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European Casting Industry has collaborated with a Chinese manufacture of seamless pipes, that it will provide first class quality standard of pipes to our clients. ECI ensures that the pipes has been systematically tested and monitored to ensure that the standards of quality are being met.

With this new Italian/Chinese venture, ECI will be able to distribute seamless pipe to more areas around the world, particularly in the Middle East, Europe and North America.

Hot-rolling Seamless Steel Pipe Process Flow Chart

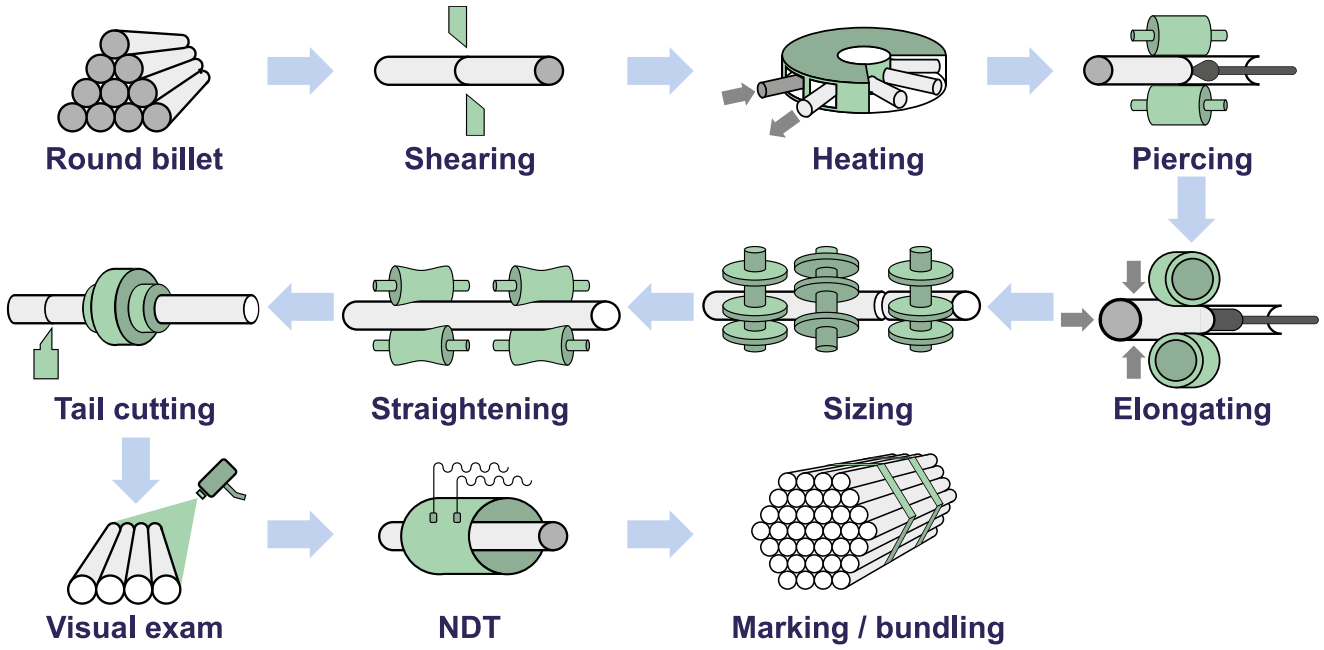

Table 1 - USS SEAMLESS STANDARD PIPE AND LINE PIPE - Composition and Properties

Mechanical Properties - Tensile Requirements					
Specification	Grade	Strength - psi			
		Yield		Tensile	
		Min	Max	Min	Max
ASTM A53	A	30,000	-	48,000	-
	B	35,000	-	60,000	-
ASTM A106	A	30,000	-	48,000	-
	B	35,000	-	60,000	-
	C	40,000	-	70,000	-
ASTM A252	1	30,000	-	50,000	-
	2	35,000	-	60,000	-
	3	45,000	-	66,000	-
ASTM A501		36,000	-	58,000	-
ASTM A523	A	30,000	-	48,000	-
	B	35,000	-	60,000	-
ASTM A618	III	50,000	-	65,000	-
API 5L PSL 1	A	30,000	-	48,000	-
	B	35,000	-	60,000	-
	X42	42,000	-	60,000	-
	X46	46,000	-	63,000	-
	X52	52,000	-	66,000	-
	X56	56,000	-	71,000	-
	X60	60,000	-	75,000	-
	X65	65,000	-	77,000	-
	X70	70,000	-	82,000	-
API 5L PSL 2	B	35,000	65,000	60,000	110,000
	X42	42,000	72,000	60,000	110,000
	X46	46,000	76,000	63,000	110,000
	X52	52,000	77,000	66,000	110,000
	X56	56,000	79,000	71,000	110,000
	X60	60,000	82,000	75,000	110,000
	X65	65,000	87,000	77,000	110,000
	X70	70,000	90,000	82,000	110,000
	X80	80,000	100,000	90,000	120,000

