

adaptalok system

CURVED 90° & 45° ONE-PIECE PUSH-ON LIQUID TIGHT IP66 FITTINGS

TYPE C90 IP66

90° ELBOW FITTING – FIXED EXTERNAL THREAD
For insertion into knockouts using a locknut.
Black (BL) and Grey (GR).



TYPE CS90 IP66

90° ELBOW BODY – SWIVEL EXTERNAL THREAD
For insertion into threaded entries & knockouts.
Black only. Grey made to order.



TYPE CSF90 IP66

90° ELBOW BODY – SWIVEL INTERNAL THREAD
For attachment to external threads & other fittings.
Black only. Grey made to order.



TYPE FLC90 IP66

90° ELBOW BODY – PANEL MOUNT FLANGE
For panel mounting via 2 or 4 hole fixing
& integral face seal. Black (BL) and Grey (GR).



NOMINAL CONDUIT SIZE	METRIC THREAD	PART NUMBER**	PG THREAD	PART NUMBER	METRIC THREAD	PART NUMBER	PG THREAD	PART NUMBER	METRIC THREAD	PART NUMBER	PG THREAD	PART NUMBER	PART NUMBER
10	M12	AL10/M12/C90	PG7	AL10/PG7/C90	-	-	-	-	-	-	-	-	-
13	M16	AL13/M16/C90	PG9	AL13/PG9/C90	M16	AL13/M16/CS90/	PG9	AL13/PG9/CS90/	M16	AL13/M16/CSF90/	PG9	AL13/PG9/CSF90/	-
13	-	-	-	-	-	-	PG11	MTO	-	-	PG11	MTO	-
13	-	-	-	-	-	-	PG13.5	MTO	-	-	PG13.5	MTO	-
16	M16	AL16/M16/C90	PG9	AL16/PG9/C90	M16	AL16/M16/CS90/	PG9	MTO	M16	AL16/M16/CSF90/	PG9	MTO	AL16/FL/C90
16	M20	AL16/M20/C90	PG11	AL16/PG11/C90	-	-	PG11	AL16/PG11/CS90/	-	-	PG11	AL16/PG11/CSF90/	-
16	-	-	PG13.5	AL16/PG13/C90	-	-	PG13.5	MTO	-	-	PG13.5	MTO	-
16	-	-	-	-	-	-	PG16	MTO	-	-	PG16	MTO	-
18	-	-	PG13.5	*AL18/PG13/90	-	-	-	-	-	-	-	-	-
21	M20	AL21/M20/C90	-	-	-	-	PG11	MTO	M20	AL21/M20/CSF90/	PG11	MTO	-
21	-	-	PG13.5	AL21/PG13/C90	M20	AL21/M20/CS90/	PG13.5	AL21/PG13/CS90/	-	-	PG13.5	AL21/PG13/CSF90/	AL21/FL/C90
21	-	-	PG16	AL21/PG16/C90	-	-	PG16	AL21/PG16/CS90/	-	-	PG16	AL21/PG16/CSF90/	-
28	M25	AL28/M25/C90	PG21	AL28/PG21/C90	M25	AL28/M25/CS90/	PG21	AL28/PG21/CS90/	M25	AL28/M25/CSF90/	PG21	AL28/PG21/CSF90/	AL28/FL/C90
34	M32	AL34/M32/C90	PG29	AL34/PG29/C90	M32	AL34/M32/CS90/	PG29	AL34/PG29/CS90/	M32	AL34/M32/CSF90/	PG29	AL34/PG29/CSF90/	AL34/FL/90
42	M40	AL42/M40/C90	PG36	AL42/PG36/C90	M40	AL42/M40/CS90/	PG36	AL42/PG36/CS90/	M40	AL42/M40/CSF90/	PG36	AL42/PG36/CSF90/	AL42/FL/90
54	M50	AL54/M50/C90	PG48	AL54/PG48/C90	M50	AL54/M50/CS90/	PG48	AL54/PG48/CS90/	-	-	-	-	AL54/FL/90
54	M63	AL54/M63/C90	-	-	M63	AL54/M63/CS90/	-	-	-	-	-	-	-

**Supplied with locknut.

To order complete Part No, add colour - e.g. AL21/M20/CS90/BL

NOMINAL CONDUIT SIZE	PF THREAD	PART NUMBER	NPT THREAD	PART NUMBER**
13	3/8	AL13/PF038/C90	3/8	AL13/038/C90
16	3/8	AL16/PF038/C90	3/8	AL16/038/C90
16	1/2	AL16/PF050/C90	1/2	AL16/050/C90
17	1/2	-	1/2	AL17/050/C90
21	1/2	AL21/PF050/C90	1/2	AL21/050/C90
22	1/2	-	1/2	AL22/050/C90
28	3/4	AL28/PF075/C90	3/4	AL28/075/C90
34	1	AL34/PF100/C90	1	AL34/100/C90
42	1 1/4	AL42/PF125/C90	1 1/4	AL42/125/C90
54	1 1/2	AL54/PF150/C90	1 1/2	AL54/150/C90
54	2	AL54/PF200/C90	2	AL54/200/C90

TYPE C90 Polyamide (Nylon) 66 construction in black or grey

TYPE CS90/CSF90 Polyamide (Nylon) 66 body in black or grey with nickel plated brass thread

TYPE FL/A & FL/45 - IP66
PANEL MOUNTING SWIVEL FLANGE,
WITH INTEGRAL FACE SEAL
For straight (A) and 45° elbows,
available in black & grey

NOMINAL CONDUIT SIZE	PART NUMBER TYPE FL/A	PART NUMBER TYPE FL/45
21	AL21/FL/A	AL21/FL/45
28	AL28/FL/A	AL28/FL/45

Compatible with fine & coarse pitch corrugated flexible conduit systems

Fixed Polyamide or swivel brass threads for easy installation

www.adaptaflex.com

Infoline: 01675 468202

The following pages enable you to select Adaptaflex products which best fit the purpose intended and are designed to help meet your product liability obligations over the lifetime of the installation.

To select the most appropriate Adaptaflex system for any given application match the performance criteria required to the relevant tables on the following pages.

Performance criteria used in this table are:

Bending to EN50086

Flexible and pliable conduits can be bent by hand. Flexible systems may flex frequently throughout their life and are suitable for both static and dynamic applications.

Pliable systems are intended only for static applications.

Flexibility

Dependent on ease of bending and minimum bend radius without failure.

Fatigue Life

The recommended maximum number of flexing cycles to avoid failure, dependent on temperature, bend radius and frequency of movement.

Torsional Capability

Degree of resistance to conduit damage caused by twisting.

