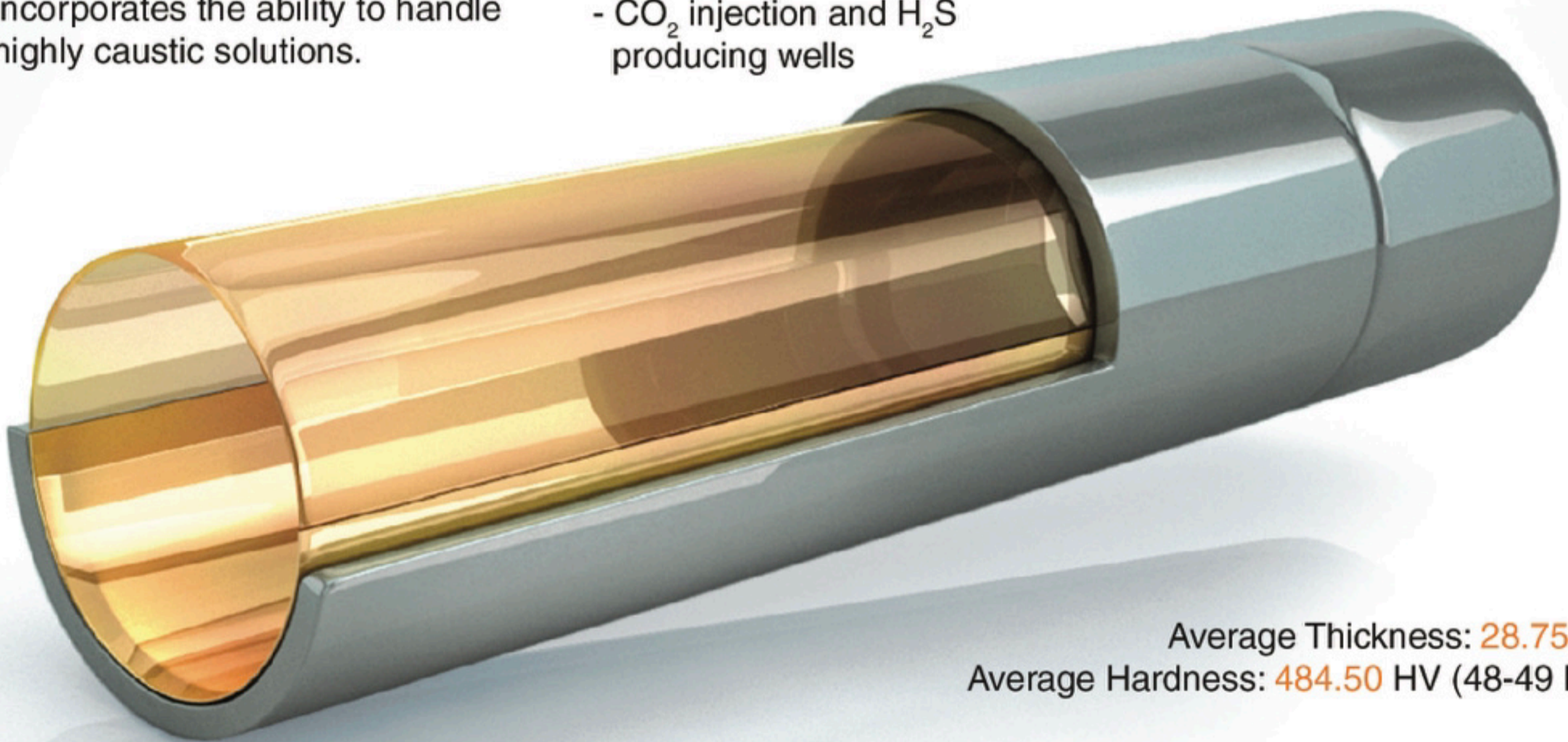
### MAC-100Cc

(Corrosion Control)

MAC 100Cc is our signature corrosion control product that incorporates a proprietary blend that produces a high quality Metallic Alloy Coating that is resistant to CO<sub>2</sub>, H<sub>2</sub>S and incorporates the ability to handle highly caustic solutions.