NOTE: Elongation requirements vary with area of test specimen and minimum tensile strength of the steel grade.
NOTE: Seamless Line Pipe in sizes 4½" through 16" OD can be furnished heat treated for enhanced tough ness at higher strength levels. Over 14" OD subject to inquiry.

Composition and Properties

Chemical and mechanical properties requirement are as prescribed by current API 5L and applicable ASTM Standards editions in effect at the time of this printing.

Table 2 - USS SEAMLESS STANDARD PIPE AND LINE PIPE - Composition and Properties

Chemical Requirements, Percent (Product)						
Specification	**Grade**	**C Max**	**Mn Max**	**P Max**	**S Max**	**Other**
ASTM A53	A[1] B[1]	0.25 0.30	0.95 1.20	0.05 0.05	0.045 0.045	- -
ASTM A106	A[1,2] B[1,2] C[1,2]	0.25 0.30 0.35	0.27 - 0.93 0.29 - 1.06 0.29 - 1.06	0.035 0.035 0.035	0.035 0.035 0.035	0.10 min. Si 0.10 min. Si 0.10 min. Si
ASTM A252	1, 2 & 3	-	-	0.050	-	-
ASTM A501		0.30	-	0.045	0.045	-
ASTM A523	A B	0.25 0.30	0.95 1.20	0.045 0.045	0.060 0.060	- -
ASTM A618	III	0.27	1.40	0.035	0.035	0.35 max. Si 0.01 min. V
API 5L PSL 1[a]	A B X42 X46, X52, X56 X60[e], X65[e], X70[e]	0.22 0.28 0.28 0.28 0.28	0.90 1.20 1.30 1.40 1.40	0.030 0.030 0.030 0.030 0.030	0.030 0.030 0.030 0.030 0.030	- b, d c, d c, d c, d
API 5L PSL 2[a]	B X42 X46, X52, X56 X60[e], X65[e], X70[e], X80[e]	0.24 0.24 0.24 0.24	1.20 1.30 1.40 1.40	0.025 0.025 0.025 0.025	0.015 0.015 0.015 0.015	b, d c, d c, d c, d

ASTM notes for table 2:

[1]Residual elements, max: Cu-0.40, Ni-0.40, Cr-0.40, Mo-0.15, V-0.08. These five elements combined shall not exceed 1%.

[2]For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted up to a maximum of 1.35%.

API 5L notes for table 2:

[a]For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.05% above the specified maximum manganese content is permissible, up to a maximum, of 1.50% for Grades X42 through X52, up to a maximum of 1.65% for grades higher than X52 but less than X70, and up to 2.00% for Grades X70 and higher.

[b]Columbium [niobium], vanadium, titanium, or combinations thereof may be used by agreement between the purchaser and manufacturer.

[c]Columbium [niobium], vanadium, titanium, or combinations thereof may be used at the discretion of the manufacturer.

[d]The sum of the columbium [niobium], vanadium, and titanium contents shall not exceed 0.15%.

[e]Other chemical compositions may be furnished by agreement between purchaser and manufacturer, providing that the limits of Footnote d, and the tabular limits for phosphorus and sulfur are met.