Minimum Dynamic Bend Radius @ Minimum Temperature

The recommended minimum inside bend radius at the minimum temperature to EN50086. Fatigue life in dynamic flexing applications is dependent upon bend radius, frequency of bending, temperature and the chemical environment.

Minimum Temperature to EN50086

The minimum operating temperature defined by the bending classification.

Minimum Static Temperature

The recommended minimum operating temperature in static mode.

Maximum Temperature to EN50086

The maximum operating temperature defined by the bending classification.

Maximum Long Term Temperature

The recommended maximum operating temperature in static mode.

Ultimate Compression Strength

Final resistance to deformation under compressive load.

Ultimate Tensile Strength

A combination of final conduit tensile and fitting pull-off resistance.

Abrasion Resistance

An indication of resistance to rubbing against other materials.

UV Resistance

An indication of suitability for external application dependent on resistance to degradation caused by exposure to UV ie. sunlight.

Non-Flame Propagating to EN50086

Self-extinguishing within a given time once a fire source is removed.

Halogen Free

Giving off < 0.1% Halogen acid gas when burnt.

Fire Performance (see key on page 39)

Systems combining various levels of high flame retardancy, low smoke density and toxicity in the event of fire are classified as Low Fire Hazard (LFH), Enhanced Low Fire Hazard (ELFH), Inherent Low Fire Hazard (ILFH) or Super Low Fire Hazard (SLFH).

EMI Screen @ 1MHz

(see **SCREEN SYSTEMS** on page 45)

SCREEN SYSTEMS are classified as EMI Screen, Enhanced EMI Screen or High EMI Screen dependent on capability to reduce electromagnetic interference (EMI) in the frequency range 0.1MHz to 1000 MHz.

System IP Rating to EN50086

(see definitions on page 43)

The resistance of an assembled system to the ingress of solids and liquids, dependent on the combination of conduit and fittings.

The point of entry into adjoining equipment may require independent sealing to maintain the system IP rating, see sealing washers on page 23.

CONDUITS

NON-METALLIC SYSTEMS

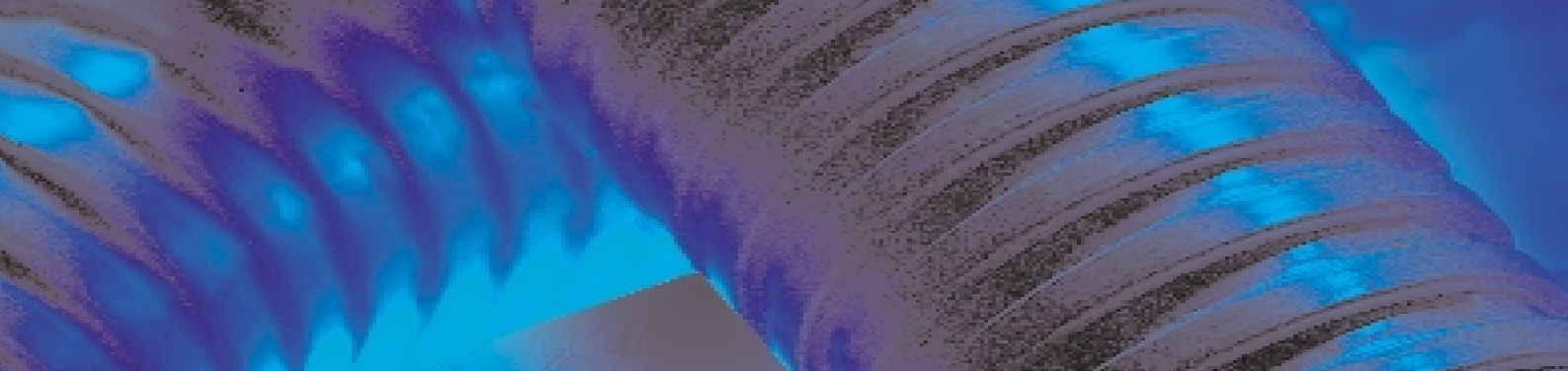
PAGE NUMBER	CONDUIT TYPE	NOMINAL SIZE RANGE mm		COLOUR/FINISH (SEE KEY BELOW)	
		MIN	MAX		
ADAPTALOK ADAPTA SEAL ADAPTARING FLEXIBLE SYSTEMS	CONDUIT 4-5	PA LIGHT	13	54	B/G
		PA STANDARD	10	106	B/G
		PA HEAVY	13	54	B/G
	FITTINGS 6-17	PR	13	54	B/G
		PI	10	106	B/G
		PIH	13	54	B
PP		13	34	B	
HI-SPEC FLEXIBLE SYSTEMS	18-19	PK	13	34	B
		PKTC	13	34	S
		PKSS	13	34	S
		PRTC	16	54	S
		PRSS	16	54	S
KORIFIT PVC PLIABLE SYSTEM & XTRAFLEX FLEXIBLE SYSTEM	20-21	KFL	16	50	G
		KFS	16	25	W
		KFM	12	50	B
	22	XF	12	50	B

METALLIC SYSTEMS

ADAPTASTEEL STEEL FLEXIBLE SYSTEMS	24-25	S	10	75	S
		SS	12	32	S
ADAPTASTEEL COVERED STEEL FLEXIBLE SYSTEMS	26-27	SP	10	75	B/G/O
		SN	12	32	B
		LFH-SP	16	50	B
ADAPTASTEEL LIQUID TIGHT COVERED STEEL FLEXIBLE SYSTEMS	28-29	SPL	10	63	B/G/O
		SPLHC	16	63	B
		SPUL	16	63	G
ADAPTASTEEL OVERBRAIDED FLEXIBLE SYSTEMS	30	SB	10	50	S
		STC	10	50	S
	31	SPB	10	50	S
		SPTC	10	50	S
32	SPLHCB	16	50	S	
STAYFLEX PLIABLE SYSTEM	33	LSP	16	32	B

