D'AMORE & LUNARDI S.P.A.

D'AMORE & LUNARDI

Seamless and welded carbon steel pipes

EASY GUIDE TO LINE PIPE





HISTORY

1865 *D'Amore family* ***begins trading in non-ferrous metals****.*

1945 ***D'Amore & Lunardi S.p.A. is established*** *and develops a gradual commercial expansion in shipbuilding and industrial building supplies.*

1965 ***100 years later****, the company builds a* ***new warehouse (100,000 m²)*** *in Serravalle Scrivia (AL), a strategic position at the centre of the Milan-Turin-Genoa industrial triangle.*

1989 *Consumer development in Southern Italy leads to the opening of a new branch in the area, close to the production plants, to trade and coat tubular products. D'Amore Sud S.p.A. is established in Taranto (70,000 m²).*

1994 *D'Amore & Lunardi S.p.A. always has the customer's quality demands at heart. The quality system is certified to ISO 9002 standards.*

2003 *The ongoing commitment to customer satisfaction was rewarded in 2003 with ISO 9001 certification and continues to the present day.*

2012 *D'Amore & Lunardi S.p.A.* ***opens in Naples a new warehouse*** *to improve the sales in Center-South Italy.*

2015 ***D'Amore & Lunardi S.p.A. is 150 years old and the Italian Commerce Chamber names with the prestigious title of Historical Italian Company.***
Looking for improving the quality service to our clients and anticipating the new market needs, D'Amore & Lunardi S.p.A. obtains from the Ministero dei Lavori Pubblici the certificate of "Centro Trasformazione Qualificato" far the mechanical processing applied on structural pipes (micropali).

Thanks to a modern and highly technological plant D'Amore & Lunardi S.p.A. ***is able to provide all finishing processes that qualify the pipe*** *according to its intended use.*

D'Amore & Lunardi S.p.A. can satisfy a wide range of uses far steel pipes in waterworks, pipelines, petro-chemical and food plants, etc*.*

The quality of the products, the large stock availability, the prompt delivery, the wide and diversified range of production abilities in the finishing processes, make D'Amore & Lunardi S.p.A. the benchmark in the market of high quality pipes.

INDEX

HEADQUARTERS

D'AMORE & LUNARSI S.p.A.
via Gambarato, 32
15069 Serravalle Scrivia (AL)
Italy
Phone +39 0143 61191
commerciale@damorelunardi.it

SUBSIDIARIES

D'AMORE & LUNARSI S.p.A.
Zona Industriale ASI
Località Pascarola
80023 Caivano (NA)

D'AMORE Sud S.p.A.
Strada Vicinale per Bellavista, 8500
74100 - TARANTO - Italy
Tel: +39 0994751722

STEEL GRADES CORRESPONDENCE

CORRESPONDENCE BETWEEN **API 5L** AND **EN 10217-1**

API 5L / EN 10217-1	CHEMICAL COMPOSITION (CAST ANALYSIS)[a] in % by mass % maximum														MECHANICAL PROPERTIES[e]							
															TENSILE PROPERTIES					IMPACT PROPERTIES		
															Upper Yield Strenght R_{eH}[f] min for T mm (N/mm²)		Tensile Strenght R_m (N/mm²)	ELONGATION A min %[f]		Minimum average absorbed energy KV J at a temperature of °C		
																				longitudinal		transverse
	C	Si	Mn %	P	S	Cr[b]	Mo[b]	Ni[b]	Al_{tot}	Cu[b c]	Nb[b]	Ti[b]	V[b]	Cr+Cu+Mo+Ni[b]	T ≤ 16	16 < T ≤ 40		longitudinal	transverse	0	-10	0
STEEL GRADE																						
P195TR1[h]	0,13	0,35	0,70	0,025	0,010	0,30	0,08	0,30	-	0,30	0,010	0,04	0,02	0,70	195	185	320-440	27	25	-	-	-
P195TR2	0,13	0,35	0,70	0,025	0,015	0,30	0,08	0,30	0,02[d]	0,30	0,010	0,04	0,02	0,70	195	185	320-440	27	25	40	28 g	27
P235TR1[h]	0,16	0,35	1,20	0,025	0,010	0,30	0,08	0,30	-	0,30	0,010	0,04	0,02	0,70	235	225	360-500	25	23			-
P235TR2	0,16	0,35	1,20	0,025	0,015	0,30	0,08	0,30	0,02[d]	0,30	0,010	0,04	0,02	0,70	235	225	360-500	25	23	40	28 g	27
P265TR1[h]	0,20	0,40	1,40	0,025	0,010	0,30	0,08	0,30	-	0,30	0,010	0,04	0,02	0,70	265	255	410-570	21	19	-	-	-
P265TR2	0,20	0,40	1,40	0,025	0,015	0,30	0,08	0,30	0,02[d]	0,30	0,010	0,04	0,02	0,70	265	255	410-570	21	19	40	28 g	27

a) Elements not included in this Table shall not be intentionally added to the steel without the agreement of the purchaser, except for elements which may be added for finishing the cast. All appropriate measures shall be taken to prevent the addition of undesirable elements from scrap or other materials used in the steel making process.
b) The content of these elements need not be reported unless intentionally added to the cast.
c) Option 3: In order to facilitate subsequent forming operation, an agreed maximum copper content lower than indicated and an agreed specified maximum tin content shall apply.
d) This requirement is not applicable provided the steel contains a sufficient amount of other nitrogen binding elements, which shall be reported.
e) For wall thickness greater than 40 mm the mechanical properties are subject to agreement.
f) See 11.2.
g) Option 5: Additionally, longitudinal impact strength shall be verified at -10 °C.
h) Tubes made to these material grades are unlikely to support the essential requirements of Directive 97/23/EC unless other criteria are taken into account, see Annex I section 7.5 of this Directive