### Benefits

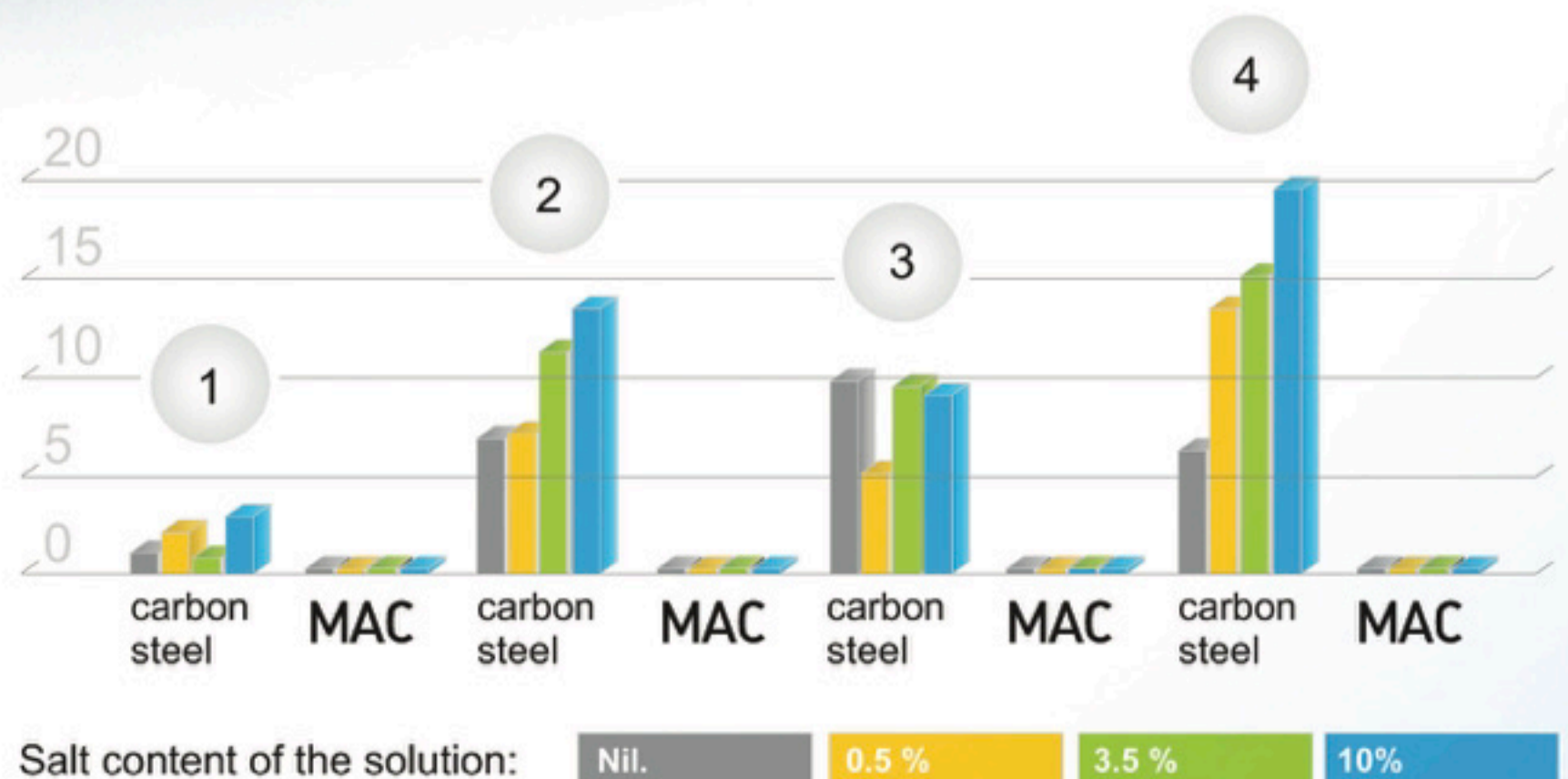
- No ID Restriction
- Bond Strength > 19 K - 60 K PSI
- Excellent Corrosion Resistance
- Complete Protection of your tubing string that includes threads and couplings
- Reduce and/or eliminate inhibitor use.
- Suitable for Injector and Disposal wells.
- CO<sub>2</sub> injection and H<sub>2</sub>S producing wells



Average Thickness: 28.75 (µM)  
Average Hardness: 484.50 HV (48-49 HRC)

Corrosion of Steel and Metallic Coating in Petroleum Production Brine at 95 Deg. C Corrosion rate, Mills Per Year

- 1 N<sub>2</sub> Deoxygenated Solutions
- 2 CO<sub>2</sub> Saturated Solutions
- 3 H<sub>2</sub>S Saturated Solutions
- 4 CO<sub>2</sub>+H<sub>2</sub>S Saturated Solutions



REF: EN Conference 1980, R. Duncan, corrosion Results for petroleum applications



### MAC-100Cc Technical Specifications

<b>Hardness</b>	484.50 HV (48-49 HRC)
<b>Ductility</b>	2.0% Elongation
<b>Wear Resistance</b>	12-16TWI
<b>Magnetic Properties</b>	Non-magnetic
<b>Electrical Resistivity</b>	50-100 micro ohm/cm
<b>Corrosion Resistance</b>	Excellent
<b>Coating Thickness</b>	1-3 mils
<b>Melting Point</b>	880 °C
<b>Coefficient of Thermal Expansion</b>	12.0 U m/m °C
<b>Tensile Strength</b>	800 MPa
<b>Modulus of Elasticity</b>	170 GPa
<b>Structure</b>	Amorphous
<b>Density</b>	7.8 gm/cm <sup>3</sup>
<b>Coefficient of Friction</b>	0,15
<b>RA reading</b>	135.7 micro-inch
<b>Bond Strength</b>	19 K - 60 K PSI

### Wear and Friction Data / Dry Sliding Properties

Wear System	Wear Rates		Dynamic Coefficient of Friction	
	Pin (m <sup>3</sup> /Nm)	Disc (m <sup>3</sup> /Nm)	Start	End
Steel / Steel	5.5 x 10 <sup>-12</sup>	8.2 x 10 <sup>-12</sup>	0.48	0.73
Steel / E'less Ni (9%P)	3.4 x 10 <sup>-13</sup>	7.4 x 10 <sup>-13</sup>	0.44	0.56
Steel/ Hard Chromium	6.9 x 10 <sup>-14</sup>	5.0 x 10 <sup>-15</sup>	0.25	0.71
<b>Steel/ MAC 100</b>	<b>3.0 x 10<sup>-15</sup></b>	<b>3.5 x 10<sup>-15</sup></b>	<b>0.15</b>	<b>0.16</b>
Steel / TiN	2.7 x 10 <sup>-15</sup>	6.7 x 10 <sup>-15</sup>	0.70	0.93

Friction coefficient

Start: 0.011, Min: 0.100, Max: 0.164  
Mean: 0.157, Std. Dev.: 0.006

Base: Material Pin / Disc 0.4% carbon steel  
 F = 20N, v = 800 mm/min, Ra = 0.9 -1.1 μm,  
 thickness = approx. 20 μm, t = 60 min, Pin-radius r = 5 mm

According to ASTM G133 /DIN 50324