

Conduit flexible, medium-duty

VAML
PMAFLEX



application

- in passenger areas of railway vehicles
- excellent fire safety characteristics allow application in public buildings like hospitals, hotels, airports, train and subway stations, shopping centers etc.

material

- high-grade, specially formulated polyamide 6

characteristics

- good resistance to ultra violet rays and weathering
- good impact strength
- outstanding self-extinguishing characteristics
- minimal development of smoke and gases
- free from halogens and cadmium



temperature range

-40°C ... +105°C continuous, +160°C short-term

specifications

EN 45545 HL3 (requirement set R22/R23)
NF F 16-101 and 102 classification I2/F2

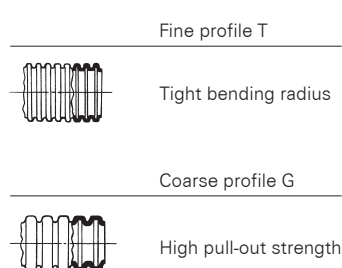
compatible with

T/PMAFIX, T/PMAFIX^{Pro}, T/PMA Smart Line, T/PMAGRIP

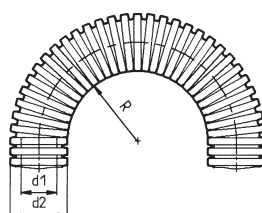
colour

black, grey

order no.		conduit size		rec. fitting threads		dimensions in mm (nom.)			weight	packing unit
black	grey	NW	metr.	metric	PG	d1	d2	stat. R.	kg/100 m	metre
T/VAMLT-07B	T/VAMLT-07S	07	10	M12x1.5	07	6.8	10.0	15	2.2	50
T/VAMLT-10B	T/VAMLT-10S	10	12	M12x1.5	09	9.6	13.0	20	2.8	50
T/VAMLT-12B	T/VAMLT-12S	12	16	M16x1.5	11	12.0	15.8	30	3.8	50
T/VAMLG-17B	T/VAMLG-17S	17	20	M20x1.5	16	15.3	21.2	40	6.3	50
T/VAMLG-23B	T/VAMLG-23S	23	25	M25x1.5	21	21.6	28.5	45	9.9	50
T/VAMLG-29B	T/VAMLG-29S	29	32	M32x1.5	29	27.6	34.5	55	13.3	50
T/VAMLG-36B	T/VAMLG-36S	36	40	M40x1.5	36	36.0	42.5	65	16.0	30
T/VAMLG-48B	T/VAMLG-48S	48	50	M50x1.5	48	47.0	54.5	75	22.8	30
T/VAMLG-56B	T/VAMLG-56S	56	68	-	-	56.3	67.2	140	33.0	30
T/VAMLG-70B	T/VAMLG-70S	70	80	-	-	67.5	80.0	160	46.0	10
T/VAMLG-95B	T/VAMLG-95S	95	106	-	-	91.5	106.0	210	66.0	10
T/VAMLG-125B	T/VAMLG-125S	125	146	-	-	126.5	146.5	450	85.0	6



Dimensions



stat. R. = lowest recommended bending radius
for static (fixed) installation

Code reference

VAML = type
T = fine profile
G = coarse profile
10 = nominal width
B = colour-black
S = colour-grey

VAML T - 10 B

VAML-Index

Property	Relative Importance (min. to max.)
ductility	0.7
fatigue / reverse bending	0.4
pressure resistance	0.6
cold temperature performance	0.4
weather resistance	0.6