CORRESPONDENCE BETWEEN **API 5L** AND **ISO 3183 ANNEX A**

API 5L / ISO 3183	CHEMICAL ANALYSES % maximum											Yield Strenght (N/mm²)		Ultimate Strenght (N/mm²)		ELONG %	IMPACT TEST
	C[b]	Si	Mn %[b]	P	S	V	Nb	Ti	Other	CE_{IIW}[a]	CE_{Pcm}[a]	min	max	min	max	Transvers	J / C°
PSL1 GRADES[a]																	
L210 / A	0,22	-	0,90	0,030	0,030	-	-	-	-	n.r.	n.r.	210	-	335	-	by equation	n.r.
-	-	-	-	-	-	-	-	-	-	n.r.	n.r.	-	-	-	-	-	n.r.
L245 / B	0,26	-	1,20	0,030	0,030	c,d	c,d	d	-	n.r.	n.r.	245	-	415	-	by equation	n.r.
L290/ X42	0,26	-	1,30	0,030	0,030	d	d	d	-	n.r.	n.r.	290	-	415	-	by equation	n.r.
L360/ X52	0,26	-	1,40	0,030	0,030	d	d	d	-	n.r.	n.r.	360	-	460	-	by equation	n.r.
L415 / X60	0,26[e]	-	1,40[e]	0,030	0,030	f	f	f	-	n.r.	n.r.	415	-	520	-	by equation	n.r.
L450/ X65	0,26[e]	-	1,45[e]	0,030	0,030	f	f	f	-	n.r.	n.r.	450	-	535	-	by equation	n.r.
L485/ X70	0,26[e]	-	1,65[e]	0,030	0,030	f	f	f	-	n.r.	n.r.	485	-	570	-	by equation	n.r.
PSL2 GRADES																	
L245/ B	0,22	0,45	1,20	0,025	0,015	0,050	0,050	0,04	e	0,43	0,25	245	450	415	760	by equation	27/0°
L290/ X42	0,22	0,45	1,30	0,025	0,015	0,050	0,050	0,04	e	0,43	0,25	290	495	415	760	by equation	27/0°
L360/ X52	0,22	0,45	1,40	0,025	0,015	d	d	d	e	0,43	0,25	360	530	460	760	by equation	27/0°
L415 / X60	0,12[f]	0,45[f]	1,60[f]	0,025	0,015	g	g	g	h	0,43	0,25	415	565	520	760	by equation	27/0°
L450/ X65	0,12[f]	0,45[f]	1,60[f]	0,025	0,015	g	g	g	h	0,43	0,25	450	600	535	760	by equation	27/0°
L485 / X70	0,12[f]	0,45[f]	1,70[f]	0,025	0,015	g	g	g	h	0,43	0,25	485	635	570	760	by equation	27/0°
L555 / XBO	0,12[f]	0,45[f]	1,85[f]	0,025	0,015	g	g	g	i	0,43[f]	0,25	555	705	625	825	by equation	27/0°

PSL1

a) For requirements of Cu, Ni, Cr, Mo see Note - a of APISL
b) For each reduction of 0,1 % below maximum Carbon concentration see Note - b of API 5L PSL1
c) Unless otherwise agreed, the sum of Nb and V contents shall be max 0,6%
d) The sum Nb, V, Ti concentrations shall be max 0,15%
e) Unless otherwise agreed
f) Unless otherwise agreed the sum Nb, V, Ti concentrations shall be max 0,15 % n.r. Not required

PSL2

a) Based on product analysis. For sealmess pipes with "t" greater than 20 mm the CE limits shall be agreed. The CEw limits apply if the carbon mass is greter than 0,12 and the CEPcm if it is less than or equal to 0,12
b) For each reduction of 0,1 % below maximum Carbon concentration see Note - b of API 5L PSL2
d) The sum Nb, V, Ti concentrations shall be max 0,15%
e) Unless otherwise agreed, 0,50 % max for Cu, 0,30 % max for Ni, 0,30 % max for Cr and 0,15% max for Mo
f) Unless otherwise agreed
g) Unless otherwise agreed, The sum Nb, V, Ti concentrations shall be max 0,15 %
h) Unless otherwise agreed, 0,50 % max for Cu, 0,50 % max for Ni, 0,50 % max for Cr and 0,50% max for Mo
i) Unless otherwise agreed, 0,50 % max for Cu, 1,00 % max for Ni, 0,50 % max for Cr and 0,50% max for Mo

ISO 3183 CHEMICAL COMPOSITION FOR PIPE WITH T S 25,0 MM (0,984 IN)											
ANNEX A STEEL GRADE (STEEL NAME)	MASS FRACTION, BASED UPON HEAT AND PRODUCT ANALYSES[a] % maximum									Carbon equivalent[c] % maximum	
	C[b]	Si	Mn[b]	P	S	V	Nb	Ti	Other	CE_{IIW}	CE_{Pcm}
SEAMLESS AND WELDED PIPE											
L245NE or BNE	0,18	0,40	1,20	0,025	0,015	-	-	-	d	0,42	0,25
L290NE or X42NE	0,19	0,40	1,20	0,025	0,015	0,06	0,05	0,04	d	0,42	0,25
L360NE or X52NE	0,22	0,45	1,40	0,025	0,015	0,10	0,05	0,04	d,e	0,43	0,25
L415NE or X60NE	0,23	0,45[j]	1,40[j]	0,025	0,015	0,10[j]	0,05[j]	0,04[j]	d,e,f	as agreed	as agreed
SEAMLESS PIPE											
L360QE or X52QE	0,18	0,45	1,50	0,025	0,015	0,05	0,05	0,04	d	0,42	0,25
L415QE or X60QE	0,18	0,45	1,70	0,025	0,015	0,09	0,06	0,05	d,e,f	0,43	0,25
L450QE or X65QE	0,18	0,45	1,70	0,025	0,015	0,10	0,06	0,07	d,e,f	0,43	0,25
L485QE or X70QE	0,18	0,45	1,80	0,025	0,015	0,11	0,06	0,07	d,e,f	0,43	0,25
L555QE or X80QE	0,18	0,45	1,90	0,025	0,015	0,11	0,07	0,07	e,g	as agreed	as agreed
WELDED PIPE											
L245ME or BME	0,18	0,45	1,20	0,025	0,015	0,05	0,05	-	d	0,40	0,25
L290ME or X42ME	0,18	0,45	1,30	0,025	0,015	0,05	0,05	-	d	0,40	0,25
L360ME or X52ME	0,18	0,45	1,40	0,025	0,015	0,06	0,06	0,05	d	0,41	0,25
L415ME or X60ME	0,12[j]	0,45	1,60	0,025	0,015	0,09	0,08[i]	0,07	e,h	0,42	0,25
L450ME or X65ME	0,12[j]	0,45	1,60	0,025	0,015	0,09	0,08[i]	0,07	e,h	0,43	0,25
L485ME or X70ME	0,12[j]	0,45	1,70	0,025	0,015	0,11	0,08[i]	0,07	e,h	0,43	0,25
L555ME or X80ME	0,12[j]	0,45	1,80	0,025	0,015	0,11	0,08[i]	0,07	e,h	0,43[j]	0,25[j]

a) Elements not mentioned in this table shall not be added intentionally without purchaser's approval except for elements that may be added for deoxidation and finishing of the heat
b) For each reduction of 0,01 % below the specified maximum for C, an increase of 0,05 % above the specified maximum for Mn is permissible, up to a maximum increase of 0,20 %.
c) Based upon product analysis (see API Spee SL, 46th edition 2018, 9.2.4 and 9.2.5), The CE_{IIW} imits apply if C > 0,12 % and the CE_{Pcm} limits apply if C ≤ 0, 12 %
d) 0,015 % ≤ Al_{total} ≤ 0,060 %; N ≤ 0,012 %; Al/N ≥ 2:1, Cu≤ 0,25 %; Ni≤ 0,30 %; Cr ≤ 0,30 %; Mo≤ 0,10 %
e) V+Nb+Ti≤0,15%
f) If agreed, Mo≤ 0,35 %
g) 0,015 % ≤Al_{total} ≤ 0,060 %; N ≤ 0,012 %; Al/N ≥ 2:1, Cu≤ 0,25 %; Ni≤ 0,60 %; Cr ≤ 0,50 %; Mo≤ 0,50 %
h) 0,015 % ≤Al_{total} ≤ 0,060 %; N ≤ 0,012 %; Al/N ≥ 2:1, Cu≤ 0,50 %; Ni≤ 0,50 %; Cr ≤ 0,30 %; Mo≤ 0,35 %
i) Use of higher Nb levels shall meet the following formula: Nb+ Cs 0,20 %
j) Unless otherwise agreed

