EMI/RFI Shielded

Electri-Flex Company offers three types of flexible liquidtight conduits designed for wiring applications requiring shielding effectiveness from Electromagnetic and Radio Frequency Interference (EMI / RFI).

Shielded conduit provides exceptional shielding effectiveness from electromagnetic and radio frequency interference (EMI/RFI). Use it to protect sensitive electronic circuits from outside noise in such applications as communications, radar and data transmission. But shielded conduit doesn't just keep interference out, it also keeps emissions in, which is vital to meeting European CE standards - an important issue for OEMs. Additionally, shielding conduits provide a redundant EMI/RFI system protection when using shielded cables with EMI/RFI shielded enclosures.

All three are designed to accept industry standard liquidtight connectors and address the problems of assembly and grounding. Connectors of this type include a grounding ferrule, which contacts the internal metallic material of the conduit and the connector body. This produces a direct shield-to-drain or ground, simply by tightening the connector.

SHIELD-FLEX

SHIELD-FLEX conduit allows for greater versatility than shielded cable in wiring configurations and retrofitting projects. With three levels of effectiveness to choose from, SHIELD-FLEX meets your needs.

Distinctive Characteristics May Include:

- UL Listed (Type SLA)
- Accepts standard liquidtight fittings
- Withstands wide temperature ranges
- Three levels of EMI/RFI protection
- WEEE and RoHS Compliant
- Halogen-Free Also Available

Markets We Serve:

- Medical
- Military
- Industrial
- Government/Defense
- Commercial
- Telecommunications
- Aerospace
- Public Transit
- Utilities

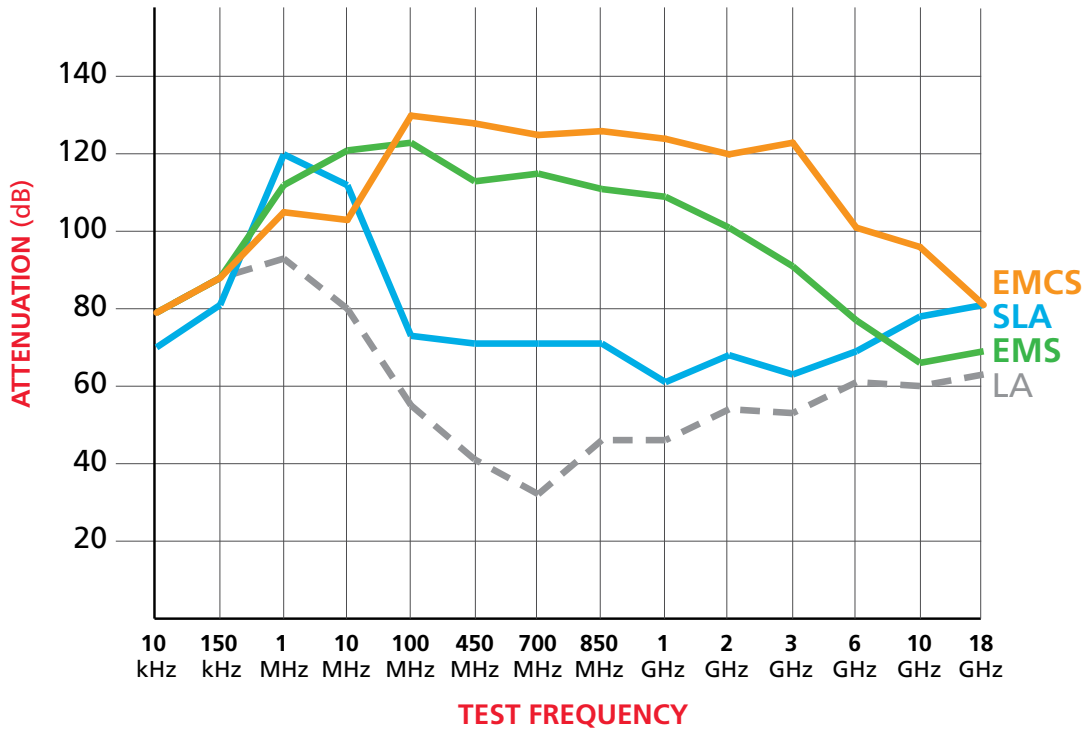
Applications/Markets:

