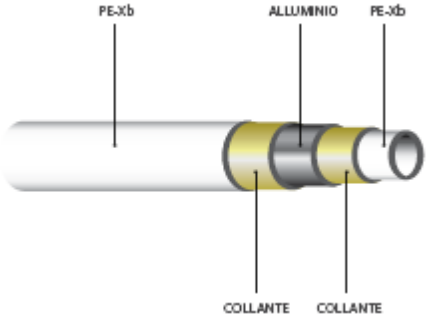
Product specifications

APE MULTYLAYER (PEXb/Al/PEXb) pipe, UNI EN ISO 21003 and DIN 4726 compliant. This pipe consists of a double inner and outer layer of crosslinked polyethylene PEXb (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 PEXb 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 0---	9MN03182 0----	9MN03202 0---	9MN02202 0---	9MN04263 0---	9MN45323 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 BR4	9MN031820 BR4	9MN032020 BR4	9MN042630 BR4	9MN453230 BR4
Outer diameter	mm	16	18	20	26	32
Inner diameter	mm	12	14	16	20	26
Weight	g/m	104	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

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Technical Specifications

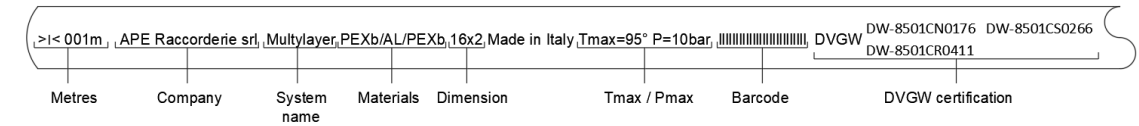
Outer diameter	mm	16	18	20	26	32
Volume of water	l/m	0.113	0.154	0.201	0.314	0.531
Internal roughness	µm	7				
Thermal conductivity at 20°C	W/mK	0.43				
Coefficient of expansion	mm/m °C	0.026				
Degree of crosslinking	%	> 65%				
Oxygen permeability	mg/l	0				
Colour		White				

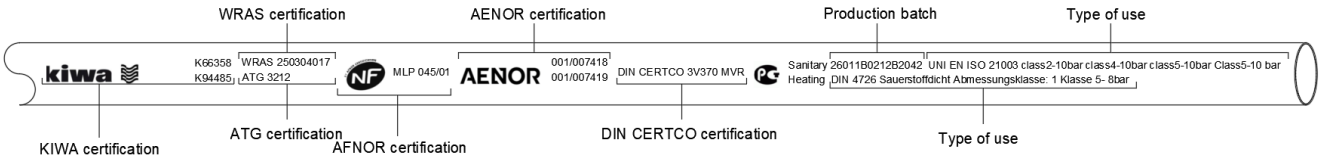
Technical specifications

Type		PEXb/Al/PEXb 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





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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-temparature 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 ist national regulations.
(**) Where more then 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 Multylayer pipe at the various pressures of use when changing operating temperatures.