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properties		unit	value	test method according to
Mechanical properties				
Impact strength	(+23 °C) (-45 °C) (-15 °C) (+23 °C)	J	> 6 class 3 (> 2 J) class 4 (> 6 J) class 5 (> 20 J)	PMA DO 9.21-4330 IEC EN 61386 IEC EN 61386 IEC EN 61386
Compression strength		N	> 200 (50 x 50 mm)	PMA DO 9.21-4320
		N	> 400 (100 x 100 mm)	PMA DO 9.21-4320
			class 2	IEC EN 61386
Reverse bending stresses		cycles	> 20'000	PMA DO 9.21-4420
		cycles	> 35'000	PMA DO 9.21-4425
	(-25 °C)	cycles	> 5'000	IEC EN 61386-23
	(-45 °C)		pliable	IEC EN 61386-22
Pull-out resistance conduit/PMAFIX:				
Connector type IP68		N	> 350	PMA DO 9.21-4610
			class 2	IEC EN 61386
Connector type IP66		N	> 300	PMA DO 9.21-4610
			class 2	IEC EN 61386
Testing at 23°C, 50% r.h., conduit nominal width 17, unless otherwise stated				
Thermal properties				
Continuous application temperature		°C	-40 ... +105	PMA DO 9.21-4510
Upper application temperature		°C	+120 20'000 h	PMA DO 9.21-4360
Short-term		°C	+160 168 h	PMA DO 9.21-4360
Application temperature range		°C	-45 ... +105	IEC EN 61386
Temperature change characteristics:			Kat. B	PMA DO 9.21-4370
Cold-warm shock test			very good	
Fire safety characteristics				
Fire performance			non flame-propagating V2	IEC EN 61386
Fire performance				UL 94
Glowing wire flammability index		°C	960	EN 60695-2-10
Oxygen index		%	> 35	EN ISO 4589-1
Self-extinguishing class			I2	NF F 16-101
Smoke emission class			F2	NF F 16-101 + 102
Fire protection grades / toxicity			S4 / SR2 / ST2 FED 30 <1 compl.	DIN 5510
Fire risk level			LR4	UNI CEI 11170-3 Ed. 2005
Fire performance		s	30	EN ISO 11925-2
Fire hazard level			HL3 (requirem. set R22/23)	EN 45545-2
Flame Spread			I = 0	GOST 12.1.044-89
Smoke emission toxicity			compliant with M-7	Boeing BSS 7239
Fire performance NFPA 130:				NFPA 130:
- Flammability			compliant	ASTM E 162-02
- Smoke density			compliant	ASTM E 662-06
- Heat and visible smoke			22.7	ASTM E 1354-02a
- Smoke emission toxicity		MJ/kg	compliant	Bombardier SMP 800-C

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properties	unit	value	test method according to
Weathering resistance			
Weathering (UV/humidity) for black colour		very good	
Chemical properties			
Please refer to www.pma.ch			
Environmental properties			
RoHS and REACH compliant Free from halogens		yes yes	DIN 53474
Application approvals/releases			
SEV Lloyd's Register Bureau Veritas Det Norske Veritas SNCF DB Deutsche Bahn Trenitalia Rail Coach Factory Beml PKP Cargo PKP PR PKP Intercity	CE (LWD) type approval type approval type approval homologation listed homologation homologation homologation homologation homologation homologation		accredited laboratory classification authority classification authority classification authority test programme No. 478 operating company operating company operating company operating company operating company operating company
Content of delivery			
Conduit			

In addition to the national and international standards which consider mainly material properties and general product performance, PMA applies its own internally developed standards when assessing the system suitability of cable protection products. The PMA standards are based on 30 years experience and allow a better assessment of whether a product is practically appropriate for a specific application.

The specifications and instructions for our customers in this document reflect the product engineering level at the time of manufacturing. Please consider the valid data sheet release at a time. For questions please contact the PMA customer service. ABB Switzerland Ltd, PMA Cable Protection accepts no liability for damages resulting from unprofessional installation or application or misuse for a purpose. This disclaimer also includes damages to third parties. It is the customer's responsibility to check the delivered products and immediately notify ABB Switzerland Ltd, PMA Cable Protection of detected faults. It is also the customer's responsibility to test the delivered product on its applicability for the intended purpose. ABB Switzerland Ltd, PMA Cable Protection will accept no liability or responsibility for their products if a product or a PMA system is combined or used together with third-party products, i.e. products from other companies than ABB Switzerland Ltd, PMA Cable Protection. Jurisdiction in all legal disputes concerning product liability have the courts of the canton of Zurich/Switzerland. Swiss law applies.