COLOUR KEY

B = BLACK
G = GREY
N = NICKEL PLATE
O = ORANGE
S = SELF
W = WHITE



BENDING TO EN50086	FLEXIBILITY	FATIGUE LIFE	TORSIONAL CAPABILITY	MIN DYNAMIC BEND RADIUS mm @ MIN TEMP	TEMPERATURE RANGE (°C)			MAX LONG TERM	ULTIMATE COMPRESSION STRENGTH (N/50mm)	ULTIMATE TENSILE STRENGTH (N)	ABRASION RESISTANCE	UV RESISTANCE	NON-FLAME PROPAGATING TO EN50086	HALOGEN FREE	FIRE PERFORMANCE (SEE KEY BELOW)	EMI SCREEN @ 1MHz(dB) (see page 45)
					MIN TO EN50086	MIN STATIC	MAX TO EN50086									
F	VH	H	†	80	-5	-40	120	120	320	150	M	VH*	✓	✓	-	-
F	H	H	†	80	-5	-40	120	120	350	200	H	VH*	✓	✓	LFH	-
F	M	M	†	-	-5	-40	120	120	600	350	H	VH*	✓	✓	LFH	-
F	H	H	†	80	-5	-40	120	120	350	250	H	VH*	✓	✓	ELFH	-
F	VH	VH	†	80	-45	-50	120	90	250	200	M	VH*	✓	✓	-	-
F	VH	VH	†	100	-45	-50	120	110	300	220	M	VH*	✓	✓	-	-
F	VH	VH	†	-	-5	-20	105	90	100	100	M	M*	-	✓	-	-
F	VH	H	-	-	-45	-60	260	260	600	300	VH	VH	✓	✓	SLFH	-
F	VH	H	-	-	-45	-60	260	260	600	1200*	H	VH	✓	✓	SLFH	98
F	VH	H	-	-	-45	-60	260	260	600	1500	VH	VH	✓	✓	SLFH	61
F	M	H	-	80	-5	-40	120	120	350	1200*	H	VH	✓	✓	ELFH	98
F	M	H	-	80	-5	-40	120	120	350	1500*	VH	VH	✓	✓	ELFH	61
P	M	L	-	-	-5	-5	60	60	400	150	M	H	✓	-	-	-
P	M	L	-	-	-5	-5	60	60	750	250	M	H	✓	-	-	-
P	M	L	-	-	-5	-5	60	60	800	300	M	H	✓	-	-	-
P	VH	M	✓	-	-5	-5	60	60	450	150	M	M	✓	-	-	-
F	H	H	-	40	-45	-50	250	300	1500	1000	M	VH	✓	✓	ILFH	-
F	H	H	-	40	-45	-50	250	350	2550	1700	H	VH	✓	✓	ILFH	-
F	H	M	-	40	-5	-15	90	70*	1500	1000	M	VH	✓	-	-	-
F	M	M	-	50	-25	-40	150	120	1500	1000	H	H	✓	✓	-	-
F	M	M	-	50	-5	-25	105	90	1500	1000	M	H	✓	✓	ELFH	-
F	M	M	-	160	-5	-20	105	105*	2500	1600	M	VH	✓	-	-	-
F	M	H	-	60	-45	-65	150	135*	2500	1600	M	H	✓	✓	-	-
F	M	M	-	N/C	-5	-15	105	75*	2500	1600	M	VH	✓	-	-	-
F	H	H	-	40	-45	-50	250	300	1500	1000	H	VH	✓	✓	ILFH	74
F	H	H	-	40	-45	-50	250	300	1500	1000	H	VH	✓	✓	ILFH	103
F	H	M	-	40	-5	-15	90	70*	1500	1000	H	VH	✓	-	-	74
F	H	M	-	40	-5	-15	90	70*	1500	1000	H	VH	✓	-	-	100
F	M	H	-	50	-45	-65	150	135*	2500	3500*	H	VH	✓	✓	-	72
P	M	L	-	90	-5	-15	90	70	1050	150	M	H	✓	-	-	-

F = FLEXIBLE
P = PLIABLE

†WITH ADAPTING FITTINGS

*HIGHER SHORT-TERM MAX TEMP POSSIBLE

*HIGH SUSPENDED LOAD CAPABILITY

*BLACK ONLY

PERFORMANCE LEVEL KEY

L = LOW
M = MEDIUM
H = HIGH
VH = VERY HIGH

FITTINGS

SYSTEM IP RATING TO EN50086	WHEN USED WITH FITTING RANGE	TYPE	COLOUR/FINISH (SEE KEY BELOW)	
66	=	AL	A/C90/FL90+FLC90/45/Y	B/G
66	=	AL	PPA	B
66	=	AL	SA/SFA/SC90/S45/SF45	B/G+N
66	=	AL	UNEF Connectors	B
66, 67	=	AS	A/C90/FL90/T	B/G
40	=	AR	A/C90/FL90/T	B/G
65	=	ADC	FLA/FL90/CP90	B/G
66, 68	=	AS	A/C90 with SWM	B/G
66, 67	=	PK	PK	N
66, 67	=	PB	B	N
40	=	KC	A/C90	B/G/W
65	=	KF	A/2020	W
65	=	XF	A/C90	B
40	=	S	A/B/F	N
40	=	S	C	N
54	=	SP	A/B/F	N
65	=	SP	M	N
00	=	SP	E	N
67	=	SPL	A/B	N
66, 67, 68	=	SPL	M	N
00	=	SPL	E	N
40	=	SB	A/B	N
54	=	SPB	A/B	N
66, 67, 68	=	SPLB	A/B	N
67	=	LSP	A	N

FIRE PERFORMANCE CLASSIFICATION KEY

PROPERTY	LFH	ELFH	SLFH	ILFH
OXYGEN INDEX ISO4589	31% ≥ OI ≥ 28%	OI ≥ 35%	OI ≥ 35%	Low Fire Hazard i.e. Types S, SS & SB conduit and fittings
BS6853 SMOKE DENSITY 3m²	0.02 ≥ A _s ≥ 0.03	0.005 ≥ A _s ≥ 0.02	A _s ≤ 0.005	
ZERO HALOGEN	✓	✓	✓	
ZERO PHOSPHORUS	✓	✓	✓	
ZERO SULPHUR	✓	✓	✓	
LONDON UNDERGROUND	CONCESSION	APPROVED	APPROVED	
TOXICITY INDEX NES713 ISSUE 3	5.0 ≥ TI ≥ 6.0	0.5 ≥ TI ≥ 5.0	TI ≤ 0.5	
NFF16-102	I3F2	I2F2	I2F1	

conduit & fitting materials

This chart is designed to assist product selection by detailing the material types of the main components which make up a particular conduit system, i.e. conduit, covering, overbraid, fitting body & thread.

The full names for the abbreviated material types can be found on the next page in the materials key.