THICKNESS RANGE

In **EN10225:2009** edition, the maximum thickness is:

- **150 mm** for S355G7/8/10 + N
- **100 mm** for S355G7/8/10 + M
- **100 mm** for S420Gx/S460Gx + M/QT

In the **EN10225-1:2019** edition, the thicknesses have increased to:

- **200 mm** for S355NLO
- **120 mm** for S355/S420/S460/S500MLO
- **150 mm** for S355/S420/S460/S500/S620/S690QLO

INTERNAL SOUNDNESS (UT)

According to **EN10225:2009**, Ultrasonic testing shall be carried out and shall meet the following requirements

- **Group 3** - EN 10160, class S1/E2
- **Group 2 -** EN 10160, class S0/E1

According to **EN10225-1:2019,** all plates shall meet EN10160 class S0/E1

When option 18 is specified S1/E2 shall be met

CHEMISTRY

In **EN10225-1:2019** the chemical analysis per element is less strict.

However, the requirement on CEV are more severe.

For example:

S355MLO CEV max 0,39

S355G10 CEV max 0,43

EQUIVALENT STEEL GRADES B/W 2009 & 2019 EDITIONS

EN 10025: 2009		EN10225-1: 2019
Group 2	S355G7+M	S355MLO
Group 2	S355G7+N	S355NLO
Group 3	S355G8+M	S355MLO + Options 2 & 3
Group 3	S355G8+N	S355NLO + Options 2 & 3
Group 2	S355G9+N	S355NLO
Group 2	S355G9+M	S355MLO
Group 3	S355G10+N	S355NLO + Options 2 & 3
Group 3	S355G10+M	S355MLO + Options 2 & 3
Group 2	S420G1+QT	S420QLO
Group 2	S420G1+M	S420MLO
Group 3	S420G2+QT	S420QLO + Options 2 & 3
Group 3	S420G2+M	S420MLO + Options 2 & 3
Group 2	S460G1+QT	S460QLO
Group 2	S460G1+M	S460MLO
Group 3	S460G2+QT	S460QLO + Options 2 & 3
Group 3	S460G2+M	S460MLO + Options 2 & 3
-	-	S500MLO
-	-	S500QLO
-	-	S550QLO
-	-	S620QLO
-	-	S690QLO

IMPACT TEST:

According to **EN10225:2009**, Charpy impact test specimen orientation for:

- **Group 1** — Longitudinal
- **Group 2 & 3** — Transverse

According to **EN10225-1: 2019,**

All the Charpy impact test specimens — Transverse

STEEL NAME DESIGNATION SYSTEM COMPARISON

	EN 10025: 2009	EN10225-1: 2019
S	Structural **S**teel	Structural **S**teel
355 / 420 / 460 / 500 / 550 / 600 / 620 / 690	**Min. Yield Strength** for thickness t <= 16 mm in Mpa	**Min. Yield Strength** for thickness t <= 16 mm in Mpa
Gxx	**Capital G**, followed by a max. of 2 digits indicating steel grade within the groups 1,2 or 3, as defined in EN 10225:2009	**removed**
M / N / QT	**+ M** Thermo mechanical rolling **+ N** Normalizing rolling **+ QT** Quenched & Tempered	**+ M** Thermo mechanical rolling **+ N** Normalizing rolling **+ Q** Quenched & Tempered
L	not applicable	**Letter L** indicating specified impact properties @-40°C
0	not applicable	**Capital O** indicating Offshore structures
Example	*S355G7+N* *S355G8+M* *S460G2+QT*	*S355NLO* *S355MLO* *S460QLO*

EN10225: 2019 OTHER CHANGES

REPORTING OF CEV

According to **EN10225: 2009**, reporting of CEV in the MTC **is mandatory**.

According to **EN10225: 2019**, reporting of CEV and/ or Pcm **is not mandatory** unless otherwise agreed between the manufacturer and buyer at the time of enquiry and order (Option 8)

CERTIFICATION

According to **EN10225: 2009** edition, material certification shall be according to EN10204 (2.1 / 2.2 / 3.1 / 3.2) based on agreement between purchaser and seller.

But according to **EN10225-2: 2019** edition, minimum EN10204 3.1 certification is mandatory

MARKING & BUNDLING

	EN 10025: 2009	EN10225-1: 2019
Colorcoding	Mandatory	Not Mandatory
Die stamping	Mandatory	Not Mandatory

THROUGH THICKNESS TESTING

	EN 10025: 2009	EN10225-1: 2019
Required for materials:	≥ 25 mm	≥ 15 mm

EN 10225: 2019 POSSIBLE CONFUSIONS

Both plates and rolled sections are available in S355MLO.

However, for plates the impact test is in transverse direction. For rolled sections the impact test is done in longitudinal direction.

LIST OF OPTIONS IN EN 10225-1 TO -4

Option Number		Options	Part 1	Part 2	Part 3	Part 4
1		Further details of steel manufacturing process	▪	▪	▪	▪
2		Vacuum degassed and/or ladle refined	▪	▪	▪	▪
3		Reduced S-contents	▪		▪	▪
4		Furnace normalizing is mandatory	▪			
5	4*	Other more severe reduction ratios	▪			
6	7*	Restricted heat analysis	▪	▪	▪	▪
7	8*	Product analysis	▪	▪	▪	▪
8		Whether a Pcm and/ or CEV value to be reported	▪	▪	▪	▪
9	10*	Simulated post weld heat treatment (PWHT) at 580°C	▪		▪	▪
10		Simulated PWHT at another temperature	▪		▪	▪
11	12*	Strain age test	▪			
12	13*	Through thickness testing	▪	▪	▪	▪
13	14*	Flattening test			▪	
14	15*	Fracture mechanic testing	▪			
15	16*	Plate cold forming procedures	▪			