Pipeschedules and wall thcknesses in inch/mm and weights

Table 3 - ASME B 36.10 PIPE SCHEDULES - Wall= Wallthickness in Millimeters | Wt= Weights in kilogram per meter

Nominal pipe size	O.D.	Standard		Extra strong		Double extra strong		Schedule		Schedule		Schedule	
Inches	mm	STD Wall	Wt	XS Wall	Wt	XXS Wall	Wt	10 Wall	Wt	20 Wall	Wt	30 Wall	Wt
1/8”	10,3	1,7	0,357	2,4	0,470								
1/4”	13,7	2,2	0,625	3,0	0,804								
3/8”	17,1	2,3	0,848	3,2	1,10								
1/2”	21,3	2,8	1,26	3,7	1,62	7,5	2,54						
3/4”	26,7	2,9	1,68	3,9	2,19	7,8	3,63						
1”	33,4	3,4	2,50	4,5	3,23	9,1	5,45						
1.1/4”	42,2	3,6	3,38	4,9	4,46	9,7	7,75						
1.1/2”	48,3	3,7	4,05	5,1	5,40	10,2	9,54						
2”	60,3	3,9	5,43	5,5	7,47	11,1	13,4						
2.1/2”	73	5,2	8,62	7,0	11,4	14	20,4						
3”	88,9	5,5	11,3	7,6	15,3	15,2	27,7						
3.1/2”	101,6	5,7	13,6	8,1	18,6	16,2	34						
4”	114,3	6	16,1	8,6	22,3	17,1	41,1						
5”	141,3	6,6	21,8	9,5	30,9	19	57,4						
6”	168,3	7,1	28,2	11	42,5	21,9	79,1						
8”	219,1	8,2	42,5	12,7	64,6	22,2	108			6,4	33,3	7	36,7
10”	273	9,3	60,2	12,7	81,5	25,4	155			6,4	41,7	7,8	50,9
12”	323,9	9,5	73,8	12,7	97,4	25,4	187			6,4	49,7	8,4	65,1
14”	355,6	9,5	81,2	12,7	107			6,4	54,6	7,9	68,1	9,5	81,2
16”	406,4	9,5	93,1	12,7	123			6,4	62,6	7,9	77,9	9,5	93,1
18”	457,2	9,5	105	12,7	139			6,4	70,5	7,9	87,8	11,1	122
20”	508	9,5	117	12,7	155			6,4	78,5	9,5	117	12,7	155
22”	558,8	9,5	129	12,7	171			6,4	86,4	9,5	129	12,7	171
24”	609,6	9,5	141	12,7	187			6,4	94,7	9,5	141	14,3	210
26”	660,4	9,5	153	12,7	203			7,9	128	12,7	203		
28”	711,2	9,5	165	12,7	219			7,9	138	12,7	219	15,9	272
30”	762	9,5	176	12,7	234			7,9	147	12,7	234	15,9	292
32”	812,8	9,5	188	12,7	250			7,9	157	12,7	250	15,9	312
34”	863,6	9,5	200	12,7	266			7,9	167	12,7	266	15,9	332
36”	914,4	9,5	212	12,7	282			7,9	177	12,7	282	15,9	351

Table 4 - ASME B 36.10 PIPE SCHEDULES - Wall= Wallthickness in Millimeters | Wt= Weights in kilogram per meter

Nominal pipe size	O.D.	Schedule		Schedule		Schedule		Schedule		Schedule		Schedule		Schedule	
Inches	mm	40 Wall	Wt	60 Wall	Wt	80 Wall	Wt	100 Wall	Wt	120 Wall	Wt	140 Wall	Wt	160 Wall	Wt
1/8”	10,3	1,7	0,357			2,4	0,470								
1/4”	13,7	2,2	0,625			3,0	0,804								
3/8”	17,1	2,3	0,848			3,2	1,10								
1/2”	21,3	2,8	1,26			3,7	1,62							4,8	1,9
3/4”	26,7	2,9	1,68			3,9	2,19							5,6	2,89
1”	33,4	3,4	2,50			4,5	3,23							6,4	4,23
1.1/4”	42,2	3,6	3,38			4,9	4,46							6,4	5,6
1.1/2”	48,3	3,7	4,05			5,1	5,40							7,1	7,23
2”	60,3	3,9	5,43			5,5	7,47							8,7	11,1
2.1/2”	73	5,2	8,62			7,0	11,4							9,5	14,9
3”	88,9	5,5	11,3			7,6	15,3							11,1	21,3
3.1/2”	101,6	5,7	13,6			8,1	18,6								
4”	114,3	6	16,1			8,6	22,3			11,1	28,3			13,5	33,5
5”	141,3	6,6	21,8			9,5	30,9			12,7	40,2			15,9	49,0
6”	168,3	7,1	28,2			11	42,5			14,3	54,2			18,3	67,5
8”	219,1	8,2	42,5	10,3	53,1	12,7	64,6	15,1	75,8	18,3	90,7	20,6	101	23,0	112
10”	273	9,3	60,2	12,7	81,5	15,1	95,8	18,3	115	21,4	133	25,4	156	28,6	172
12”	323,9	10,3	79,7	14,3	109	17,4	132	21,4	160	25,4	187	28,6	208	33,3	239
14”	355,6	11,1	94,3	15,1	126	19,0	158	23,8	195	27,8	224	31,8	253	35,7	281
16”	406,4	12,7	123	16,7	160	21,4	203	26,2	245	30,9	286	36,5	333	40,5	365
18”	457,2	14,3	156	19	206	23,8	254	29,4	310	34,9	363	39,7	408	45,2	459
20”	508	15,1	183	20,6	248	26,2	311	32,5	381	38,1	441	44,4	508	50,0	564
22”	558,8			22,2	294	28,6	373	34,9	451	41,3	526	47,6	600	54,0	671
24”	609,6	17,4	255	24,6	355	30,9	441	38,9	547	46,0	639	52,4	719	59,5	807
26”	660,4														
28”	711,2														
30”	762														
32”	812,8														
34”	863,6														
36”	914,4														