- Air Handling Equipment (HVAC)
- Test & Measurement Equipment
- Data Centers
- Variable Speed Drives
- Commercial-off-the-shelf (COTS) (CAGE Code: 09641)
- CE-European Standard
- Radio Broadband/Antenna
- Solar/Wind Energy
- Ship Building
- Medical Diagnostics Equipment
- Wireless Communication
- Healthcare/Medical

Shielded flexible conduits allow for greater versatility for wiring configurations and retrofitting than is experienced with shielded cable assemblies.
All three of these easy-to-install shielding conduits offer a "good–better–best" scenario as shown in the Shielding Effectiveness chart below. We use a combination of steel or bronze flexible cores coupled with a tinned copper braid to achieve not only the required EMI / RFI protection, but also the added protection from crushing, impact and abrasion.
The outer jacketing material may be modified to accommodate a variety of environmental conditions, with materials ranging from standard PVC to halogen-free polyurethane to high / low temperature thermoplastics.

Shielding Effectiveness

The graph below depicts a general comparative shielding effectiveness (attenuation in dBs) of all three types of SHIELD-FLEX conduit. The dotted line indicates a comparison to standard unshielded liquidtight flexible conduit Type LA. The spectrum of test frequency is from 10 kHz to 10 MHz Electric Field, to 100 MHz to 1 GHz Planewave Field and 2 GHz to 18 GHz Microwave Field. Tests were performed per MIL-STD-285 and in general accordance with IEEE 299. 1" trade size conduit was tested using standard liquidtight fittings from Thomas & Betts Series 5300. Results are based on controlled laboratory conditions and may vary in actual field installed conditions.



TYPE SLA

Markets:
- Aerospace
- Cell Towers
- Data Centers
- Defense
- Healthcare
- Renewable Energy
- Ship Building
- Telecommunications

Type SLA is identical to standard UL Listed liquidtight flexible steel conduit (See Type LA) but is augmented with a tinned copper shielding braid located over the inner steel core and under its protective PVC jacket. The braid offers a minimum of 90% coverage. For a low-smoke, low-flame spread, zero-halogen version, ask for HFSLA (p. 35).

Construction:

Inner Core:
- Hot Dipped Galvanized Steel
- 3/8" – 1-1/4" Squarelock Profile with continuous bonding strip
- 1-1/2" – 2" Fully Interlocked Profile
- Shielded with a tinned copper braid

Liquidtight Jacket:
- Flexible PVC
- Resistant to Oils and Mild Acids
- Flame Retardant
- Sunlight Resistant (UV)

Application:

This conduit is intended for installation in accordance with Article 350 of the NEC (ANSI/NFPA-70)
- Suitable as an equipment grounding conductor per Article 250.118(7). Larger sizes require separate grounding conductor.
- Suitable for use in hazardous locations: Class I, Div. 2 and Classes II and III.
- Accepts Standard Metallic Liquidtight Fittings
- Designed for wiring applications requiring shielding effectiveness from Electromagnetic and Radio Frequency Interference (EMI/RFI)

Proudly made in the U.S.A.

Product Information

Certifications & Compliance

Listed File # E29278. Conforms to Underwriters Laboratories Standard ANSI/UL-360 for Liquidtight Flexible Steel conduit.

WEEE and RoHS Compliant

BS EN IEC 61386 Classification Code 444240650414

ARRA Certification

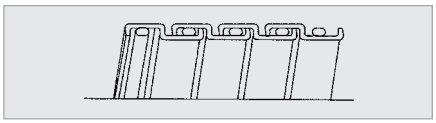
Standard Colors

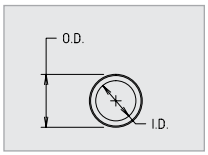
Black. Other colors and jacketing materials available upon request

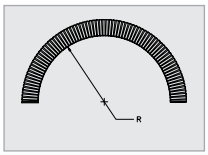
Working Temperatures

-30°C to 80°C Dry / 60°C Wet / 70°C Oil

Squarelock with Filler SIZES: 3/8" - 1-1/4"