LIST OF OPTIONS IN EN 10225-1 TO -4

Option Number		Options	Part 1	Part 2	Part 3	Part 4
16	17*	Plate hot forming procedures	▪			
17	18*	Weldability data	▪	▪	▪	▪
18	19*	Ultrasonic testing according to EN10160	▪			
19	21*	Ultrasonic testing according to EN10306		▪		
20		NDT surface inspection for HFW hollow sections				▪
21		Higher requirements for NDT			▪	▪
22		Internal soundness according to EN ISO 10893-8 and -9			▪	▪
23	20*	Other surface conditions than EN10163-3, class C 2		▪		
24		Inspection certificate 3.2	▪	▪	▪	▪
25		Test frequency for every specified plate thickness	▪			
26	24*	Testing of the weld seam			▪	▪
27		Testing of the corner region for rectangular hollow sections			▪	▪
28		Marking by another method	▪	▪	▪	▪
29	29*	Unbundled supply		▪	▪	▪
30	25*	Greater thicknesses than specified		▪	▪	▪

*** Orange option numbers as per EN 10225: 2009**

DESIGNATION ACCORDING TO:		CHEMICAL ANALYSIES						Minimum Yield Strenght R_{eH} (N/mm2)			Ultimate Strenght R_m (N/mm2)		ELONG %	IMPACT (J)
EN 10025 2019 Designation	EN 10025 Number	C * % max	Mn % max	Si % max	P % max	S % max	N % max	Nominal wall thickness (mm)			Nominal wall thickness (mm)		Longitudinal / Transvers	W.T
								≤16	>16 ≤40	>40 ≤100	< ≥3	≤100		>10 ≤150
5185	1,0035							185	175		310÷540	290÷510	10 / 8	-
S235JR	1,0037	0,17			0,045	0,045	0,009	235	225	215	360÷510	340÷470	17 / 15	27
S235JRG1	1,0036	0,17	1,40		0,045	0,045	0,007	235	225	215	360÷510	340÷470	17 / 15	27
S235JRG2	1,0038	0,17	1,50		0,035	0,035	0,007	235	225	215	360÷510	340÷470	17 / 15	27
S235.10	1,0114	0,17	1,40		0,040	0,040	0,009	235	225	215	360÷510	340÷470	17 / 15	27
S275JR	1,0044	0,21	1,50		0,045	0,045	0,009	275	265	255÷235	430÷580	410÷560	14 / 12	27
5275J0	1,0143	0,18	1,50		0,040	0,040	0,009	275	265	255÷235	430÷580	410÷560	14 / 12	27
S275J2G3	1,0144	0,18	1,50		0,035	0,035		275	265	255÷235	430÷580	410÷560	14 / 12	27
S275J2G4	1,0145	0,18	1,50		0,035	0,035		275	265	255÷235	430÷580	410÷560	14 / 12	27
S355JR	1,0045	0,24	1,60	0,55	0,045	0,045	0,009	355	345	335÷315	510÷680	490÷630	14 / 12	27
5355J0	1,0553	0,20	1,60	0,55	0,040	0,040	0,009	355	345	335÷315	510÷680	490÷630	14 / 12	27
5355J2G3	1,057	0,20	1,60	0,55	0,035	0,035		355	345	335÷315	510÷680	490÷630		27
S355J2G4	1,0577	0,20	1,60	0,55	0,035	0,035		355	345	335÷315	510÷680	490÷630	14 / 12	27
S355K2G3	1,0595	0,20	1,60	0,55	0,035	0,035		355	345	335÷315	510÷680	490÷630	14 / 12	40
S355K2G4	1,0596	0,20	1,60	0,55	0,035	0,035		355	345	335÷315	510÷680	490÷630	14 / 12	40
E295	1,005				0,045	0,045	0,009	295	285	275÷255	490÷660	470÷610	20 / 18	-
E335	1,006				0,045	0,045	0,009	335	325	315÷295	590÷770	570÷710	16 / 14	-
E360	1,007				0,045	0,045	0,009	360	355	345÷325	690÷900	670÷830	11 / 10	-

PIPELINE COATING

A) BITUMINOUS COATING ACCORDING TO UNI 5256

Class I	Class II (*)	Class III (*)	Class IV (*)
min. 3 mm	min. 3 mm	min. 4 mm	min. 6 mm

(*) double glass wool wrapped

B) PE 3 LAYERS COATING ACCORDING TO ISO 21809

UNI 9099		ISO 21809-1	
Diameter	Thickness (mm)	Diameter	Thickness (mm)
DN < 100	1,8	DN < 125	1,8
DN 125 - DN 250	2,0	DN 150 - DN 350	2,1
DN 300 - DN 500	2,2	DN 400 - DN 650	2,5
DN 550 - DN 800	2,5	DN 700 - DN 900	2,8
DN > 800	3,0	DN ≥ 1000	3,3

C) COLD WRAPPING ALTENE SYSTEM ACCORDING TO EN 12068 OVERLAP 50% MINIMUM

- **Primer code: P16/P19/P27**
  Components: bitumen, rubber and adhesive resins
- **Inner tape thickness: 0.508 to 0.762 mm; black colour**
  Components: blend of stabilized polyolefine/polyethylene - butyl rubber - adhesive resins
- **Outer tape thickness: 0.508 to 0.762 mm; white colour**
  Components: blend of stabilized polyolefine/polyethylene - butyl rubber - adhesive resins
- **Final thickness: from 2,0 mm to 3,0 mm**

D) POLYURETHANE COATING ACCORDING TO EN 10290

Class	Thickness (µmm)
A	Up to 1000
B	Up to 1500
On customer demand	Above 1500*

(*) to be applied with more than 1 layer

PIPELINE LININGS

Epoxy paint for gas pipe line	Dft 50 - 100 µmm
Epoxy paint solvent free for potable water according to D.M. 174/04	Dft 100 - 350 µmm
Bitumen primer according to UNI 5256 Cl A	Dft 50 µmm

