

SEAM-FREE HCW PIPE AND TUBE

DESIGN IN THE ADVANTAGES OF COLD ROLL EXTRUSION FROM PCC ROLLMET.



Rollmet HCW pipe and tube sets the standard for large diameter stainless steel, high nickel alloy pipe and tube for the power, petrochemical and nuclear industries.

PRODUCTION DETAILS

- New method of manufacturing listed in ASTM A312 material specification (Heavily Cold Worked)
- Metallurgical equivalent of seamless
- Weld and Heat Affected Zone (HAZ) eliminated via PCC Rollmet, Inc.'s patented Cold Roll Extrusion process (seam free)
- Corrosion tested by ASTM 249 – former weld/parent metal decay ratios of less than 1.0
- Corrosion tested to ASTM 262 practice A, B, C, E and F – all passed
- Lower cost than seamless
- Sizes 6" to 12" schedule 20, 10 and 5 (s)

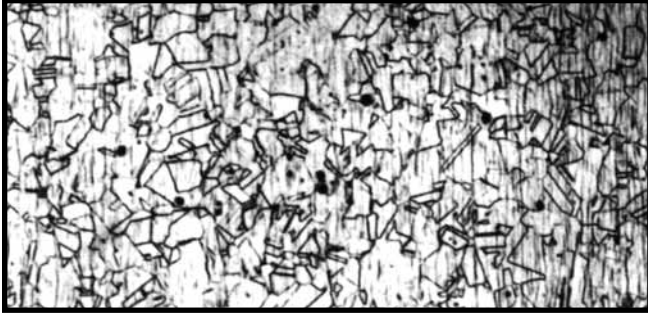
COLD ROLL EXTRUSION METHODS

- Strengths of Cold Roll Extruded solid-solution alloy pipes are usually greater than those of conventional manufactured pipe/tube because of the fine grain size achieved through cold working and recrystallization
- Cold Roll Extrusion, as a net process, achieves final pipe dimensions through metal displacement
- Cold Roll Extrusion is performed at ambient room temperature
- Cold Roll Extrusion utilizes precision stainless steel and nickel alloy starting blanks or extruded preforms as starting material for all stainless and nickel alloy production
- Isotropic properties achieved either as a cold worked tubular or in all finished annealed tubular products
- Enhanced corrosion resistance achieved through ASTM 5 or finer grain size

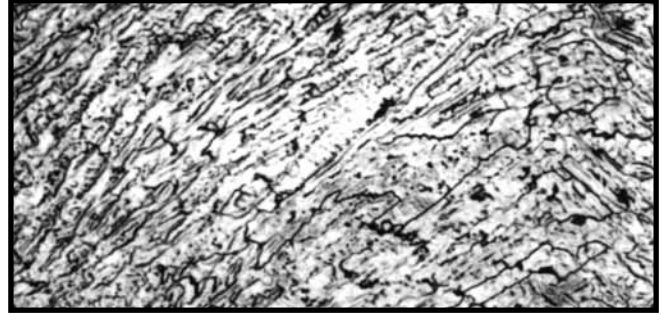


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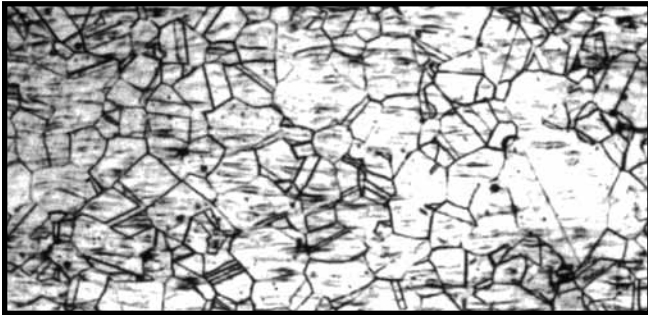
100X PHOTOMICROGRAPHS – BEFORE AND AFTER HCW/SEAM-FREE PROCESSING



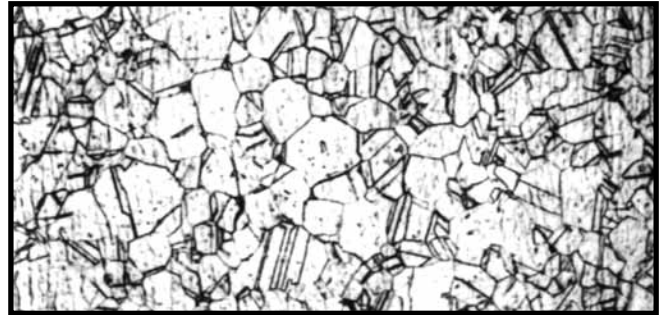
Parent metal area as received from mill.



Weld metal area as received from mill.



Parent metal area after roll extrusion and anneal.



Weld metal area after roll extrusion and anneal.

DIMENSIONS OF HCW/SEAM-FREE TUBE*

TUBE SIZE	DIAMETER	WALLS	WALLS	WALLS	WALLS
6"	6.00	.065	.083	.109	.120
8"	8.00	.065	.083	.109	.120
10"	10.00		.109	.120	.188
12"	12.00		.109	.120	.188

* Most diameter and light wall combinations of HCW tubes can be manufactured by PCC Rollmet, Inc.

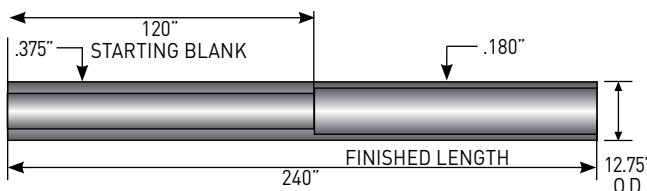
DIMENSIONS OF HCW/SEAM-FREE PIPE

PIPE SIZES	OUTSIDE DIAMETERS	ASA PIPE SCHEDULE			
		5S	10S	10	20
6"	6.625	.109	.134	.134	
8"	8.625	.109	.148	.148	
10"	10.750	.134	.165	.165	.250
12"	12.750	.156	.180	.180	.250

QUALITY CERTIFICATIONS

- AS9100/ISO9001
- PED approved to Directive 97/23/EC
- ISO 9001 approved
- AD2000-Merkblatt W0 approved

INTERNAL COLD ROLL EXTRUSION. The starting hollow is placed inside a one piece, cylindrical die ring. The rollers inside the starting hollow are displaced radially outward until they bite into the inside diameter of the hollow surface a controlled amount. The hollow outside diameter remains constant while the rollers produce a thinner wall with a corresponding increase in I.D. and hollow length in a single pass.



Internal Cold Roll Extruded cylinder typical starting blank, demonstrating material economy and axial growth in length while keeping the O.D. constant during Internal Cold Roll Extrusion.

PCC ROLLMET for over 50 years, has delivered high quality, precision seamless pipe in nickel, stainless steel, duplex stainless, and ferritic alloys. Backed by the global support of the PCC Energy group of companies, we provide on time delivery and material that meets all critical specification requirements, coupled with practical solutions for all your seamless piping needs.

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