

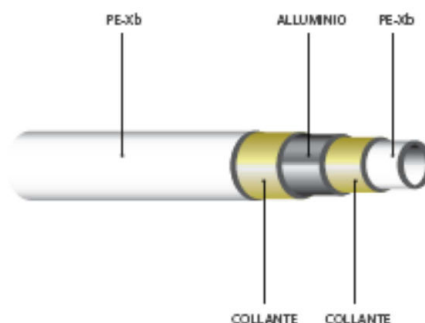


Product specifications

APE MULTYLAYER (PE-xB/Al/PE-xB) pipe, UNI EN ISO 21003 and DIN 4726 compliant. This pipe consists of a double inner and outer layer of crosslinked polyethylene PE-xB (silane method - B) bound by a special adhesive to a longitudinally welded (TIG butt welded) intermediate aluminium alloy layer. This structure is highly shapeable, provides a complete barrier to oxygen, ensures total hygiene and high corrosion resistance since fluids come in contact only with the inner PE-xB layer.

Maximum operating temperature: 95°C. Maximum peak temperature: 110°C. Max pressure at 95°C: 10 bar. Thermal conductivity at 20°C: 0.43 W/mK. Oxygen permeability: 0 mg/l. Roughness: 7 µm.

DVGW, KIWA, ATG, WRAS, KOMO, DinCertco, AFNOR, AENOR Certified.



Dimensional characteristics coli

Codes	UOM code	9MN02162	9MN03182	9MN03202	9MN02202	9MN04263	9MN45323
		0---	0----	0---	0---	0---	0---
Outer diameter	mm	16	18	20	20	26	32
Inner diameter	mm	12	14	16	16	20	26
Weight	g/m	104	118	143	134	265	343
Thickness of Al	mm	0.2	0.2	0.3	0.2	0.4	0.45
Total thickness	mm	2	2	2	2	3	3

Dimensional characteristics straight length

Codes	UOM code	9MN021620	9MN031820	9MN032020	9MN042630	9MN453230
		BR4	BR4	BR4	BR4	BR4
Outer diameter	mm	16	18	20	26	32
Inner diameter	mm	12	14	16	20	26
Weight	g/m	94	118	143	265	343
Thickness of Al	mm	0.2	0.2	0.3	0.4	0.45
Total thickness	mm	2	2	2	3	3
Straight length	m	4	4	4	4	4

Technical Specifications





Outer diameter	mm	16	18	20	26	32
Volume of water	l/m	0.113	0.154	0.201	0.314	0.531
Internal roughness	µm	7				
Thermal conductivity at 20°C	W/mK	0.43				
Coefficient of expansion	mm/m °C	0.026				
Degree of crosslinking	%	> 65%				
Oxygen permeability	mg/l	0				
Colour		White				


Technical specifications

Type		PE-xB/Al/PE-xB Multilayer pipe
Field of application		Plumbing in civil, industrial and commercial applications.
Fluid		Potable water, technical water, and water glycol (*).
Continuous use temperature	°C	95
Max peak temperature	°C	110
Maximum operating pressure at 95°C	bar	10
Maximum operating pressure at 20°C	bar	30
Duration at 95°C and 10 bar	years	50
Reaction to fire EN 1350-1		B – s1 – d0
Storage		Avoid prolonged exposure to direct sunlight
Minimum bend radius		5 times the diameter

(*) In the case of water glycol, in order to define the minimum operating temperature, it is necessary to know the elements of the mixture and the various concentrations, never exceed the value of 30%

Marking


> < 001m APE raccorderie srl, Multilayer_PEXb/Al/PEXb, 16x2 Made in Italy Tmax 95° P=10bar,		DVGW DW-8231CN0176 DW-8501CS0266 DW-S8501CR0411			
METRI	AZIENDA	NOME DEL SISTEMA	MATERIALI DIMENSIONI	Tmax/Pmax	CERTIFICAZIONE DVGW
 K66358 WRAS 1906357	 MLP 045/01	 001/007418, KOMO K66916, 001/007419 DIN CERTCO 3V370 MVR,	 Sanitary_XXXXXXXXXXXXXXXXX, UNI EN ISO 21003 class2-10bar class4-10bar class5-10bar, Heating DIN 4726 Sauerstoffdicht Abmessungsklasse: 1 Klasse 5-8bar	LOTTO DI PRUZIONE	CLASSI DI UTILIZZO
CERTIFICAZIONE KIWA	CERTIFICAZIONE AFNOR	CERTIFICAZIONE AENOR	CERTIFICAZIONE DIN CERTCO		

