



**T.A.L.
Holland**

***“ALL YOUR PIPING MATERIALS
PROMPT, PROFESSIONAL
AND PERSONAL.”***

TECHNICAL DATA

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TABLE OF HARDNESS CONVERSION

Vickers Hardness	Brinell Hardness load 3000 Kg	scale B (100 kg)	Rockwell Hardness scale C (150kg)	scale D (100kg)
85	81	41	-	-
90	86	48	-	-
95	90	52	-	-
100	95	56,2	-	-
110	105	62,3	-	-
120	114	66,7	-	-
130	124	71,2	-	-
140	133	75	-	-
150	143	78,7	-	-
160	152	81,7	0	-
170	162	85	3,0	-
180	171	87,1	6,0	-
190	181	89,5	8,5	-
200	190	91,5	11,0	-
210	200	93,4	13,4	-
220	209	95	15,7	-
230	219	96,7	18,0	-
240	228	98,1	20,3	40,3
245	233	-	21,3	41,1
250	238	99,5	22,2	41,7
255	243	-	23,1	42,2
260	247	101,0	24,0	43,1
265	252	-	24,8	43,7
270	256	102,0	25,6	44,3
275	261	-	26,4	44,9
280	265	103,5	27,1	45,3
285	270	-	27,8	46,0
290	275	104,5	28,5	46,5

TABLE OF PRESSURE UNITS CONVERSION

Unit	bar	Pa	MPa	Kg/cm ²	atm	psi
bar	1	10000	0,1	1,0197	0,987	14,504
Pa	0,00001	1	1 X (10-6)	1,0197 X (10-5)	0,987 X (10-5)	14,504 X (10-5)
MPa	10	1000000	1	10,197	9,87	145,04
Kg/cm ²	0,98	0,980 X 10	0,0980	1	0,9678	14,223
Atm	1,013	1,013 X (10+5)	0,0103	1,033	1	14,696
psi	0,0689	0,0689 X (10+5)	0,00689	0,0703	0,068	1

ELEMENTS - SYMBOLS - MASSES

Element	Symbol	Mass (Kg/dm ³)
Carbon	C	2,25
Manganese	Mn	7,43
Phosphorus	P	1,83
Sulphur	S	2,07
Silicon	Si	2,33
Chrome	Cr	7,19
Nickel	Ni	8,9
Molybdenum	Mo	10,2
Titanium	Ti	4,51
Copper	Cu	8,96
Vanadium	V	6,11
Niobium	Nb	8,57
Aluminium	Al	2,7
Nitrogen	N	1,25
Zirconium	Zr	6,51

NON-DESTRUCTIVE TESTS

CONTROL METHODS

The following non-destructive tests can be performed by qualified laboratories responding directly to the technical requirements required by the customer.

► **Ultrasonic method**

- ASTM E 213: Standard Practice for Ultrasonic Testing of Metal Pipe and Tubing

► **Electromagnetic method**

- ASTM E 709: Standard Guide for Magnetic Particle Testing
- ASTM E 309: Standard Practice for Eddy-Current Examination of Steel Tubular Products Using Magnetic Saturation

► **X-ray method**

- ASTM E 94: Standard Guide for Radiographic Examination
- ASME V ART. 2 - ASME VIII DIV. I UW51: Standards for spot Radiographic Examination

► **Liquid penetrant method**

- ASTM E 165: Standard Practice for Liquid Penetrant Examination for General Industry

► **Grain size method**

- ASTM E 112: Standard Test Methods for Determining Average Grain Size

TEST CERTIFICATES

UNI EN 10204 - DIN 50049

UNI EN 10204 REFERENCE	DESIGNATION OF THE DOCUMENT TYPE	DOCUMENT CONTENT	DOCUMENT ISSUED AND VALIDATED BY
2.1	declaration of compliance with the order	statement of compliance with the order	the manufacturer
2.2	test report	statement of compliance with the order with indication of result of non-specific inspection	the manufacturer
3.1	inspection certificate 3.1	statement of compliance with the order with indication of result of specific inspection	the manufacturer's authorized inspection representative independent from the manufacturing department
3.2	inspection certificate 3.2	statement of compliance with the order with indication of result of specific inspection	the manufacturer's authorized inspection representative independent from the manufacturing department and, either the purchaser's authorized inspection representative or the inspector designated by the official regulations

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The technical department is at your disposal for any further technical and regulatory clarification.