DIMENSIONS AND WEIGHTS TABLE

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
40	48,3	1 ½	0,109	2,77	3,11	2,09		10
			0,145	3,68	4,05	2,72	STD	40
			0,200	5,10	5,43	3,65	XS	80
50	60,3	2	0,109	2,77	3,93	2,64		10
			0,110	2,80	3,97	2,67		
			0,126	3,20	4,51	3,03		
			0,142	3,60	5,03	3,38		
			0,154	3,90	5,42	3,64	STD	40
			0,217	5,50	7,43	4,99	XS	80
65	73,0	2 ½	0,120	3,05	5,26	3,54		10
			0,126	3,20	5,51	3,70		
			0,142	3,60	6,16	4,14		
			0,154	3,90	6,65	4,47		
			0,205	5,20	8,69	5,84	STD	40
			0,276	7,00	11,39	7,66	XS	80
80	88,9	3	0,110	2,80	5,95	3,99		
			0,126	3,20	6,76	4,54		10
			0,142	3,60	7,57	5,09		
			0,157	4,00	8,37	5,63		
			0,189	4,80	9,95	6,69		
			0,217	5,50	11,31	7,60	STD	40
			0,299	7,60	15,24	10,24	XS	80
100	114,3	4	0,126	3,20	8,77	5,89		
			0,142	3,60	9,83	6,60		
			0,157	4,00	10,88	7,31		
			0,189	4,80	12,96	8,71		
			0,205	5,20	13,99	9,40		
			0,220	5,60	15,01	10,09		
			0,237	6,02	16,07	10,80	STD	40
			0,339	8,60	22,42	15,06	XS	80
125	141,3	5	0,126	3,20	10,90	7,24		
			0,142	3,60	12,22	8,21		
			0,157	4,00	13,54	8,99		
			0,189	4,80	16,16	10,73		
			0,220	5,60	18,74	12,44		
			0,260	6,60	21,92	14,73	STD	40
			0,280	7,10	23,50	15,60		
			0,374	9,50	30,88	20,75	XS	80
150	168,3	6	0,142	3,60	14,62	9,82		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
150	168,3	6	0,157	4,00	16,21	10,89		
			0,189	4,80	19,35	13,00		
			0,220	5,60	22,47	15,10		
			0,252	6,40	25,55	17,17		
			0,280	7,10	28,22	18,97	STD	40
			0,311	7,90	31,25	21,00		
			0,433	11,00	42,67	22,00	XS	80
			0,500	12,70	48,73	32,75		
200	219,1	8	0,157	4,00	21,22	14,26		
			0,189	4,80	25,37	17,04		
			0,205	5,20	27,43	18,43		
			0,220	5,60	29,48	19,81		
			0,252	6,40	33,57	22,56		20
			0,276	7,00	36,61	24,60		30
			0,311	7,90	41,14	27,65		
			0,323	8,20	42,65	28,66	STD	40
			0,343	8,70	45,14	30,33		
			0,437	11,10	56,94	38,26		60
			0,500	12,70	64,64	43,44	XS	80
			0,594	15,10	75,96	51,04		100
250	273,1	10	0,157	4,00	26,54	17,84		
			0,189	4,80	31,76	21,34		
			0,220	5,60	36,94	24,82		
			0,252	6,40	42,09	28,28		20
			0,280	7,10	46,57	31,29		
			0,307	7,80	51,03	34,29		30
			0,343	8,70	56,72	38,12		
			0,366	9,30	60,50	40,65	STD	40
			0,437	11,10	71,72	48,19		
			0,500	12,70	81,55	54,80	XS	60
			0,594	15,10	96,07	64,56		80
300	323,9	12	0,189	4,80	37,77	25,38		
			0,220	5,60	43,96	29,54		
			0,232	5,90	46,27	31,09		
			0,252	6,40	50,11	33,67		20
			0,280	7,10	55,47	37,27		
			0,311	7,90	61,56	41,37		
			0,331	8,40	65,35	43,92		30
			0,343	8,70	67,62	45,44		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
300	323,9	12	0,374	9,50	73,65	49,49	STD	
			0,406	10,30	79,65	53,52		40
			0,437	11,10	85,62	57,53		
			0,469	11,90	91,56	61,52		
			0,500	12,70	97,46	65,49	XS	
			0,563	14,30	109,18	73,36		60
350	355,6	14	0,220	5,60	48,33	32,48		
			0,252	6,40	55,11	37,03		10
			0,280	7,10	61,02	41,00		
			0,311	7,90	67,74	45,52		20
			0,343	8,70	74,42	50,01		
			0,374	9,50	81,08	54,48	STD	30
			0,406	10,30	87,71	58,94		
			0,437	11,10	94,30	63,37		40
			0,469	11,90	100,86	67,77		
			0,500	12,70	107,39	72,16	XS	
400	406,4	16	0,220	5,60	55,35	37,19		
			0,248	6,30	62,16	41,77		10
			0,280	7,10	69,91	46,98		
			0,311	7,90	77,63	52,17		20
			0,343	8,70	85,32	57,33		
			0,374	9,50	92,98	62,48	STD	30
			0,406	10,30	100,61	67,61		
			0,437	11,10	108,20	72,71		
			0,469	11,90	115,77	77,79		
			0,500	12,70	123,30	82,85	XS	40
			0,563	14,30	138,27	92,91		
			0,657	16,70	160,49	107,84		60
450	457,0	18	0,252	6,40	71,12	47,79		10
			0,280	7,10	78,77	52,93		
			0,311	7,90	87,49	58,79		20
			0,343	8,70	96,18	64,63		
			0,374	9,50	104,84	70,45	STD	
			0,406	10,30	113,46	76,24		
			0,437	11,10	122,05	82,02		30
			0,469	11,90	130,62	87,77		
			0,500	12,70	139,15	93,50	XS	
			0,563	14,30	156,11	104,90		40
			0,579	14,70	160,33	107,74		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
450	457,0	18	0,626	15,90	172,95	116,22		
			0,689	17,50	189,67	127,45		
			0,752	19,10	206,25	138,60		60
500	508,0	20	0,252	6,40	79,16	53,20		10
			0,311	7,90	97,43	65,47		
			0,343	8,70	107,12	71,98		
			0,374	9,50	116,78	78,47	STD	20
			0,406	10,30	126,41	84,95		
			0,437	11,10	136,01	91,40		
			0,469	11,90	145,58	97,83		
			0,500	12,70	155,12	104,24	XS	30
			0,563	14,30	174,10	116,99		
			0,594	15,10	183,54	123,33		40
			0,626	15,90	192,95	129,66		
			0,705	17,90	216,34	145,37		
			0,752	19,10	230,27	154,74		
550	559,0	22	0,252	6,40	87,21	58,60		10
			0,280	7,10	96,63	64,93		
			0,311	7,90	107,36	72,14		
			0,343	8,70	118,06	79,33		
			0,374	9,50	128,73	86,50	STD	20
			0,406	10,30	139,37	93,65		
			0,437	11,10	149,97	100,78		
			0,469	11,90	160,55	107,88		
			0,500	12,70	171,09	114,97	XS	30
			0,563	14,30	192,08	129,07		
			0,626	15,90	212,95	143,09		
			0,689	17,50	233,68	157,03		
			0,752	19,10	254,30	170,88		
			0,811	20,60	273,51	183,79		
600	610,0	24	0,252	6,40	95,26	64,01		10
			0,280	7,10	105,56	70,93		
			0,343	8,70	129,00	86,69		
			0,374	9,50	140,68	94,53	STD	20
			0,406	10,30	152,32	102,36		
			0,437	11,10	163,93	110,16		
			0,469	11,90	175,51	117,94		
			0,500	12,70	187,06	125,70	XS	
			0,563	14,30	210,07	141,16		30