OIL RESISTANT
SHIELDED
UV RESISTANT

				INTERNAL DIAMETER		OUTER DIAMETER		INSIDE BEND RADIUS	WEIGHT	STANDARD LENGTH					
US Trade Size	ISO (MM)	CSA (MM)	Type	Min (IN.)	Max (IN.)	Min (IN.)	Max (IN.)	Static (IN.)	Lbs. per 100 Ft.	Carton (Ft.)	Part # (black)	Reel (Ft.)	Part # (black)	Reel (Ft.)	Part # (black)
3/8"	16	12	SLA-10	0.484	0.504	0.690	0.710	2.0	29	100	78901	500	78903	1000	78904
1/2"	20	16	SLA-11	0.622	0.642	0.820	0.840	3.0	32	100	78911	500	78913	1000	78914
3/4"	25	21	SLA-12	0.820	0.840	1.030	1.050	4.2	53	100	78921	500	78924		
1"	32	27	SLA-13	1.041	1.066	1.290	1.315	5.5	82	100	78932	400	78934		
1 1/4"	40	35	SLA-14	1.380	1.410	1.630	1.660	7.0	102	50	78942	200	78944		
1 1/2"	50	41	SLA-15	1.575	1.600	1.865	1.900	4.5	124	50	78952	150	78954		
2"	63	53	SLA-16	2.020	2.045	2.340	2.375	6.0	145	50	78962	100	78964		

TYPE EMS

Markets:
- Aerospace
- Cell Towers
- Defense
- Healthcare
- Renewable Energy
- Ship Building
- Telecommunications

Proudly made in the U.S.A.

Type EMS has an inner core that is made from a fully interlocked bronze strip and does not contain a braided shield. For a low-smoke, low flame spread, zero-halogen version, ask for HFEMS (p. 35).

Construction:

Inner Core:
- Bronze
- 3/8" – 4" Fully Interlocked Profile

Liquidtight Jacket:
- Flexible PVC
- Resistant to Oils and Mild Acids
- Flame Retardant
- Sunlight Resistant (UV)

Application:
- Accepts Standard Metallic Liquidtight Fittings
- Designed for wiring applications requiring shielding effectiveness from Electromagnetic and Radio Frequency Interference (EMI/RFI)

Product Information

Certifications & Compliance

WEEE and RoHS Compliant

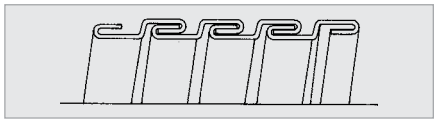
BS EN IEC 61386 Classification Code 445340650314

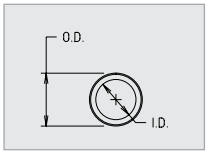
ARRA Certification

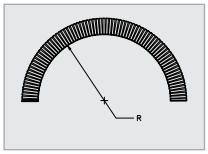
Standard Colors
Gray. Other colors and jacketing materials available upon request

Working Temperatures
-55°C to 105°C

Interlock







				INTERNAL DIAMETER		OUTER DIAMETER		INSIDE BEND RADIUS	WEIGHT	STANDARD LENGTH			
US Trade Size	ISO (MM)	CSA (MM)	Type	Min (IN.)	Max (IN.)	Min (IN.)	Max (IN.)	Static (IN.)	Lbs. per 100 Ft.	Carton (Ft.)	Part # (Gray)	Reel (Ft.)	Part # (Gray)
3/8"	16	12	EMS-10	0.484	0.504	0.690	0.710	3.0	27	100	78801	1000	78804
1/2"	20	16	EMS-11	0.622	0.642	0.820	0.840	3.0	35	100	78811	1000	78814
3/4"	25	21	EMS-12	0.820	0.840	1.030	1.050	4.0	43	100	78822	500	78824
1"	32	27	EMS-13	1.041	1.066	1.290	1.315	4.0	85	100	78832	400	78834
1 1/4"	40	35	EMS-14	1.380	1.410	1.630	1.660	4.5	101	50	78842	200	78844
1 1/2"	50	41	EMS-15	1.575	1.600	1.865	1.900	7.0	140	50	78852	150	78854
2"	63	53	EMS-16	2.020	2.045	2.340	2.375	9.5	180	50	78862	100	78864
2 1/2"	70	63	EMS-17	2.480	2.505	2.840	2.875	12.0	232	25	78872		
3"	80	78	EMS-18	3.070	3.100	3.460	3.500	13.5	320	25	78882		
4"	100	103	EMS-19	4.000	4.040	4.460	4.500	17.0	388	25	78892		

TYPE EMCS

Markets:
- Aerospace
- Cell Towers
- Defense
- Healthcare
- Renewable Energy
- Ship Building
- Telecommunications

Type EMCS is a hybrid of SLA and EMS. It utilizes the same bronze core and PVC jacket as EMS, but gets further screening protection from a tinned copper braid as found in the SLA product. For a low-smoke, low flame spread, zero-halogen version, ask for HFEMCS (p. 35).