Table 5 - SEAMLESS STEEL PIPE DESCRIPTION

VL code	Standard	Material / grade	Product description
150	**ASTM / ASME A-SA333**	Gr.6 / LT50	Seamless carbon steel pipe to ASTM A333M Grade 6 LT50, ASTM A530M and SA333M/ SA530M in accordance with ASME Section II part A, additional requirements to NACE MR-01-75. Pressure tested to the norm. Execution as per 'fine grain practice' with a grainsize of min. 6 in accordance with ASTM E 112. C-content max. 0,20%, C-eq. max. 0,41 % as per long formula. Impact test Charpy-V-notch at -50° C (average value of min. 27 Joule). Outside oiled, in lengths indicated as SRL (=5-7m) or DRL (=8-12m). O.d. ≥ 26.7 mm stamped (with 'round nose tools') with heatnumber, materialquality, size and manufacturer's brand. O.d. ≥ 60,3 mm bevelled ends as per ANSI B16.25 fig. 2a/3a. Wall thickness ≥ 25,4mm plain ends If desired with inspection report to EN 10204/3.1B.
161	**ASTM / ASME A-SA333**	Gr. P 11	Seamless low alloy-steel pipes material grade P11 (UNS K11597) to ASTM A 335M, ASTM A530M and SA335M / SA530M in accordance with ASME section II part A. Additional requirements to NACE MR-01-75. PMI investigated, outside oiled, in lengths indicated as SRL (=5-7m) or DRL (=8-12m). Ends ≥ NPS 2" (all wall thicknesses) bevelled as per ASME B16.25 1997 fig. 2a, for wallthickness ≤ 22mm and fig. 3a for wallthicknesses > 22mm.Tubes < 2" NPS plain ends. If desired, inspection report to EN 10204/3.1B.
170	**API Spec. 5L ASTM / ASME A-SA106**	Gr. B Gr. B	Seamless carbon steel pipes to API Spec.5L Gr. B/ ASTM A-106/SA-106 Gr.B, additional requirements according to NACE MR-01-75 and with hot yield determination at 300° C with a min. value of 149 N/mm^2. Pressure tested in accordance with API 5L jan. 2000 PSL1 en A/SA 530. C-content max. 0,22%, C-equivalent max. 0,41 % as per long formula. In lengths indicated as SRL (=5-7 m) or DRL (=8-12 m), outside oiled. O.d. ≥ 26,7 mm stamped (with round nose tools) with heatnumber, materialquality, size, manufacturer's brand and API monogram. O.d. ≥ 60,3mm bevelled ends as per A106 §19.1.2 note 9 (30° -0/+5°), however wallthickness ≥ 25.4mm plain ends. If desired with inspection report to EN 10204/3.1B.
174	**API Spec. 5L**	Gr. B Galv. t&c	Seamless steel pipes to AP! Spec. 5L Gr. B, threaded and coupled to API 5L, hot dipped galvanised in accordance with ASTM A53. Pressure tested to the norm. In lengths of 5-7m (SRL) If desired with mill inspection report to EN 10204/3.1B.
177	**API Spec. 5L**	Gr. X-52	Seamless carbon steel pipes to API Spec. 5L Gr. X-52 and NACE MR-01-75; C-content max. 0,22%. C-equivalent max. 0,43% for wallth. ≤ 12,7 mm; C-equivalent max. 0,45 for wallth > 12,7 mm as per long formula. In lengths indicated as DRL (=8-12 m.) Outside oiled. with bevelled ends (30°-0/+5°) If desired with inspection report to EN 10204/3.1B. Stamped (by means of 'round nose tools') with heatnumber, materialquality, size, manufacturer's symbol and API monogram. If desired with inspection report EN 10204/3.1B.
181	**ISO 2938**	Mechanical 20 MnV6	Seamless mechanical tubes, material 20 MnV6, materialnumber 1.5217, minimum tensile strength of 650 N/mm^2. Especially suitable for machining. Dimensions and tolerances in compliance with ISO 2938, in lengths indicated as SRL (=5-7 m.), with plain ends. If desired with inspection report to EN 10204/3.1B.