		CONDUIT MATERIALS				FITTING MATERIALS								
	PAGE NUMBER	CONDUIT TYPE	CONDUIT	COVERING	OVERBRAID	FITTING RANGE	FITTING TYPE	BODY	THREAD					
NON-METALLIC SYSTEMS ADAPTALOK ADAPTASEAL ADAPTARING FLEXIBLE SYSTEMS	CONDUIT 4-5	PA LIGHT	PA6	-	-	AL	A/C90/FL90/45/Y	PA66	PA66					
		PA STANDARD	PA6	-	-	AL	PPA	PP	PP					
		PA HEAVY	PA6	-	-	AL	SA/SFA/SC90/SFC90/S45/SF45	PA66+N+EPDM	NPB					
	FITTINGS 6-17	PR	PA6	-	-	AL	UNEF Connectors	PA66+N+EPDM	AA					
		PI	PA11	-	-	AS	A/C90/FLC90/T	CR+PA66+N+EPDM						
		PIH	PA11	-	-	AR	A/C90/FL/FLC90/T	A+PA66	PA66					
		PP	PP	-	-	ADC	FLA/FL90/CP90	PA66	PA66					
HI-SPEC FLEXIBLE SYSTEMS	18-19	PK	PK	-	-	PK	PK	NPB	NPB					
		PKTC	PK	-	TC	PB	B	SC+NPB	NPB					
		PKSS	PK	-	SS316									
		PRTC	PA6	-	TC									
		PRSS	PA6	-	SS316									
KORIFIT PVC PLIABLE SYSTEM & XTRAFLEX FLEXIBLE SYSTEM	20-21	KFL	PVCU	-	-	KC	A/C90	A+PA66	PA66					
		KFS	PVCU	-	-	KF	A/2020	PA66	PA66					
		KFM	PVCU	-	-	XF	A/C90	CR+PA66+N+EPDM	PA66					
	XF	PVCU+PVC	-	-										
METALLIC SYSTEMS	ADAPTASTEEL STEEL FLEXIBLE SYSTEMS	24-25	S	S	-	-	S	A/B/F	NPB	NPB				
			SS	SS316	-	-					S	C	NPB	-
	ADAPTASTEEL COVERED STEEL FLEXIBLE SYSTEMS	26-27	SP	S	PVC	-	SP	A/B/F	NPB	NPB				
			SN	S	TPE	-					SP	M	A+NPB+N+EPDM	NPB/PA6
			LFH-SP	S	PO	-					SP	C/E	NPB	-
	ADAPTASTEEL LIQUID TIGHT COVERED STEEL FLEXIBLE SYSTEMS	28-29	SPL	S	PVCOR	-	SPL	A/B	PA6+NPB+N+EPDM	NPB/PA6				
			SPLHC	S	TPR	-					SPL	M	A+NPB+N+EPDM	NPB/PA6
			SPUL	S	PVCOR	-					SPL	E	NPB	-
	ADAPTASTEEL OVERBRAIDED FLEXIBLE SYSTEMS	30	SB	S	-	S	SB	A/B	NPB	NPB				
			STC	S	-	TC								
		31	SPB	S	PVC	S	SPB	A/B	NPB	NPB				
			SPTC	S	PVC	TC								
32	SPLHCB	S	TPR	SS316	SPLB	A/B	PA6+NPB+N+EPDM	NPB/PA6						
STAYFLEX PLIABLE SYSTEM	33	LSP	LS*	PVC	-	LSP	A	NPB	NPB					

*Includes Kraftpaper liner

To assess the chemical resistance of an assembled system:

- from the Materials Key, compare the material of the conduit & fittings selected, against the main chemical of concern in this chart.
- the least suitable material determines the overall chemical resistance of the system. Phone the Adaptaflex Infoline for other chemicals, concentrations and temperatures.

MATERIALS KEY

=	Acetal (POM)
=	Anodised aluminium
=	Brass
=	Copper
=	Chloroprene rubber
=	EPDM
=	Lead steel
=	Nitrile (NBR)
=	Nickel plated brass
=	Polyamide (nylon) 6
=	Polyamide (nylon) 11
=	Polyamide (nylon) 66
=	Polyketone
=	Polyolefin
=	Polypropylene
=	Polyurethane
=	PVC
=	Oil resistant PVC
=	Unplasticised PVC
=	Galvanised steel
=	Silicone (O)
=	Stainless steel grade 316
=	Tinned copper
=	Thermoplastic elastomer
=	Thermoplastic rubber