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Classification of service conditions UNI – EN ISO 21003

Application class	Design temperature Td [°C]	Time b at Td [years]	T max [°C]	Time at T max [years]	T mal [°C]	Time at T mal [h]	Typical field of application
1 (*)	60	49	80	1	95	100	Hot water supply (60°C)
2 (*)	70	49	80	1	95	100	Hot water supply (70°C)
4 (**)	20 + 40 + 60	2,5 20 25	70	2,5	100	100	Underfloor heating and low-temperature radiators
5 (**)	20 + 60 + 80	14 25 10	90	1	100	100	High-temperature radiators

(*) A country may select either class 1 or 2 in conformity with its national regulations.

(**) Where more than one design temperature for time and associated temperature appears for any class, they should be aggregated.

Regression curves diameter 16x2

The curves shown below (Figure 1) show the life of the APE Multilayer pipe at the various pressures of use when changing operating temperatures.

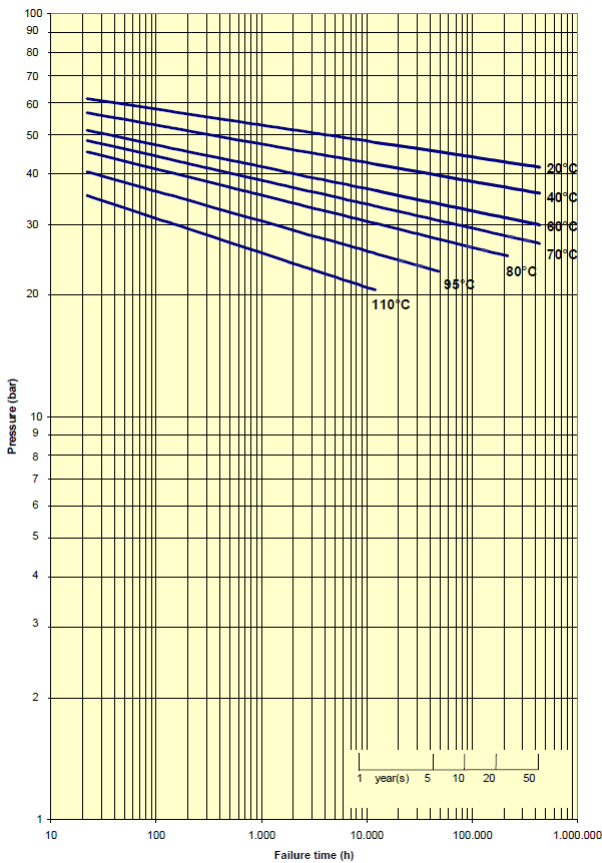


Figure 1

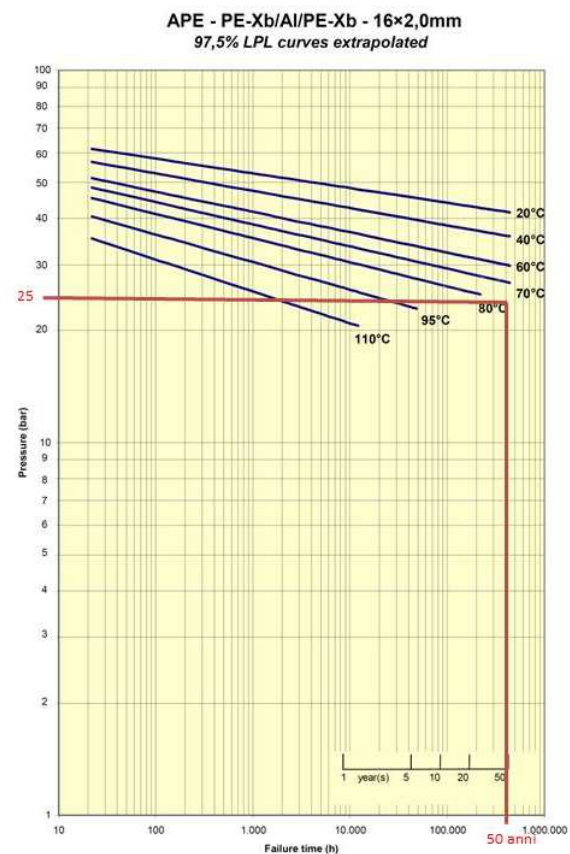


Figure 2

Figure 2 (produced by an accredited institution) shows an example of aging of the APE multilayer pipe. This example demonstrates how to work at a pressure of **25 bar** and at a temperature of **60 °C** the multilayer pipe lasts over 50 years, this is possible thanks to the use of polyethylene crosslinked, such performances are not obtainable using non-crosslinkable polyethylenes or PERT.

Chart of load loss

T water 10°C

Outer diameter	16	18	20	26	32
Thickness	2	2	2	3	3
Inner diameter	12	14	16	20	26
v (m/s)	Flow rate (l/h) Load loss (mm c.a.*/m)				
0,1	41	55	72	113	191
	2,43	2,01	1,70	1,28	0,93
0,2	81	111	145	226	382
	8,18	6,75	5,71	4,32	3,11
0,3	122	166	217	339	573
	16,63	13,72	11,61	8,78	6,33
0,4	163	222	290	452	765
	27,52	22,69	19,21	14,53	10,47
0,5	204	277	362	565	956
	40,66	33,54	28,38	21,47	15,47
0,6	244	333	434	679	1147
	55,95	46,14	39,05	29,54	21,28
0,7	285	388	507	792	1338
	73,27	60,43	51,14	38,69	27,87
0,8	326	443	579	905	1529
	92,56	76,33	64,60	48,88	35,21