Construction:

Inner Core:
- Bronze
- 3/8" – 2" Fully Interlocked Profile
- Shielded with a tinned copper braid

Liquidtight Jacket:
- Flexible PVC
- Resistant to Oils and Mild Acids
- Flame Retardant
- Sunlight Resistant (UV)

Application:
- Accepts Standard Metallic Liquidtight Fittings
- Designed for wiring applications requiring shielding effectiveness from Electromagnetic and Radio Frequency Interference (EMI/RFI)

Proudly made in the U.S.A.

Product Information

Certifications & Compliance

WEEE and RoHS Compliant

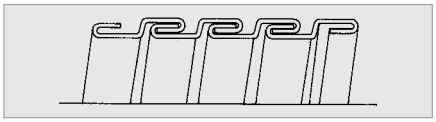
CE BS EN IEC 61386 Classification Code 445340650314

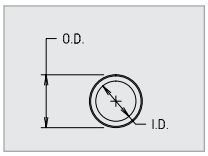
ARRA Certification

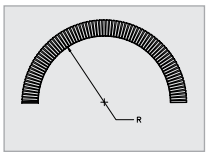
Standard Colors
Black. Other colors and jacketing materials available upon request

Working Temperatures
-55°C to 105°C

Interlock







				INTERNAL DIAMETER		OUTER DIAMETER		INSIDE BEND RADIUS	WEIGHT	STANDARD LENGTH			
US Trade Size	ISO (MM)	CSA (MM)	Type	Min (IN.)	Max (IN.)	Min (IN.)	Max (IN.)	Static (IN.)	Lbs. per 100 Ft.	Carton (Ft.)	Part # (Black)	Reel (Ft.)	Part # (Black)
3/8"	16	12	EMCS-10	0.484	0.504	0.690	0.710	3.0	27	100	78701	500	78703
1/2"	20	16	EMCS-11	0.622	0.642	0.820	0.840	3.0	35	100	78711	500	78713
3/4"	25	21	EMCS-12	0.820	0.840	1.030	1.050	4.0	43	100	78722	500	78724
1"	32	27	EMCS-13	1.041	1.066	1.290	1.315	4.0	85	100	78732	400	78734
1 1/4"	40	35	EMCS-14	1.380	1.410	1.630	1.660	4.5	101	50	78742	200	78744
1 1/2"	50	41	EMCS-15	1.575	1.600	1.865	1.900	7.0	140	50	78752	150	78754
2"	63	53	EMCS-16	2.020	2.045	2.340	2.375	9.5	180	50	78762	100	78764

OIL RESISTANT
SHIELDED
UV RESISTANT
HI/LOW TEMP

HALOGEN-FREE (HF) SERIES

For a low-smoke, low-flame spread, zero-halogen version, ask for HFSLA, HFEMS or HFEMCS. It's ideal for field installation in confined, public areas such as subways, tunnels, etc.

There are many situations and areas where PVC is not allowed for electrical construction. The jacketing material used in the Halogen-Free Series virtually eliminates the release of acidic gases found in PVC products.

COMBUSTION & FLAMMABILITY	TEST	VALUE
Vertical Burn (Material)	UL94	V-0 Rating; No Flaming Drips
Vertical Burn (Conduit)	UL360	Pass; No Flaming Drips
Oxygen Index %	D2863	28.5
Flame Spread Index	ASTM E162	25; No Flaming Drips
Smoke Generation (Flaming)	ASTM E662 (NFPA 258)	Ds 41@1.5 Min/Ds 113@4.0 Min
Smoke Generation (Non-Flaming)	ASTM E662 (NFPA 258)	Ds 4@1.5 Min/Ds 19@4.0 Min
Toxic Gas Generation	BOMBARDIER SMP 800-C	Pass
Toxicity Index	NES 713	3.9

Test data is based on controlled laboratory conditions and does not necessarily reflect performance in actual fire conditions. Additional product information available upon request.