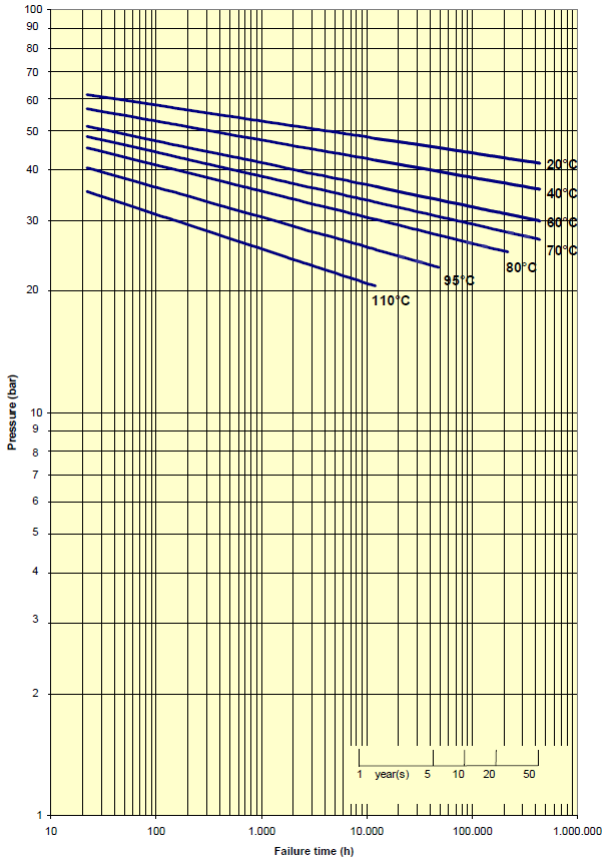


Figure 1

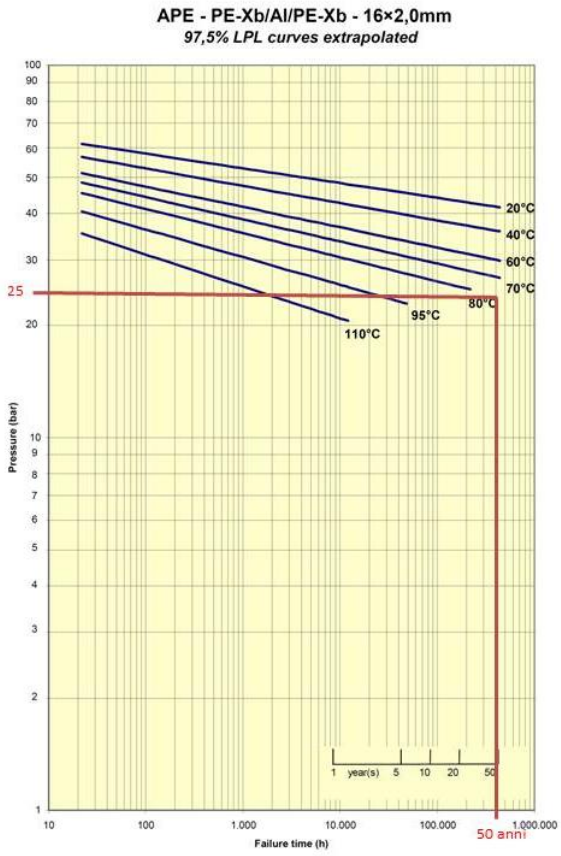


Figure 2

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.

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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

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Compliance

- **DVGW** Certificate - DW-8501CN0176
- **KIWA** certificate - N° K66358 e N° K94485
- **WRAS** Certificate - 250304017
- **ATG** Certificate - 3212
- **KOMO** certificate - K66915101
- **DinCertco** Certificate **–** 3V370 MVR
- **AFNOR** Certificate - Admission N° 101160, Holder 045
- **AENOR** Certificate - 001/007418
- UNI EN ISO 21003
- DIN 4726
- Ministerial Decree No. 174/2004

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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	9MN107550BR
Outer diameter	mm	40	50	63	75
Inner diameter	mm	33	42	54	65
Weight	g/m	571	727	1120	1500
Thickness of aluminium	mm	0,5	0,6	0.9	1
Total thickness	mm	3,5	4,0	4,5	5
Bar length	m	4	4	4	4

Technical Specifications

Volume of water	l/m	0,855	1,385	2,290	3,318
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			

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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 – 63 and 75 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-temparature 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 ist national regulations. (**) Where more then one design temperature for time and associated temperature appears for any class, they should be aggregated.							