0,9	366	499	651	1018	1720
	113,74	93,81	79,39	60,06	43,27
1	407	554	724	1131	1911
	136,77	112,80	95,46	72,22	52,03
1,1	448	610	796	1244	2102
	161,60	133,28	112,79	85,33	61,47
1,2	489	665	869	1357	2294
	188,18	155,20	131,34	99,37	71,59
1,3	529	720	941	1470	2485
	216,47	178,53	151,09	114,31	82,35
1,4	570	776	1013	1583	2676
	246,45	203,25	172,01	130,14	93,75
1,5	611	831	1086	1696	2867
	278,07	229,34	194,08	146,84	105,78
1,6	651	887	1158	1810	3058
	311,32	256,76	217,29	164,40	118,43
1,7	692	942	1230	1923	3249
	346,17	285,50	241,61	182,80	131,69
1,8	733	998	1303	2036	3440
	382,58	315,53	267,02	202,03	145,54
1,9	774	1053	1375	2149	3632
	420,55	346,84	293,52	222,08	159,98
2	814	1108	1448	2262	3823
	460,05	379,42	321,09	242,93	175,01

T water 60°C

Outer diameter	16	18	20	26	32
Thickness	2	2	2	3	3
Inner diameter	12	14	16	20	26
v (m/s)	Flow rate (l/h) Load loss (mm c.a.*/m)				
0,1	41	55	72	113	191
	1,85	1,53	1,29	0,98	0,71
0,2	81	111	145	226	382
	6,24	5,14	4,35	3,29	2,37
0,3	122	166	217	339	573
	12,68	10,46	8,85	6,70	4,82
0,4	163	222	290	452	765
	20,98	17,30	14,64	11,08	7,98
0,5	204	277	362	565	956
	31,00	25,57	21,64	16,37	11,79
0,6	244	333	434	679	1147
	42,65	35,18	29,77	22,52	16,23
0,7	285	388	507	792	1338
	55,86	46,07	38,99	29,50	21,25
0,8	326	443	579	905	1529
	70,56	58,20	49,25	37,26	26,84
0,9	366	499	651	1018	1720
	86,72	71,52	60,52	45,79	32,99
1	407	554	724	1131	1911
	104,27	86,00	72,78	55,06	39,67
1,1	448	610	796	1244	2102
	123,20	101,61	85,99	65,06	46,87
1,2	489	665	869	1357	2294
	143,46	118,32	100,13	75,76	54,58
1,3	529	720	941	1470	2485
	165,04	136,11	115,19	87,15	62,78
1,4	570	776	1013	1583	2676
	187,89	154,96	131,14	99,22	71,48
1,5	611	831	1086	1696	2867
	212,00	174,84	147,97	111,95	80,65
1,6	651	887	1158	1810	3058
	237,35	195,75	165,66	125,34	90,29
1,7	692	942	1230	1923	3249
	263,91	217,66	184,20	139,36	100,40
1,8	733	998	1303	2036	3440
	291,68	240,56	203,58	154,03	110,96
1,9	774	1053	1375	2149	3632
	320,62	264,43	223,78	169,31	121,97
2	814	1108	1448	2262	3823
	350,73	289,26	244,80	185,21	133,43