SUITABILITY KEY

- S = SUITABLE
- L = LIMITED SUITABILITY
- U = UNSUITABLE
- A = CONTACT ADAPTAFLX INFOLINE

	A	AA	B	C	CR	E	LS	N	NPB	PA6	PA12	PA66	PK	PO	PP	PU	PVC	PVCOR	PVCU	S	SC	SS316	TC	TPE	TPR
ASTM NO.1	S	S	S	S	S	U	S	S	S	S	S	S	S	S	L	S	S	U	S	S	S	S	S	S	S
ASTM NO.2	S	S	S	S	L	U	S	S	S	S	S	S	S	S	L	S	S	U	S	S	S	S	S	S	L
ASTM NO.3	S	S	S	S	U	U	S	L	S	S	S	S	S	L	L	S	U	S	S	S	L	S	S	S	L
ACETIC ACID (10%)	S	S	U	L	S	S	U	S	S	L	L	L	S	S	S	L	L	S	U	S	S	S	L	S	S
ACETONE	L	S	S	S	L	S	U	S	U	S	S	S	S	S	U	S	L	U	U	U	S	L	S	S	U
ALUMINIUM CHLORIDE	L	S	U	L	S	S	U	S	A	L	S	L	S	S	S	S	L	S	U	L	L	L	L	L	S
ANILINE	S	S	S	S	L	S	S	U	S	L	U	L	L	L	S	U	U	U	U	S	S	S	S	L	S
BENZALDEHYDE	S	S	S	S	U	S	S	U	S	L	L	L	S	U	L	L	U	U	U	S	L	S	S	L	L
BENZENE	S	S	S	S	U	U	S	U	S	S	S	S	S	U	L	L	U	U	U	S	L	S	S	S	U
CARBON TETRACHLORIDE	S	S	S	S	U	U	S	U	S	S	S	S	S	S	U	L	L	L	L	S	U	S	S	S	U
CHLORINE WATER	U	L	U	U	L	L	U	U	S	U	U	U	U	L	L	U	U	U	L	U	L	U	U	U	S
CHLOROFORM	L	S	S	S	U	U	S	U	S	U	L	S	U	L	L	U	U	U	S	U	S	S	S	U	L
CITRIC ACID	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
COPPER SULPHATE	S	S	S	S	S	S	S	S	L	S	L	S	S	S	S	S	S	S	S	S	S	S	S	S	S
CRESOL	U	S	L	L	L	U	S	U	S	U	U	U	L	U	S	U	L	L	L	S	U	S	L	L	S
DIESEL OIL	S	S	S	S	L	U	S	S	S	S	S	S	S	L	S	S	L	S	S	S	U	S	S	S	S
DIETHYLAMINE	U	S	S	S	U	U	S	U	S	S	L	S	S	S	S	U	L	L	L	S	L	S	S	L	S
ETHANOL	S	S	S	S	S	S	S	S	S	L	S	L	S	L	S	L	U	U	S	S	S	S	S	L	S
ETHER	S	S	S	S	L	U	S	U	S	S	S	S	S	U	S	S	L	L	S	S	U	S	S	L	S
ETHYLAMINE	L	S	S	S	U	S	S	S	S	L	S	S	L	S	U	L	L	L	L	S	U	S	S	L	L
ETHYLENE GLYCOL	S	S	S	S	S	U	S	S	S	S	S	S	S	S	S	S	L	L	S	U	S	S	S	L	S
ETHYL ETHANOATE	S	S	S	S	U	S	S	S	L	S	L	S	L	S	U	U	U	U	S	L	S	S	S	S	U
FREON 32	S	S	S	S	S	S	U	S	S	S	S	S	S	U	S	L	L	L	L	U	U	S	S	U	U
HYDROCHLORIC ACID (10%)	L	L	U	U	S	S	U	S	U	L	U	U	U	S	L	S	S	S	U	L	U	U	U	U	S
HYDROCHLORIC ACID (36%)	U	L	U	U	S	L	U	S	U	U	U	U	U	U	S	U	L	S	S	U	L	U	U	U	S
HYDROGEN PEROXIDE (35%)	U	S	U	S	S	U	S	S	L	L	L	L	S	L	S	U	S	S	S	U	S	S	S	L	L
HYDROGEN PEROXIDE (87%)	U	S	U	L	U	A	U	S	S	U	U	U	S	U	L	U	S	S	S	U	L	S	L	U	U
LACTIC ACID	U	L	L	S	S	U	S	L	S	L	S	L	S	S	S	L	L	L	L	U	L	S	S	L	S
LUBRICATING OIL	S	S	S	S	U	S	S	S	S	S	S	S	S	S	L	S	L	S	L	S	S	U	S	S	S
METHANOL	S	S	S	S	S	S	S	S	L	L	L	L	S	L	S	L	U	U	S	S	S	S	S	L	S
METHYL BROMIDE	U	S	S	S	U	U	S	S	S	U	U	U	S	U	L	U	U	U	S	U	S	S	U	L	S
MEK	S	S	S	S	U	S	S	S	S	S	S	S	S	U	S	L	U	U	U	S	U	S	U	S	U
NITRIC ACID (10%)	L	L	U	U	L	S	U	S	U	U	U	U	U	S	S	U	S	S	S	U	L	U	U	U	S
NITRIC ACID (70%)	U	L	U	U	U	U	S	U	U	U	U	U	U	U	S	S	S	S	S	U	U	U	U	U	S
OXALIC ACID	L	S	U	L	S	S	U	S	L	S	L	S	S	S	L	L	S	S	U	L	S	L	S	S	S
OZONE (GAS)	U	S	S	S	L	S	U	S	U	U	U	S	S	L	S	L	L	L	S	S	U	S	S	L	S
PARAFFIN OIL	S	S	S	S	L	U	S	S	S	S	S	S	S	S	L	S	L	S	S	S	S	S	S	S	S
PETROL	S	S	S	S	U	U	S	S	S	S	S	S	S	U	S	S	U	S	S	S	U	S	S	S	S
PHENOL	U	S	L	L	L	S	S	S	U	U	U	L	U	S	L	L	L	L	S	S	S	L	L	S	S
SEA WATER	S	S	L	S	S	U	S	L	S	S	S	S	S	S	S	S	S	S	S	U	S	S	S	S	S
SILVER NITRATE	S	S	U	S	S	U	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
SKYDROL	S	S	S	S	L	L	S	S	S	S	S	S	S	U	S	L	U	U	U	S	L	S	S	L	S
SODIUM CHLORIDE	S	S	U	S	S	S	U	S	L	S	S	S	S	S	S	S	S	S	S	U	S	S	S	S	S
SODIUM HYDROXIDE (10%)	S	U	U	S	S	U	S	S	S	S	S	S	S	S	S	S	S	S	S	U	S	S	S	S	S
SODIUM HYDROXIDE (60%)	S	U	U	S	S	U	S	S	S	L	S	S	S	S	L	L	S	S	U	S	L	S	L	S	S
SULPHUR DIOXIDE (GAS)	U	L	U	L	L	S	U	L	U	U	U	U	S	L	S	U	S	S	U	S	U	L	L	S	S
SULPHURIC ACID (10%)	U	L	U	U	S	S	U	U	U	U	U	U	L	S	S	L	S	S	S	U	L	U	U	L	S
SULPHURIC ACID (70%)	U	L	U	U	L	S	U	U	U	U	U	U	L	S	U	S	S	S	U	U	U	U	U	U	S
TOLUENE	S	S	S	S	U	U	S	S	S	S	S	S	S	L	S	U	U	U	U	U	U	U	U	U	U
TRANSFORMER OIL	S	S	S	S	L	U	S	S	S	S	S	S	S	L	S	S	L	S	S	L	S	S	L	S	L
1,1,1-TRICHLOROETHANE	S	S	S	S	U	U	U	U	S	S	S	S	S	L	L	L	U	U	U	U	U	S	S	U	L
TRICHLOROETHYLENE	L	S	S	S	U	U	U	S	L	U	L	S	L	L	L	U	U	U	U	U	S	S	U	U	U
TURPENTINE	S	S	S	S	U	U	S	S	S	S	S	S	S	S	U	U	L	L	L	S	S	S	L	U	U
VEGETABLE OIL	S	S	S	S	L	S	S	S	S	S	S	S	S	L	S	S	L	S	S	L	S	S	L	S	S
VINYL ACETATE	L	S	S	S	S	U	U	L	S	L	S	L	S	U	S	U	U	U	U	U	U	S	S	U	S
WATER	S	S	S	S	S	U	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
WHITE SPIRIT	S	S	S	S	L	U	S	S	S	S	S	S	S	U	S	L	L	L	S	S	U	S	S	L	L
ZINC CHLORIDE	S	L	U	L	S	S	U	S	S	U	S	U	S	S	S	S	S	S	S	U	S	S	L	L	S

EN50086 classifications

NON METALLIC SYSTEMS	WITH FITTING												
		1 COMPRESSION	2 IMPACT	3 MIN. TEMP.	4 MAX. TEMP.	5 BENDING	6 ELECTRICAL	7 SOLID INGRESS (IP)	8 LIQUID INGRESS (IP)	9 CORROSION	10 TENSILE	11 NON-FLAME PROPAGATING	12 SUSPENDED LOAD
PA LIGHT	AL	2	4	2	4	4	0	6	6	0	1	1	0
PA STANDARD	AL	2	4	2	4	4	0	6	6	0	1	1	0
PA HEAVY	AL	2	4	2	4	4	0	6	6	0	2	1	0
PR	AL	2	4	2	4	4	0	6	6	0	1	1	0
PI	AL	1	3	5	4	4	0	6	6	0	1	1	0
PIH	AL	2	4	5	4	4	0	6	6	0	1	1	0
PP	AL	2	3	2	3	4	2	6	6	0	1	2	0