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Chart of load loss

T water = 10°C

Outer diameter	40	50	63	75
Thickness	3,5	4	4,5	5
Inner diameter	33	42	54	65
v (m/s)	**Flow rate** (l/h) Load loss (mm c.a./m)			
0,1	**308**	**499**	**824**	**1195**
	0,69	0,51	0,37	0,29
0,2	**616**	**998**	**1649**	**2389**
	2,31	1,71	1,25	0,99
0,3	**924**	**1496**	**2473**	**3584**
	4,70	3,47	2,54	2,01
0,4	**1232**	**1995**	**3298**	**4778**
	7,77	5,75	4,20	3,33
0,5	**1540**	**2494**	**4122**	**5973**
	11,48	8,49	6,20	4,92
0,6	**1847**	**2993**	**4947**	**7168**
	15,80	11,69	8,54	6,77
0,7	**2155**	**3491**	**5771**	**8362**
	20,69	15,31	11,18	8,87
0,8	**2463**	**3990**	**6596**	**9557**
	26,14	19,33	14,12	11,20
0,9	**2771**	**4489**	**7420**	**10751**
	32,12	23,76	17,35	13,76
1	**3079**	**4988**	**8245**	**11946**
	38,62	28,57	20,87	16,55
1,1	**3387**	**5486**	**9069**	**13140**
	45,63	33,76	24,66	19,56
1,2	**3695**	**5985**	**9894**	**14335**
	53,14	39,31	28,71	22,77
1,3	**4003**	**6484**	**10718**	**15530**
	61,13	45,22	33,03	26,20
1,4	**4311**	**6983**	**11543**	**16724**
	69,59	51,48	37,60	29,82
1,5	**4619**	**7481**	**12367**	**17919**
	78,52	58,09	42,43	33,65
1,6	**4927**	**7980**	**13192**	**19113**
	87,91	65,03	47,50	37,67
1,7	**5234**	**8479**	**14016**	**20308**
	97,75	72,31	52,82	41,89
1,8	**5542**	**8978**	**14841**	**21503**
	108,03	79,92	58,37	46,30
1,9	**5850**	**9476**	**15665**	**22697**
	118,75	87,85	64,17	50,89
2	**6158**	**9975**	**16490**	**23892**
	129,91	96,10	70,19	55,67

T water = 60°C

Outer diameter	40	50	63	75
Thickness	3,5	4	4,5	5
Inner diameter	33	42	54	65
v (m/s)	**Flow rate** (l/h) Load loss (mm c.a./m)			
0,1	**308**	**499**	**824**	**1195**
	0,52	0,39	0,28	0,22
0,2	**616**	**998**	**1649**	**2389**
	1,76	1,30	0,95	0,75
0,3	**924**	**1496**	**2473**	**3584**
	3,58	2,65	1,93	1,53
0,4	**1232**	**1995**	**3298**	**4778**
	5,92	4,38	3,20	2,54
0,5	**1540**	**2494**	**4122**	**5973**
	8,75	6,48	4,73	3,75
0,6	**1847**	**2993**	**4947**	**7168**
	12,04	8,91	6,51	5,16
0,7	**2155**	**3491**	**5771**	**8362**
	15,77	11,67	8,52	6,76
0,8	**2463**	**3990**	**6596**	**9557**
	19,93	14,74	10,77	8,54
0,9	**2771**	**4489**	**7420**	**10751**
	24,49	18,11	13,23	10,49
1	**3079**	**4988**	**8245**	**11946**
	29,44	21,78	15,91	12,62
1,1	**3387**	**5486**	**9069**	**13140**
	34,79	25,74	18,80	14,91
1,2	**3695**	**5985**	**9894**	**14335**
	40,51	29,97	21,89	17,36
1,3	**4003**	**6484**	**10718**	**15530**
	46,60	34,47	25,18	19,97
1,4	**4311**	**6983**	**11543**	**16724**
	53,06	39,25	28,67	22,74
1,5	**4619**	**7481**	**12367**	**17919**
	59,86	44,28	32,35	25,65
1,6	**4927**	**7980**	**13192**	**19113**
	67,02	49,58	36,21	28,72
1,7	**5234**	**8479**	**14016**	**20308**
	74,52	55,13	40,27	31,94
1,8	**5542**	**8978**	**14841**	**21503**
	82,36	60,93	44,50	35,30
1,9	**5850**	**9476**	**15665**	**22697**
	90,54	66,97	48,92	38,80
2	**6158**	**9975**	**16490**	**23892**
	99,04	73,26	53,51	42,44

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Certificates

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

- **KIWA** N° K94485
- **WRAS** - 250304017
- **DVGW** - DW-8501CN0176
- **AFNOR** N° 101160 holder 045
- **ATG** 3212
- **UNI EN ISO 21003**
- **DIN 4726**
- **DM n° 174/2004**

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