Table 6 - TABLE OF MINIMUM PERMISSIBLE WALL THICKNESSES ON INSPECTION FOR PIPE SPECIFIED WALL THICKNESSES

Note 1 - The following equation, upon which this table is based, shall be applied to calculate minimum permissible wall thickness from specified wall thickness: t_s **x 0.875 =** t_m
where:
t_s = specified wall thickness, in. [mm], and
t_m = minimum permissible wall thickness, in. [mm].
The wall thickness is expressed to three [two] decimal places, the fourth [third] decimal place being carried forward or dropped in accordance with **Practice E29**.
Note 2 - This table is a master table covering wall thicknesses available in the purchase of difwferent classifications of pipe, but it is not meant to imply that all of the walls listed therein are obtainable under this specification.

Specified Wall Thickness (t_s), in. [mm]	Minimum Permissible Wall Thickness on Inspection (t_m), in. [mm]	Specified Wall Thickness (t_s), in. [mm]	Minimum Permissible Wall Thickness on Inspection (t_m), in. [mm]	Specified Wall Thickness (t_s), in. [mm]	Minimum Permissible Wall Thickness on Inspection (t_m), in. [mm]
0.068 [1.73]	0.060 [1.52]	0.294 [7.47]	0.257 [6.53]	0.750 [19.05]	0.656 [16.66]
0.088 [2.24]	0.077 [1.96]	0.300 [7.62]	0.262 [6.65]	0.812 [20.62]	0.710 [18.03]
0.091 [2.31]	0.080 [2.03]	0.307 [7.80]	0.269 [6.83]	0.844 [21.44]	0.739 [18.77]
0.095 [2.41]	0.083 [2.11]	0.308 [7.82]	0.270 [6.86]	0.864 [21.94]	0.756 [19.20]
0.109 [2.77]	0.095 [2.41]	0.312 [7.92]	0.273 [6.93]	0.875 [22.22]	0.766 [19.46]
0.113 [2.87]	0.099 [2.51]	0.318 [8.08]	0.278 [7.06]	0.906 [23.01]	0.793 [20.14]
0.119 [3.02]	0.104 [2.64]	0.322 [8.18]	0.282 [7.16]	0.938 [23.82]	0.821 [20.85]
0.125 [3.18]	0.109 [2.77)	0.330 [8.38]	0.289 [7.34]	0.968 [24.59]	0.847 [21.51]
0.126 [3.20]	0.110 [2.79]	0.337 [8.56]	0.295 [7.49]	1.000 [25.40]	0.875 [22.22]
0.133 [3.38]	0.116 [2.95]	0.343 [8.71]	0.300 [7.62]	1.031 [26.19]	0.902 [22.91]
0.140 [3.56]	0.122 [3.10]	0.344 [8.74]	0.301 [7.65]	1.062 [26.97]	0.929 [26.30]
0.145 [3.68]	0.127 [3.23]	0.358 [9.09]	0.313 [7.95]	1.094 [27.79]	0.957 [24.31]
0.147 [3.73]	0.129 [3.28]	0.365 [9.27]	0.319 [8.10]	1.125 [28.58]	0.984 [24.99]
0.154 [3.91]	0.135 [3.43]	0.375 [9.52]	0.328 [8.33]	1.156 [29.36]	1.012 [25.70]
0.156 [3.96]	0.136 [3.45]	0.382 [9.70]	0.334 [8.48]	1.219 [30.96]	1.067 [27.08]
0.179 [4.55]	0.157 [3.99]	0.400 [10.16]	0.350 [8.89]	1.250 [31.75]	1.094 [27.79]
0.187 [4.75]	0.164 [4.17]	0.406 [10.31]	0.355 [9.02]	1.281 [32.54]	1.121 [28.47]