PK	PK	2	4	5	6	4	3	6	7	0	3	1	0
PKTC	PB	2	4	5	6	4	3	6	7	0	3	1	0
PKSS	PB	2	4	5	6	4	3	6	7	0	3	1	0
PRTC	PB	2	4	2	4	4	1	6	7	0	3	1	0
PRSS	PB	2	4	2	4	4	1	6	7	0	3	1	0

KFL	KC	2	2	3	1	2	2	4	0	0	1	1	0
KFS	KC	2	3	3	1	2	2	4	0	0	2	1	0
KFM	KC	3	3	3	1	2	2	4	0	0	1	1	0

METALLIC SYSTEMS

S	S	4	4	5	6	4	0	4	0	1	4	1	5
SS	S	4	4	5	6	4	0	4	0	4	4	1	5

SP	SP(M)	4	4	2	2	4	2	6	5	0	4	1	5
SN	SP(M)	4	4	4	5	4	0	6	5	0	4	1	5
LFH-SP	SP(M)	4	4	2	3	4	0	6	5	0	4	1	5

SPL	SPL(M)	4	4	2	3	4	2	6	7	0	4	1	5
SPLHC	SPL(M)	4	4	5	5	4	0	6	7	0	4	1	5

SB	SB	4	4	5	6	4	1	4	0	1	4	1	0
STC	SB	4	4	5	6	4	1	4	0	1	4	1	0
SPB	SPB	4	4	2	2	4	3	5	4	0	4	1	0
SPTC	SPB	4	4	2	2	4	3	5	4	0	4	1	0
SPLHCB	SPLB	4	4	5	5	4	1	6	7	0	5	1	0

LSP	LSP	3	4	2	2	2	2	6	7	0	1	1	0
-----	-----	---	---	---	---	---	---	---	---	---	---	---	---

Information based on nominal 20mm conduit size

PERFORMANCE CLASSIFICATION KEY

CLASSIFICATION LEVEL	COMPRESSION STRENGTH (N)	IMPACT STRENGTH (J)	MINIMUM TEMPERATURE (°C)	MAXIMUM TEMPERATURE (°C)	BENDING	ELECTRICAL PROPERTIES	IP RATING (SOLID INGRESS)	IP RATING (WATER INGRESS)	CORROSION RESISTANCE	TENSILE STRENGTH (N)	NON-FLAME PROPAGATING	SUSPENDED LOAD CAPACITY (N)
0	-	-	-	-	-	Not declared	-	0	N/A	Not declared	-	Not declared
1	125	0.5	5	60	Rigid	Conductor	-	1	Low	100	✓	20
2	320	1	-5	90	Pliable	Insulator	-	2	Medium	250	✗	30
3	750	2	-15	105	Pli/Semi Rigid	Con./Ins	3	3	Med-Hi	500	-	150
4	1250	6	-25	120	Flexible	-	4	4	High	1000	-	450
5	4000	20	-45	150	-	-	5	5	-	2500	-	850
6	-	-	-	250	-	-	6	6	-	-	-	-
7	-	-	-	-	-	-	7	7	-	-	-	-

In 1995/96 the new European standards for flexible and pliable conduit systems (BS EN 50086-2.3 & BS EN 50086-2.2) were published by BSI.

This is the first European standard for such conduit systems and has been written to conform to the Low Voltage Directive (LVD) and the Construction Product Directive (CPD).

EN50086 is a performance standard which identifies key product characteristics (detailed below). For each of these characteristics there are recommended tests with associated performance classifications.

The adjacent table and key allow you to check product suitability in line with the EN50086 performance classifications.

Compression Strength

(Performance Classification 1)

Resistance to deformation under compressive load.

Impact Resistance

(Performance Classification 2)

Resistance to brittle fracture and deformation under impact.

Minimum Temperature to EN50086

(Performance Classification 3)

The minimum operating temperature defined by the bending classification.

Maximum Temperature to EN50086

(Performance Classification 4)

The maximum operating temperature defined by the bending classification.

Bending to EN50086

(Performance Classification 5)

Flexible and *pliable* conduits can be bent by hand.

Flexible systems may flex frequently throughout their life and are suitable for both *static* and *dynamic* applications.

Pliable systems are intended only for static applications.

Electrical Properties (Performance Classification 6)

Conduit systems defined as electrical conductors or insulators.

System IP Rating to EN50086 (Performance Classifications 7 & 8)

(see definitions on page 43)

The resistance of an assembled system to the ingress of solids and liquids, dependent on the combination of conduit and fittings.

The point of entry into adjoining equipment may require independent sealing to maintain the system IP rating, see sealing washers on page 23.

Corrosion (Performance Classification 9)

Metallic systems defined by their resistance to corrode under exposure to water vapour.

Tensile Strength (Performance Classification 10)

Resistance of a system to a short term tensile load at ambient temperature.

Non-Flame Propagating to EN50086

(Performance Classification 11)

Self-extinguishing within a given time once a fire source is removed.

Suspended Load Capability

(Performance Classification 12)

Resistance of a fitting to a high continuous tensile load at maximum temperature.