DIMENSIONS AND WEIGHTS TABLE

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
600	610,0	24	0,626	15,90	232,94	156,53		
			0,689	17,50	255,69	171,82		40
			0,752	19,10	278,32	187,02		
			0,811	20,60	299,41	201,20		
			0,874	22,20	321,79	216,23		
			0,969	24,60	355,12	238,63		60
650	660,0	26	0,252	6,40	103,15	69,32		
			0,280	7,10	114,31	76,82		
			0,311	7,90	127,04	85,37		10
			0,343	8,70	139,73	93,90		
			0,374	9,50	152,39	102,40	STD	
			0,406	10,30	165,02	110,89		
			0,437	11,10	177,62	119,36		
			0,469	11,90	190,19	127,80		
			0,500	12,70	202,72	136,22	XS	20
			0,563	14,30	227,70	153,01		
			0,626	15,90	252,55	169,70		
			0,689	17,50	277,27	186,32		
			0,752	19,10	301,87	202,85		
			0,811	20,60	324,81	218,26		
			0,874	22,20	349,16	234,63		
			0,937	23,80	373,39	250,91		
			1,000	25,40	397,49	267,10		
700	711,0	28	0,280	7,10	123,24	82,82		
			0,311	7,90	136,97	92,04		10
			0,374	9,50	164,34	110,43	STD	
			0,406	10,30	177,98	119,59		
			0,437	11,10	191,58	128,74		
			0,469	11,90	205,15	137,86		
			0,500	12,70	218,69	146,96	XS	20
			0,563	14,30	245,68	165,09		
			0,626	15,90	272,54	183,14		30
			0,689	17,50	299,28	201,11		
			0,752	19,10	325,89	218,99		
			0,811	20,60	350,72	235,67		
			0,874	22,20	377,08	253,39		
			0,937	23,80	403,32	271,02		
			1,000	25,40	429,44	288,57		
750	762	30	0,311	7,90	146,91	98,72		10

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
750	762	30	0,343	8,70	161,61	108,60		
			0,374	9,50	176,29	118,46	STD	
			0,406	10,30	190,93	128,30		
			0,437	11,10	205,54	138,12		
			0,469	11,90	220,12	147,91		
			0,500	12,70	234,67	157,69	XS	20
			0,563	14,30	263,67	177,18		
			0,626	15,90	292,54	196,58		30
			0,689	17,50	321,29	215,90		
			0,752	19,10	349,91	235,13		
			0,811	20,60	376,63	253,08		
			0,874	22,20	405,00	272,15		
			0,937	23,80	433,26	291,13		
			1,000	25,40	461,38	310,03		
800	813,0	32	0,280	7,10	141,10	94,82		
			0,311	7,90	156,84	105,39		10
			0,374	9,50	188,24	126,49	STD	
			0,406	10,30	203,88	137,00		
			0,437	11,10	219,50	147,50		
			0,469	11,90	235,09	157,97		
			0,500	12,70	250,64	168,42	XS	20
			0,563	14,30	281,65	189,26		
			0,626	15,90	312,54	210,02		30
			0,689	17,50	343,30	230,69		40
			0,752	19,10	373,93	251,27		
			0,811	20,60	402,54	270,49		
			0,874	22,20	432,93	290,91		
			0,937	23,80	463,19	311,25		
			1,000	25,40	493,32	331,50		
850	864,0	34	0,311	7,90	166,78	112,07		10
			0,343	8,70	183,50	123,30		
			0,374	9,50	200,18	134,52	STD	
			0,406	10,30	216,84	145,71		
			0,437	11,10	233,46	156,88		
			0,469	11,90	250,05	168,03		
			0,500	12,70	266,61	179,15	XS	20
			0,563	14,30	299,64	201,35		
			0,626	15,90	332,53	223,45		30
			0,689	17,50	365,31	245,48		40

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
850	864,0	34	0,752	19,10	397,95	267,41		
			0,811	20,60	428,44	287,90		
			0,874	22,20	460,85	309,67		
			0,937	23,80	493,12	331,36		
			1,000	25,40	525,27	352,96		
900	914,0	36	0,311	7,90	176,52	118,62		10
			0,343	8,70	194,22	130,51		
			0,374	9,50	211,90	142,39	STD	
			0,406	10,30	229,54	154,24		
			0,437	11,10	247,15	166,08		
			0,469	11,90	264,72	177,89		
			0,500	12,70	282,27	189,68	XS	20
			0,563	14,30	317,27	213,19		
			0,626	15,90	352,14	236,63		30
			0,689	17,50	386,88	259,97		
			0,752	19,10	421,50	283,24		40
			0,811	20,60	453,84	304,97		
			0,874	22,20	488,22	328,07		
			0,937	23,80	522,47	351,08		
			1,000	25,40	556,59	374,01		
1000	1016	40	0,311	7,90	196,39	131,97		
			0,343	8,70	216,11	145,22		
			0,374	9,50	235,79	158,45	STD	
			0,406	10,30	255,45	171,65		
			0,437	11,10	275,07	184,84		
			0,469	11,90	294,66	198,00		
			0,500	12,70	314,22	211,14	XS	
			0,563	14,30	353,24	237,36		
			0,626	15,90	392,13	263,50		
			0,689	17,50	430,90	289,55		
			0,752	19,10	469,55	315,52		
			0,811	20,60	505,66	339,79		
			0,874	22,20	544,06	365,59		
			0,937	23,80	582,33	391,31		
			1,000	25,40	620,48	416,94		
1050	1.067,0	42	0,343	8,70	227,05	152,57		
			0,374	9,50	247,74	166,47	STD	
			0,406	10,30	268,40	180,36		
			0,437	11,10	289,03	194,22		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
1050	1.067,0	42	0,469	11,90	309,62	208,06		
			0,500	12,70	330,19	221,88	XS	
			0,563	14,30	371,22	249,45		
			0,626	15,90	412,13	276,94		
			0,689	17,50	452,91	304,34		
			0,752	19,10	493,57	331,66		
			0,811	20,60	531,57	357,20		
			0,874	22,20	571,98	384,35		
			0,937	23,80	612,26	411,42		
			1,000	25,40	652,42	438,41		
1100	1.118,0	44	0,343	8,70	237,99	159,92		
			0,374	9,50	259,69	174,50	STD	
			0,406	10,30	281,35	189,06		
			0,469	11,90	324,59	218,11		
			0,500	12,70	346,16	232,61	XS	
			0,563	14,30	389,21	261,53		
			0,626	15,90	432,13	290,38		
			0,689	17,50	474,92	319,13		
			0,752	19,10	517,59	347,80		
			0,811	20,60	557,47	374,61		
			0,874	22,20	599,90	403,11		
			0,937	23,80	642,19	431,53		
			1,000	25,40	684,37	459,87		
1150	1.168,0	46	0,343	8,70	248,72	167,13		
			0,374	9,50	271,40	182,37	STD	
			0,406	10,30	294,05	197,59		
			0,469	11,90	339,26	227,97		
			0,500	12,70	361,82	243,13	XS	
			0,563	14,30	406,84	273,38		
			0,626	15,90	451,73	303,55		
			0,689	17,50	496,50	333,63		
			0,748	19,00	538,35	361,76		
			0,811	20,60	582,87	391,67		
			0,874	22,20	627,27	421,51		
			0,937	23,80	671,54	451,25		
			1,000	25,40	715,68	480,92		
1200	1.219,0	48	0,374	9,50	283,35	190,40	STD	
			0,406	10,30	307,01	206,30		
			0,469	11,90	354,23	238,03		

