

COD QC-3.1-Ed.2 REV 6/2017



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EUID: ROONRC.J28/9/1991; J28/9/31.01.1991
VAT No. RO 1510210/1992
Subscribed and Paid Share Capital: 291,587,538,34 lei

INSPECTION CERTIFICATE - EN 10204: 2004 / 3.1

No.: E1562 Date: 21.01.2022	Manufacturer's mark :	Purchase Order No.: P123563-875 ITEM 149961	PL: 10437
Buyer: ENCORE METALS A Division Of Reliance Metals Canada Limited			
Specifications: ASTM A519/A519M:2017 Spec. RMCL Type 80-4140 Rev.7a ddt. April 10 th 2018		Dimensions: 3.750" x 0.875" Grade Designation: 4140 / 80Y/AISI 4140 Q & T	
Description of Goods: P123563-875 HOT FINNISHED SEAMLESS MECHANICAL TUBE			
Heat No.: R58045	Lot No.: 468977	Country of manufacture: Romania	Country of melt and pour: Romania
Quantity	Pcs 36	Length ft 853.54	Weight lbs 22540.03

Ladle Chemical Analysis (%)

C	Mn	S	P	Si	Ni	Cr	Mo	Cu	Al	V
0.40	0.84	0.003	0.014	0.22	0.09	1.03	0.20	0.20	0.025	0.012

Product Chemical Analysis (%)

C	Mn	S	P	Si	Ni	Cr	Mo	Cu	Al	V
0.41	0.86	0.004	0.015	0.22	0.08	1.03	0.19	0.20	0.026	0.012
0.40	0.87	0.003	0.014	0.22	0.08	1.03	0.18	0.20	0.026	0.012

Mechanical Properties

TENSILE TEST (ASTM A370-2019) -at room temperature- Test Specimen: Round longitudinal-mid wall / 0.5 inch	Yield strength 0.2%OFFSET/ 0.5%EUL KSI	UTS KSI	Elongation in 2 in. %	Reduction of area %
Dimension - Specimen (inch): 1. 0.5008 / 2. 0.5000 Section - Specimen (inch ²): 1. 0.1970 / 2. 0.1963 Length - Specimen (Lo) (inch): 1. 2 / 2. 2	1. 89.5/90.3	107	23	66
	2. 88.2/88.5	107	25	69

Micro - inclusions content ASTM E45-2018 - method A

Classification Heat	Sulfides (A)		Aluminum (B)		Silicates (C)		Globular oxides (D)	
	t	h	t	h	t	h	t	h
R58045	0	0	0.58	0	0	0	1.75	0.83

Type of furnace used: Continuous heat treatment line, gas furnace
The method for monitoring temperature: atmosphere thermocouples
Heat treatment:
- austenitized at 1562°F, 27 min
- quenched in water:
the start temperature of quench media: 70°F
the end temperature of quench media: 73°F
- tempered at 1346°F, 67 min.
- hot straightening; stress free at min 950°F: OK
- cooled in still air
Charpy V - Notch (ASTM A370-2019/E23-2018): full size
Longitudinal Temperature [32° F]: 86 (86; 86; 87) foot-pounds
Temperature [14° F]: 91 (90; 93; 91) foot-pounds
Temperature [-50° F]: 58 (58; 55; 62) foot-pounds

Process of melting - electric arc furnace, vacuum degassed
As-tempered surface Hardness HBW (ASTM A370-2019/E10-2018): 1. 226; 2. 226
As-tempered Hardness HRC (ASTM A370-2019/ASTM E18-2019):
NACE MR0175/ISO 15156-2:2015
1. (17.51; 17.60; 17.58)-(18.53; 19.97; 19.11)-(19.09; 18.27; 19.26)-(19.44; 19.43; 19.34)
2. (18.52; 17.71; 18.42)-(19.34; 19.54; 18.70)-(17.60; 18.23; 18.47)-(18.44; 20.38; 18.46)
As-quenched Hardness HRC (ASTM A370-2019/E18-2019):
(57.95; 54.98; 58.11)-(58.25; 54.73; 58.24)-(57.79; 54.85; 57.70)-(58.19; 55.29; 57.57)
Grain size ASTM E 112-2013: 8.5
U.T. acc. to ASTM E213-2020 (5%-notch depth): OK
Reduction ratio: 4.86:1

P.O.#: P123563
R#: R172805
ITEM#: 149961
HEAT#: R58045
BRANCH#: 875

Visual and dimensional inspection of the tubes were performed and the results were satisfactory
The manufacturer of pipes is certified in acc. with ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018
THIS PRODUCT IS FREE OF MERCURY CONTAMINATION
NO REPAIR BY WELDING HAS BEEN CARRIED OUT
QC & LABORATORIES CHIEF
Dipl. Eng. Silviu Barbuлесcu

MILL INSPECTOR
Eng. Iulian Andrei

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THIS IS FOR CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED WITH THE ORDERED SPECIFICATION AND THAT INFORMATION IS CORRECT, THEY MEET THE SPECIFICATION'S REQUIREMENTS AND ARE RECORDS IN OUR COMPANY DOCUMENTS.

P.O. # 6266, Part # 03-FMX01-DEFSCH3... Desc: 3" Default Schedule (80), ANSI
RF, 316SS/CS Static Mixer
3NPS SIEVE FIVE