Thread Data

METRIC

Standard thread conforming to EN60423 & BS3643

PG

German Standard thread conforming to DIN40430

PF

Japanese conduit thread conforming to JIS B 0202

NPT

US taper seal pipe thread conforming to ANSI/ASME B1.20.1 - 1983

UNEF

American Unified Thread conforming to BS1580

THREAD SIZE mm	EXT. THREAD OUTSIDE DIAMETER	INT. THREAD INSIDE DIAMETER	PITCH	THREAD SIZE mm	EXT. THREAD OUTSIDE DIAMETER	INT. THREAD INSIDE DIAMETER	PITCH	THREAD SIZE (Inches)	EXT. THREAD OUTSIDE DIAMETER	INT. THREAD INSIDE DIAMETER	PITCH	THREAD SIZE (Inches)	EXT. THREAD OUTSIDE DIAMETER	PITCH	THREAD SIZE (Inches)	EXT. THREAD OUTSIDE DIAMETER	INT. THREAD INSIDE DIAMETER	PITCH
M8	8.0	6.9	1.0	PG7	12.5	11.3	1.27	1/4	13.0	-	1.34	-	-	-	5/8	15.9	14.7	1.06
M10	10.0	8.9	1.0	PG9	15.2	13.9	1.41	3/8	16.7	15.0	1.34	3/8	16.7	1.14	3/4	19.1	17.7	1.27
M12	12.0	10.9	1.0	PG11	18.6	17.3	1.41	1/2	21.0	18.6	1.81	1/2	21.0	1.81	13/16	20.6	19.3	1.27
M12	12.0	10.4	1.5	PG13.5	20.4	19.1	1.41	3/4	26.4	24.1	1.81	3/4	26.4	1.81	7/8	22.2	20.9	1.27
M16	16.0	14.4	1.5	PG16	22.5	21.2	1.41	1	33.3	30.3	2.31	1	33.3	2.21	15/16	23.8	22.4	1.27
M18	18.0	16.9	1.0	PG21	28.3	26.8	1.59	1 1/4	41.9	39.0	2.31	1 1/4	41.9	2.21	1	25.4	24.0	1.27
M20	20.0	18.4	1.5	PG29	37.0	35.5	1.59	1 1/2	47.8	44.8	2.31	1 1/2	47.8	2.21	1 1/8	28.6	27.0	1.41
M25	25.0	23.4	1.5	PG36	47.0	45.5	1.59	2	59.6	56.7	2.31	2	59.6	2.21	1 3/16	30.2	28.6	1.41
M30	30.0	28.4	1.5	PG42	54.0	52.5	1.59	-	-	-	-	-	-	-	1 1/4	31.8	30.2	1.41
M32	32.0	30.4	1.5	PG48	59.3	57.8	1.59	-	-	-	-	-	-	-	1 5/16	33.3	31.8	1.41
M40	40.0	38.4	1.5	-	-	-	-	-	-	-	-	-	-	-	1 3/8	34.9	33.4	1.41
M50	50.0	48.4	1.5	-	-	-	-	-	-	-	-	-	-	-	1 1/16	36.5	35.0	1.41
M63	63.0	61.4	1.5	-	-	-	-	-	-	-	-	-	-	-	1 3/4	44.5	42.9	1.41
M75	75.0	73.4	1.5	-	-	-	-	-	-	-	-	-	-	-	2	50.8	49.3	1.41
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2 1/4	57.2	55.4	1.41

NOTE: Dimensions are nominal & in mm unless otherwise stated.

IP Ratings

The degree of ingress protection is indicated by two digits following the letters IP. The first refers to protection against the ingress of solid objects, the second refers to protection against the ingress of water.

Protection against solids
1st Digit

4 Protection against solid bodies larger than 1mm

5 Protection against dust (no harmful deposits)

6 Complete protection against dust

Example

Adaptalok system is IP66 which provides complete protection against dust and protection against jets of water of similar force to heavy seas.

Protection against water
2nd Digit

0 No protection

4 Protection against projections of water from all directions

5 Protection against jets of water from all directions

6 Protection against jets of water of similar force to heavy seas

7 Projection against ingress of water to a depth of 1 metre

8 Continuous submersion at a quoted pressure and time e.g. 2 bar at 24 hours

Cable Carrying Capacity

UK wiring regulations, BS7671 recommend that the total cross sectional area of the sum of the individual cables should not exceed 40% of the cross sectional area of the conduit. The nominal cross sectional area of single-core, stranded, PVC insulated cables is provided as a guide only. Other cables may have different dimensions.

NOMINAL CONDUCTOR SIZE (mm)	NOMINAL OVERALL CROSS SECTIONAL AREA (mm ²)
1.0	6.6
1.5	7.6
2.5	9.6
4.0	14.5
6.0	18.8
10.0	29.3
16.0	40.2
25.0	63.8
35.0	83.5
50.0	113.0
70.0	149.0
95.0	204.0

Example: Is SP20 suitable for five 4.0mm² & two 1.5mm² cables?

- The total cross sectional area of the conductors is 5 x 4.0mm² (for 4.0mm² conductors) + 2 x 7.6mm² (for 1.5mm² conductors) = 87.7mm²
- The cross sectional area of SP20 is 3.142 x [$\frac{\text{Inside Diameter}}{2}$]² = 224mm²
- % of conduit cross sectional area [$\frac{(a)}{(b)}$] x 100 = 39.1%

This is less than 40% therefore this conduit is suitable for this combination of cables.

The easiest way of installing cables into flexible & pliable conduit is to simultaneously draw in the cables with the conduit in straight condition before installation. UK wiring regulations prohibit the use of flexible or pliable conduit as an earthing conductor. Please phone the *Adaptaflex Infoline* for further guidance.

As a worldwide supplier of conduit systems, Adaptaflex has an expanding portfolio of international approvals obtained from the various organisations indicated below.

The table shows the relevant approvals obtained for each conduit system.

Since approvals are constantly being added, audited & updated, please phone the Adaptaflex Infoline for the latest details.

METALLIC SYSTEMS								NON-METALLIC SYSTEMS										
CONDUIT TYPE	WITH FITTING	KITE MARK BS EN 60086	CE LVD	LLOYDS	UL RU SA	LUL COMPLIANCE	AUS EX930	CONDUIT TYPE	WITH FITTING	KITE MARK BS EN 60086 OR IMO	CE LVD	LLOYDS	UL RU SA	CSA 227.3 M-91 LISTED	NF RT13-903	LUL COMPLIANCE	DIN 5510	NF16-102
S	S	✓	✓	–	–	–	–	PA LIGHT	AL	✓	✓	–	UR	–	–	CONCESSION	✓	–
SS	S	✓	✓	–	–	–	–	PA STANDARD	AL	✓	✓	✓	UR	–	✓	CONCESSION	✓	I4F3
SP	SP(M)	✓	✓	–	–	–	–	PA HEAVY	AL	✓	✓	✓	UR	✓*	✓	CONCESSION	✓	I4F3
SN	SP(M)	✓	✓	–	–	–	–	PR	AL	✓	✓	✓	UR	–	–	APPROVED	✓	I2F2
LFH-SP	SP(M)	✓	✓	✓	–	FULL	–	PI	AL	✓	✓	–	UR	–	–	CONCESSION	✓	I4F3
SPL	SPL(M)	✓	✓	✓	–	–	✓	PIH	AL	–	✓	–	UR	✓*	–	CONCESSION	✓	I4F3
SPLHC	SPL(M)	✓	✓	–	–	–	–	PP	AL	–	✓	–	–	–	–	–	–	–
SPUL		–	✓	–	UL+CSA	–	–	PK	PK	✓	✓	–	–	–	–	FULL	–	I2F1
SB	SB	✓	✓	–	–	–	–	PKTC	PB	–	✓	–	–	–	–	FULL	–	I2F1
STC	SB	✓	✓	–	–	–	–	PKSS	PB	–	✓	–	–	–	–	FULL	–	I2F1
SPB	SPB	✓	✓	–	–	–	–	PRTC	PB	–	✓	–	–	–	–	APPROVED	–	I2F2
SPTC	SPB	✓	✓	–	–	–	–	PRSS	PB	–	✓	–	–	–	–	APPROVED	–	I2F2
SPLHCB	SPLB	✓	✓	–	–	–	–	KFL	KC	16 - 25	✓	–	–	–	–	–	–	–
LSP	LSP	✓	✓	–	–	–	–	KFS	KC	16 - 25	✓	–	–	–	–	–	–	–
								KFM	KC	16 - 25	✓	–	–	–	–	–	–	–
								XF	XF	✓	✓	–	–	–	–	–	–	–

*17, 22, 28, 34, 42mm only.