0.188 [4.78]	0.164 [4.17]	0.432 [10.97]	0.378 [9.60]	1.312 [33.32]	1.148 [29.16]
0.191 [4.85]	0.167 [4.24]	0.436 [11.07]	0.382 [9.70]	1.343 [34.11]	1.175 [29.85]
0.200 [5.08]	0.175 [4.44]	0.437 [11.10]	0.382 [9.70]	1.375 [34.92]	1.203 [30.56]
0.203 [5.16]	0.178 [4.52]	0.438 [11.13]	0.383 [9.73]	1.406 [35.71]	1.230 [31.24]
0.216 [5.49]	0.189 [4.80]	0.500 [12.70]	0.438 [11.13]	1.438 [36.53]	1.258 [31.95]
0.218 [5.54]	0.191 [4.85]	0.531 [13.49]	0.465 [11.81]	1.500 [38.10]	1.312 [33.32]
0.219 [5.56]	0.192 [4.88]	0.552 [14.02]	0.483 [12.27]	1.531 [38.89]	1.340 [34.04]
0.226 [5.74]	0.198 [5.03]	0.562 [14.27]	0.492 [12.50]	1.562 [39.67]	1.367 [34.72]
0.237 [6.02]	0.207 [5.26]	0.594 [15.09]	0.520 [13.21]	1.594 [40.49]	1.395 [35.43]
0.250 [6.35]	0.219 [5.56]	0.600 [15.24]	0.525 [13.34]	1.750 [44.45]	1.531 [38.89]
0.258 [6.55]	0.226 [5.74]	0.625 [15.88]	0.547 [13.89]	1.781 [45.24]	1.558 [39.57]
0.276 [7.01]	0.242 [6.15]	0.656 [16.66]	0.574 [14.58]	1.812 [46.02]	1.586 [40.28]
0.277 [7.04]	0.242 [6.15]	0.674 [17.12]	0.590 [14.99]	1.968 [49.99]	1.722 [43.74]
0.279 [7.09]	0.244 [6.20]	0.688 [17.48]	0.602 [15.29]	2.062 [52.37]	1.804 [45.82]
0.280 [7.11]	0.245 [6.22]	0.719 [18.26]	0.629 [15.98]	2.344 [59.54]	2.051 [52.10]
0.281 [7.14]	0.246 [6.25]				

Certifications

Certificate of Authority to use the Official API Monogram

License Number: 5CT-0001

YANTAI YUANHUA STEEL PIPE CO., LTD.
Dajijia Industry Park
Yantai Development Zone
Yantai City, Shandong
People's Republic of China

American Petroleum Institute

Effective Date: MAY 11, 2012
Expiration Date: JANUARY 5, 2015

ABS

PORT OFFICE: YANTAI, P.R.CHINA

Certificate of
MANUFACTURING ASSESSMENT

YANTAI YUANHUA STEEL PIPE CO., LTD YANTAI, P.R.CHINA

SEAMLESS STEEL TUBES AND PIPES

ISSUE DATE | EXPIRATION DATE

SURVEYOR

FIRST ANNUAL ENDORSEMENT

SECOND ANNUAL ENDORSEMENT

THIRD ANNUAL ENDORSEMENT

FOURTH ANNUAL ENDORSEMENT

ABS

CERTIFICATE NUMBER | DATE

ABS TECHNICAL OFFICE

CERTIFICATE OF
DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of
YANTAI YUANHUA STEEL PIPE CO., LTD. - YanTai city

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

PRODUCT: Seamless Steel Tubes and Pipes

AMERICAN BUREAU OF SHIPPING

Engineer

RECOGNITION FOR
BV MODE II SCHEME

YANTAI YUANHUA STEEL PIPE CO.,LTD
YANTAI - CHINA

ECI EUROPEAN CASTING INDUSTRY

European Casting Industry Srl
Via D'Azeglio 57
40123 Bologna BO, Italia
P.Iva: 03228761205
www.ecivalve.it | info@ecivalve.it