TYPE HFSLA

				INTERNAL DIAMETER		OUTER DIAMETER		INSIDE BEND RADIUS	WEIGHT	STANDARD LENGTH					
US Trade Size	ISO (MM)	CSA (MM)	Type	Min (IN.)	Max (IN.)	Min (IN.)	Max (IN.)	Static (IN.)	Lbs. per 100 Ft.	Carton (Ft.)	Part # (black)	Reel (Ft.)	Part # (black)	Reel (Ft.)	Part # (black)
3/8"	16	12	HFSLA-10	0.484	0.504	0.690	0.710	2.0	29	100	789012	500	789032	1000	789042
1/2"	20	16	HFSLA-11	0.622	0.642	0.820	0.840	3.0	32	100	789128	500	789137	1000	789148
3/4"	25	21	HFSLA-12	0.820	0.840	1.030	1.050	4.2	53	100	789228	500	789247		
1"	32	27	HFSLA-13	1.041	1.066	1.290	1.315	5.5	82	100	789328	400	789347		
1 1/4"	40	35	HFSLA-14	1.380	1.410	1.630	1.660	7.0	102	50	789428	200	789447		
1 1/2"	50	41	HFSLA-15	1.575	1.600	1.865	1.900	4.5	124	50	789528	150	789547		
2"	63	53	HFSLA-16	2.020	2.045	2.340	2.375	6.0	145	50	789628	100	789647		

TYPE HFEMS

				INTERNAL DIAMETER		OUTER DIAMETER		INSIDE BEND RADIUS	WEIGHT	STANDARD LENGTH			
US Trade Size	ISO (MM)	CSA (MM)	Type	Min (IN.)	Max (IN.)	Min (IN.)	Max (IN.)	Static (IN.)	Lbs. per 100 Ft.	Carton (Ft.)	Part # (Gray)	Reel (Ft.)	Part # (Gray)
3/8"	16	12	HFEMS-10	0.484	0.504	0.690	0.710	3.0	27	100	78201	1000	78204
1/2"	20	16	HFEMS-11	0.622	0.642	0.820	0.840	3.0	35	100	78211	1000	78214
3/4"	25	21	HFEMS-12	0.820	0.840	1.030	1.050	4.0	43	100	78221	500	78224
1"	32	27	HFEMS-13	1.041	1.066	1.290	1.315	4.0	85	100	78232	400	78234
1 1/4"	40	35	HFEMS-14	1.380	1.410	1.630	1.660	4.5	101	50	78242	200	78244
1 1/2"	50	41	HFEMS-15	1.575	1.600	1.865	1.900	7.0	140	50	78252	150	78254
2"	63	53	HFEMS-16	2.020	2.045	2.340	2.375	9.5	180	50	78262	100	78264
2 1/2"	70	63	HFEMS-17	2.480	2.505	2.840	2.875	12.0	232	25	78272		
3"	80	78	HFEMS-18	3.070	3.100	3.460	3.500	13.5	320	25	78282		
4"	100	103	HFEMS-19	4.000	4.040	4.460	4.500	17.0	388	25	78292		

TYPE HFEMCS

				INTERNAL DIAMETER		OUTER DIAMETER		INSIDE BEND RADIUS	WEIGHT	STANDARD LENGTH			
US Trade Size	ISO (MM)	CSA (MM)	Type	Min (IN.)	Max (IN.)	Min (IN.)	Max (IN.)	Static (IN.)	Lbs. per 100 Ft.	Carton (Ft.)	Part # (black)	Reel (Ft.)	Part # (black)
3/8"	16	12	HFEMCS-10	0.484	0.504	0.690	0.710	3.0	27	100	86001	500	86003
1/2"	20	16	HFEMCS-11	0.622	0.642	0.820	0.840	3.0	35	100	86101	500	86103
3/4"	25	21	HFEMCS-12	0.820	0.840	1.030	1.050	4.0	43	100	86201	500	86204
1"	32	27	HFEMCS-13	1.041	1.066	1.290	1.315	4.0	85	100	86302	400	86304
1 1/4"	40	35	HFEMCS-14	1.380	1.410	1.630	1.660	4.5	101	50	86402	200	86404
1 1/2"	50	41	HFEMCS-15	1.575	1.600	1.865	1.900	7.0	140	50	86502	150	86504
2"	63	53	HFEMCS-16	2.020	2.045	2.340	2.375	9.5	180	50	86602	100	86604

FLAME RESISTANT
HALOGEN FREE
OIL RESISTANT
SHIELDED