Compliance

- **DVGW** Certificate - DW-8501CN0176
- **KIWA** certificate - N° K66358 e N° K94485
- **WRAS** Certificate - 1906357
- **ATG** Certificate - 3212
- **KOMO** certificate - K66915101
- **DinCertco** Certificate – 3V370 MVR
- **AFNOR** Certificate - Admission No 101160, Holder 045
- **AENOR** Certificate - 001/007418
- UNI EN ISO 21003
- DIN 4726
- Ministerial Decree No. 174/2004



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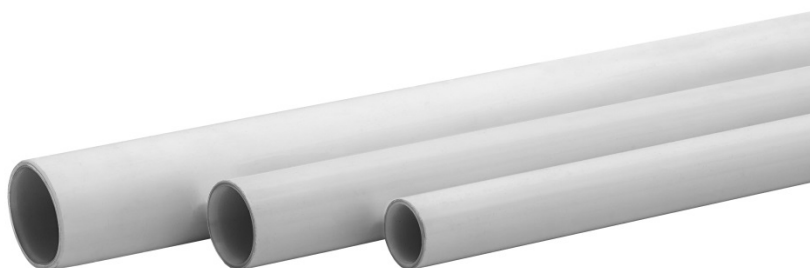
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Product specifications

APE MULTYLAYER (PE-xB/Al/PE-xB) pipe, UNI EN ISO 21003 and DIN 4726 compliant. This pipe consists of a double inner and outer layer of crosslinked polyethylene PE-xB (silane method - B) bound by a special adhesive to a longitudinally welded (TIG butt welded) intermediate aluminium alloy layer. This structure is highly shapeable, provides a complete barrier to oxygen, ensures total hygiene and high corrosion resistance since fluids come in contact only with the inner PE-xB layer.

Maximum operating temperature: 95°C. Maximum peak temperature: 110°C. Max pressure at 95°C: 10 bar. Thermal conductivity at 20°C: 0.43 W/mK. Oxygen permeability: 0 mg/l. Roughness: 7 µm.

KIWA, ATG, AFNOR Certified.



Dimensional characteristics straight length

Codes	UOM code	9MN054035BR	9MN065040BR	9MN096345BR
Outer diameter	mm	40	50	63
Inner diameter	mm	33	42	54
Weight	g/m	571	727	1120
Thickness of aluminium	mm	0,5	0,6	0.9
Total thickness	mm	3,5	4,0	4,5
Bar length	m	4	4	4

Technical Specifications

Volume of water	l/m	0,855	1,385	2,290
Internal roughness	µm	7		
Thermal conductivity at 20°C	W/mK	0,43		
Coefficient of expansion	mm/m°C	0,026		
Degree of crosslinking	%	> 65%		
Oxygen permeability	mg/l	0		
Colour		White		

Technical specifications

Type		PE-xB/Al/PE-xB Multilayer pipe
Field of application		Plumbing in civil, industrial and commercial applications.
Fluid		Potable water, technical water, and water glycol (*).
Press profile With fitting from serie APL		TH
Continuous use temperature	°C	95
Max peak temperature	°C	110
Minimum operating temperature (*)	°C	5
Maximum operating pressure at 95°C	bar	10
Maximum operating pressure at 20°C	bar	30
Reaction to fire EN 1350-1		B – s1 – d0
Storage		Avoid prolonged exposure to direct sunlight

(*) In the case of water glycol, in order to define the minimum operating temperature, it is necessary to know the elements of the mixture and the various concentrations.