Glossary

Fire Performance

Adaptaflex has introduced a set of symbols to help the user specify conduit systems for installations where fire performance is of particular concern.

Each symbol encompasses a range of properties relevant to the high specification materials used in the construction of the conduit.

They are in an ascending scale of performance from Low Fire Hazard (LFH) featuring zero halogen through to Super Low Fire Hazard (SLFH) featuring zero nitrogen. In addition, Inherent Low Fire Hazard systems (ILFH) are classified as being all metal systems.

For more detailed information on fire performance classifications, see the key on page 39.



LOW FIRE HAZARD



ENHANCED LOW FIRE HAZARD



SUPER LOW FIRE HAZARD



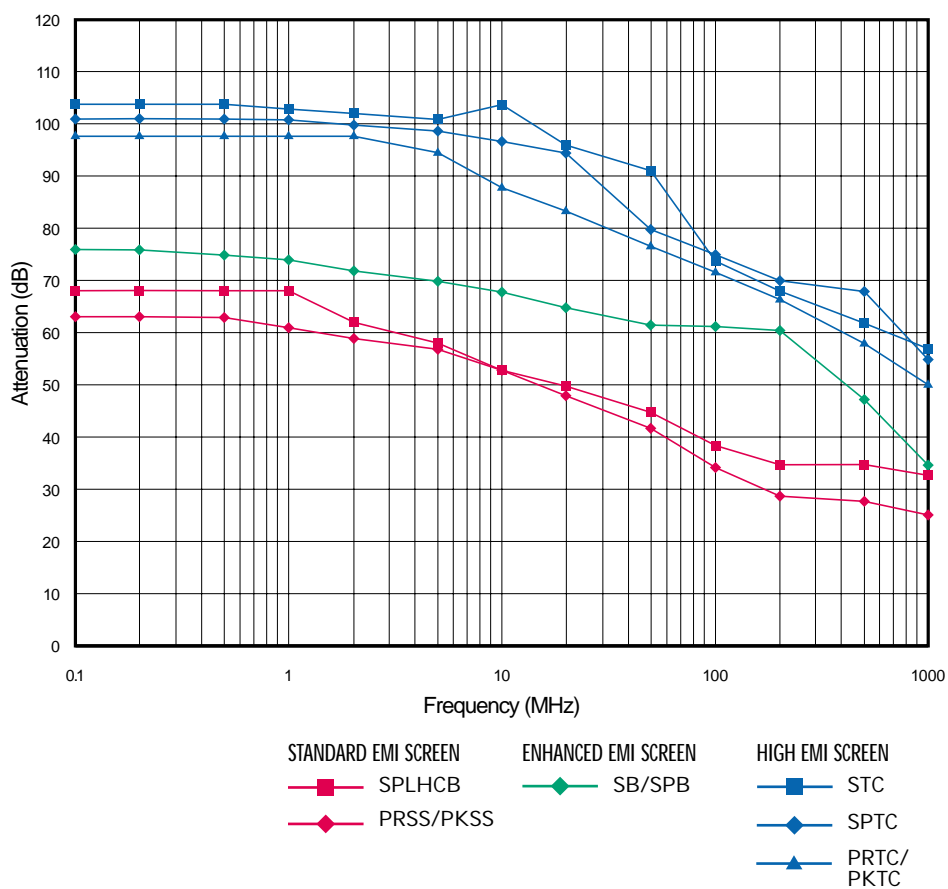
INHERENT LOW FIRE HAZARD

The European Directive on Electromagnetic Compatibility (EMC) 89/336/EEC requires any electrical equipment/ installation to be constructed so that it neither produces Electromagnetic Interference (EMI), sufficient to interfere with radio and telecommunications equipment, nor is itself affected by EMI.

All conduit systems are considered electrically passive since they do not produce or are affected by EMI. However, Adaptaflex has introduced a new range of "Screen Systems" which offer a cost-effective alternative to individually screened cables within applications where cross talk has no adverse effect.

Additionally the user gains the mechanical advantages of a conduit system and a simplified means of modification; e.g. addition, substitution or replacement of cables in an existing cable run.

The graph below shows the results of different types of 20/21mm diameter screened conduit, with its appropriate fittings, tested by ERA Technology, to IEC96/2:93 (Radio frequency cables Part 1). Tests measured attenuation in decibels (dB) over the frequency range covered by the EMC Directive, 0.1 to 1000MHz. The test data allows comparison with other screened conduit systems, and cables tested to IEC 96-1.



ADAPTFLEX TRADE MARKS

Adaptaflex, Adaptaflex Screen Systems, Adaptaflex Hi-Spec Systems, Adaptalok, Adapting, Adaptaflex, Adaptaflex, Korifit, Stayflex & Xtraflex.

ADAPTFLEX PATENTS

Adaptalok fittings; type KF Korifit fittings; type B Adaptaflex fittings; type AWB anti-vibration washer; pending on type ACB/ACG conduit clips.

ERRORS, OMISSIONS & AMENDMENTS EXCEPTED

Information given in this document was correct to the best of our knowledge at the original publication date and is for guidance only.

Adaptaflex is not liable for claims arising from product misuse.

Our policy is one of continuous development and specifications may change at any time.

EMI Screen Systems

For applications where electromagnetic interference is of particular concern we have classified suitable conduit systems by means of symbols. These are related in an ascending scale of performance from Standard EMI Screen (products featuring a stainless steel overbraid) through to High EMI Screen (products featuring a tinned copper overbraid).

For more detailed information see above.



STANDARD
EMI SCREEN



ENHANCED
EMI SCREEN



HIGH
EMI SCREEN

Fitting Characteristics



FITTING OR THREAD SWIVELS INDEPENDENTLY OF CONDUIT DURING INSTALLATION BUT IS NOT SUITABLE AS A ROTATING JOINT IN CONSTANTLY MOVING APPLICATIONS



FITTING ROTATES INDEPENDENTLY OF THE CONDUIT TO ACT AS A ROTATING JOINT WITHIN CONSTANTLY MOVING APPLICATIONS