DIMENSIONS AND WEIGHTS TABLE

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
1200	1.219,0	48	0,500	12,70	377,79	253,86	XS	
			0,563	14,30	424,82	285,47		
			0,626	15,90	471,73	316,99		
			0,689	17,50	518,51	348,42		
			0,748	19,00	562,25	377,81		
			0,811	20,60	608,78	409,08		
			0,874	22,20	655,19	440,27		
			0,937	23,80	701,47	471,37		
			1,000	25,40	747,63	502,38		
1300	1.321,0	52	0,374	9,50	307,25	206,46		
			0,406	10,30	332,92	223,71		
			0,469	11,90	384,16	258,14		
			0,500	12,70	409,74	275,33		
			0,563	14,30	460,79	309,64		
			0,626	15,90	511,72	343,86		
			0,689	17,50	562,53	378,00		
			0,752	19,10	613,20	412,05		
			0,811	20,60	660,60	443,90		
			0,874	22,20	711,03	477,79		
			0,937	23,80	761,34	511,59		
			1,000	25,40	811,52	545,31		
1350	1.372,0	54	0,406	10,30	345,87	232,41		
			0,469	11,90	399,13	268,20		
			0,500	12,70	425,71	286,06		
			0,563	14,30	478,78	321,72		
			0,626	15,90	531,72	357,30		
			0,689	17,50	584,53	392,79		
			0,752	19,10	637,22	428,19		
			0,811	20,60	686,51	461,31		
			0,874	22,20	738,95	496,55		
			0,937	23,80	791,27	531,71		
			1,000	25,40	843,46	566,78		
1400	1.422,0	56	0,437	11,10	386,20	259,51		
			0,469	11,90	413,80	278,06		
			0,500	12,70	441,37	296,59		
			0,563	14,30	496,41	333,57		
			0,626	15,90	551,32	370,47		
			0,689	17,50	606,11	407,29		
			0,752	19,10	660,77	444,02		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
1400	1.422,0	56	0,811	20,60	711,91	478,38		
			0,874	22,20	766,32	514,95		
			0,937	23,80	820,61	551,43		
			1,000	25,40	874,78	587,83		
1500	1.524,0	60	0,469	11,90	443,73	298,17		
			0,500	12,70	473,31	318,05		
			0,563	14,30	532,38	357,74		
			0,626	15,90	591,32	397,35		
			0,689	17,50	650,13	436,87		
			0,752	19,10	708,82	476,30		
			0,811	20,60	763,72	513,20		
			0,874	22,20	822,16	552,47		
			0,937	23,80	880,48	591,65		
			1,000	25,40	938,67	630,76		
1550	1.575,0	62	0,469	11,90	458,70	308,23		
			0,500	12,70	489,28	328,78		
			0,563	14,30	550,36	369,83		
			0,626	15,90	611,31	410,78		
			0,689	17,50	672,14	451,66		
			0,752	19,10	732,84	492,44		
			0,811	20,60	789,63	530,61		
			0,874	22,20	850,08	571,23		
			0,937	23,80	910,41	611,77		
			1,000	25,40	970,61	652,22		
1600	1.626,0	64	0,469	11,90	473,66	318,29		
			0,500	12,70	505,26	339,52		
			0,563	14,30	568,35	381,91		
			0,626	15,90	631,31	424,22		
			0,689	17,50	694,15	466,45		
			0,752	19,10	756,86	508,59		
			0,811	20,60	815,54	548,02		
			0,874	22,20	878,00	589,99		
			0,937	23,80	940,34	631,88		
			1,000	25,40	1002,56	673,69		
1650	1.676,0	66	0,500	12,70	520,92	350,04		
			0,563	14,30	585,98	393,76		
			0,626	15,90	650,92	437,39		
			0,689	17,50	715,73	480,95		
			0,752	19,10	780,41	524,41		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
1650	1.676,0	66	0,811	20,60	840,94	565,08		
			0,874	22,20	905,38	608,38		
			0,937	23,80	969,69	651,60		
			1,000	25,40	1033,88	694,73		
1700	1.727,0	68	0,500	12,70	536,89	360,77		
			0,563	14,30	603,96	405,84		
			0,626	15,90	670,91	450,83		
			0,689	17,50	737,73	495,73		
			0,752	19,10	804,43	540,55		
			0,811	20,60	866,84	582,49		
			0,874	22,20	933,30	627,15		
			0,937	23,80	999,62	671,71		
			1,000	25,40	1065,82	716,20		
1750	1.778,0	70	0,500	12,70	552,86	371,50		
			0,563	14,30	621,95	417,93		
			0,626	15,90	690,91	464,27		
			0,689	17,50	759,74	510,52		
			0,752	19,10	828,45	556,69		
			0,811	20,60	892,75	599,90		
			0,874	22,20	961,22	645,91		
			0,937	23,80	1029,55	691,83		
			1,000	25,40	1097,77	737,66		
1800	1.829,0	72	0,500	12,70	568,83	382,24		
			0,563	14,30	639,93	430,01		
			0,626	15,90	710,91	477,71		
			0,689	17,50	781,75	525,31		
			0,752	19,10	852,47	572,84		
			0,811	20,60	918,66	617,31		
			0,874	22,20	989,14	664,67		
			0,937	23,80	1059,49	711,94		
			1,000	25,40	1129,71	759,13		
1850	1.880,0	74	0,500	12,70	584,80	392,97		
			0,563	14,30	657,92	442,10		
			0,626	15,90	730,90	491,14		
			0,689	17,50	803,76	540,10		
			0,752	19,10	876,50	588,98		
			0,811	20,60	944,57	634,72		
			0,874	22,20	1017,06	683,43		
			0,937	23,80	1089,42	732,06		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
1850	1.880,0	74	1,000	25,40	1161,65	780,60		
1900	1.930,0	76	0,500	12,70	600,46	403,49		
			0,563	14,30	675,55	453,95		
			0,626	15,90	750,51	504,32		
			0,689	17,50	825,34	554,60		
			0,752	19,10	900,05	604,80		
			0,811	20,60	969,97	651,79		
			0,874	22,20	1044,43	701,82		
			0,937	23,80	1118,76	751,77		
			1,000	25,40	1192,97	801,64		
1950	1.981,0	78	0,500	12,70	616,44	414,23		
			0,563	14,30	693,53	466,03		
			0,626	15,90	770,50	517,75		
			0,689	17,50	847,35	569,39		
			0,752	19,10	924,07	620,94		
			0,811	20,60	995,88	669,20		
			0,874	22,20	1072,35	720,59		
			0,937	23,80	1148,70	771,89		
			1,000	25,40	1224,92	823,11		
2000	2.032,0	80	0,500	12,70	632,41	424,96		
			0,563	14,30	711,52	478,12		
			0,626	15,90	790,50	531,19		
			0,689	17,50	869,36	584,18		
			0,752	19,10	948,09	637,09		
			0,811	20,60	1021,78	686,61		
			0,874	22,20	1100,27	739,35		
			0,937	23,80	1178,63	792,00		
			1,000	25,40	1256,86	844,57		
2050	2.083,0	82	0,500	12,70	648,38	435,69		
			0,563	14,30	729,50	490,20		
			0,626	15,90	810,50	544,63		
			0,689	17,50	891,37	598,97		
			0,752	19,10	972,11	653,23		
			0,811	20,60	1047,69	704,02		
			0,874	22,20	1128,19	758,11		
			0,937	23,80	1208,56	812,12		
			1,000	25,40	1288,81	866,04		
2100	2.134,0	84	0,563	14,30	747,49	502,29		
			0,626	15,90	830,49	558,07		