APE Raccorderie do not recommend bending of pipes in diameter 40 – 50 e 63 mm

Classification of service conditions UNI – EN ISO 21003

Application class	Design temperature Td [°C]	Time at Td [years]	T max [°C]	Time at T max [years]	T mal [°C]	Time at T mal [h]	Typical field of application
1 (*)	60	49	80	1	95	100	Hot water supply (60°C)
2 (*)	70	49	80	1	95	100	Hot water supply (70°C)
4 (**)	20 + 40 + 60	2,5 20 25	70	2,5	100	100	Underfloor heating and low-temperature radiators
5 (**)	20 + 60 + 80	14 25 10	90	1	100	100	High-temperature radiators

(*) A country may select either class 1 or 2 in conformity with its national regulations.
(**) Where more than one design temperature for time and associated temperature appears for any class, they should be aggregated.

Chart of load loss

T water = 10°C

Outer diameter	40	50	63
Thickness	3,5	4,0	4,5
Inner diameter	33	42	54
v (m/s)	Flow rate (l/h) Load loss (mm c.a./m)		
0,1	308 0,69	499 0,51	824 0,37
0,2	616 2,31	998 1,71	1649 1,25
0,3	924 4,70	1496 3,47	2473 2,54
0,4	1232 7,77	1995 5,75	3298 4,20
0,5	1540 11,48	2494 8,49	4122 6,20
0,6	1847 15,80	2993 11,69	4947 8,54
0,7	2155 20,69	3491 15,31	5771 11,18
0,8	2463 26,14	3990 19,33	6596 14,12
0,9	2771 32,12	4489 23,76	7420 17,35
1	3079 38,62	4988 28,57	8245 20,87
1,1	3387 45,63	5486 33,76	9069 24,66
1,2	3695 53,14	5985 39,31	9894 28,71
1,3	4003 61,13	6484 45,22	10718 33,03
1,4	4311 69,59	6983 51,48	11543 37,60
1,5	4619 78,52	7481 58,09	12367 42,43
1,6	4927 87,91	7980 65,03	13192 47,50
1,7	5234 97,75	8479 72,31	14016 52,82
1,8	5542 108,03	8978 79,92	14841 58,37
1,9	5850 118,75	9476 87,85	15665 64,17
2	6158 129,91	9975 96,10	16490 70,19

T water = 60°C

Outer diameter	40	50	63
Thickness	3,5	4,0	4,5
Inner diameter	33	42	54
v (m/s)	Flow rate (l/h) Load loss (mm c.a./m)		
0,1	308 0,52	499 0,39	824 0,28
0,2	616 1,76	998 1,30	1649 0,95
0,3	924 3,58	1496 2,65	2473 1,93
0,4	1232 5,92	1995 4,38	3298 3,20
0,5	1540 8,75	2494 6,48	4122 4,73
0,6	1847 12,04	2993 8,91	4947 6,51
0,7	2155 15,77	3491 11,67	5771 8,52
0,8	2463 19,93	3990 14,74	6596 10,77
0,9	2771 24,49	4489 18,11	7420 13,23
1	3079 29,44	4988 21,78	8245 15,91
1,1	3387 34,79	5486 25,74	9069 18,80
1,2	3695 40,51	5985 29,97	9894 21,89
1,3	4003 46,60	6484 34,47	10718 25,18
1,4	4311 53,06	6983 39,25	11543 28,67
1,5	4619 59,86	7481 44,28	12367 32,35
1,6	4927 67,02	7980 49,58	13192 36,21
1,7	5234 74,52	8479 55,13	14016 40,27
1,8	5542 82,36	8978 60,93	14841 44,50
1,9	5850 90,54	9476 66,97	15665 48,92
2	6158 99,04	9975 73,26	16490 53,51



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Certificates

APE Raccorderie is currently in the certification process with the following institutes:

- **KIWA** N° K94485
- **AFNOR** N° 101160 holder 045
- **ATG** 3212
- **UNI EN ISO 21003**
- **DIN 4726**
- **DM n° 174/2004**



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