DIMENSIONS AND WEIGHTS TABLE

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
2100	2.134,0	84	0,689	17,50	913,38	613,76		
			0,752	19,10	996,13	669,37		
			0,811	20,60	1073,60	721,43		
			0,874	22,20	1156,11	776,87		
			0,937	23,80	1238,49	832,23		
			1,000	25,40	1320,75	887,50		
2150	2.184,0	86	0,563	14,30	765,12	514,14		
			0,626	15,90	850,10	571,24		
			0,689	17,50	934,95	628,26		
			0,752	19,10	1019,68	685,19		
			0,811	20,60	1099,00	738,49		
			0,874	22,20	1183,48	795,26		
			0,937	23,80	1267,84	851,95		
			1,000	25,40	1352,07	908,55		
2200	2.235,0	88	0,563	14,30	783,10	526,22		
			0,626	15,90	870,10	584,68		
			0,689	17,50	956,96	643,05		
			0,752	19,10	1043,70	701,34		
			0,811	20,60	1124,91	755,90		
			0,874	22,20	1211,40	814,02		
			0,937	23,80	1297,77	872,06		
			1,000	25,40	1384,01	930,01		
2250	2.286,0	90	0,563	14,30	801,09	538,31		
			0,626	15,90	890,09	598,11		
			0,689	17,50	978,97	657,84		
			0,752	19,10	1067,72	717,48		
			0,811	20,60	1150,81	773,31		
			0,874	22,20	1239,32	832,79		
			0,937	23,80	1327,70	892,18		
			1,000	25,40	1415,96	951,48		
2300	2.337,0	92	0,563	14,30	819,07	550,39		
			0,626	15,90	910,09	611,55		
			0,689	17,50	1000,98	672,63		
			0,752	19,10	1091,74	733,62		

NOMINAL OUSIDE DIAMETER			WALL THICKNESS		WEIGHTS		SCHEDULES	
ND	mm	Inch	Inch	mm	kg/m	lb/ft		
2300	2.337,0	92	0,811	20,60	1176,72	790,72		
			0,874	22,20	1267,24	851,55		
			0,937	23,80	1357,64	912,29		
			1,000	25,40	1447,90	972,95		
2350	2.388,0	94	0,563	14,30	837,06	562,48		
			0,626	15,90	930,09	624,99		
			0,689	17,50	1022,99	687,42		
			0,752	19,10	1115,77	749,76		
			0,811	20,60	1202,63	808,13		
			0,874	22,20	1295,16	870,31		
			0,937	23,80	1387,57	932,40		
			1,000	25,40	1479,85	994,41		
2400	2.438,0	96	0,563	14,30	854,69	574,32		
			0,626	15,90	949,69	638,16		
			0,689	17,50	1044,57	701,92		
			0,752	19,10	1139,32	765,59		
			0,811	20,60	1228,03	825,20		
			0,874	22,20	1322,53	888,70		
			0,937	23,80	1416,91	952,12		
			1,000	25,40	1511,17	1015,46		
2450	2.489,0	98	0,626	15,90	969,69	651,60		
			0,689	17,50	1066,58	716,71		
			0,752	19,10	1163,34	781,73		
			0,811	20,60	1253,94	842,61		
			0,874	22,20	1350,45	907,46		
			0,937	23,80	1446,85	972,24		
			1,000	25,40	1543,11	1036,92		
2500	2.540,0	100	0,626	15,90	989,68	665,04		
			0,689	17,50	1088,58	731,50		
			0,748	19,00	1181,19	793,72		
			0,811	20,60	1279,85	860,02		
			0,874	22,20	1378,37	926,23		
			0,937	23,80	1476,78	992,35		
			1,000	25,40	1575,05	1058,39		

HYDROTESTING

Formula

P = 20 * (S*T) / D

where:

P = pressure in Bar **D** = OD diameter

T = nominal WT **S** = see below

API 5L / ISO 3183	EN 10224	EN 10217
S = 90% or 95% minimum yield strength ***Holding time:*** min 5 sec D=<457 mm or 10 sec welded pipe D>457 mm	**S** = 70% minimum yield strength Max : 70 Bar	**S** = 70% minimum yield strength ***Holding time:*** min 5 sec D=<457 mm or 10 sec D>457 mm Max: 70 Bar

PIPE DIMENSIONS AND WEIGHTS (metric system)

Weight in kg for meter (W)

W = 0,0246 X (D-t) x t

where:

D = external diameter in mm

t = wall thickness in mm

PRINCIPAL UNITS OF MEASUREMENT

1 INCH = 25,4 mm

1 FOOT = 0,3048 m

1 YARD = 3 FEET = 0,9144 m

1 LBS = 0,4535 Kg

1 N = 0,102 Kg

1 Nmm2 = 1 MPA

1 MPA = 10 BAR = 9,87 ATM = 145 PSI

1 J/cm2 = 0,102 Kgm cm2

°F = (9/5 x °C) + 32

°C = (°F - 32) x 5/9

D'AMORE & LUNARDI S.P.A.

Registered office: Piazza Dante, 6/3 16121 - Genova - Italy
Headquarter: via Gambarato, 32 - 15069 Serravalle Scrivia (AL) - Italy

Phone +39 0143 61191

commerciale@damorelunardi.it
qualita@ damorelunardi.it

www.damorelunardi.it