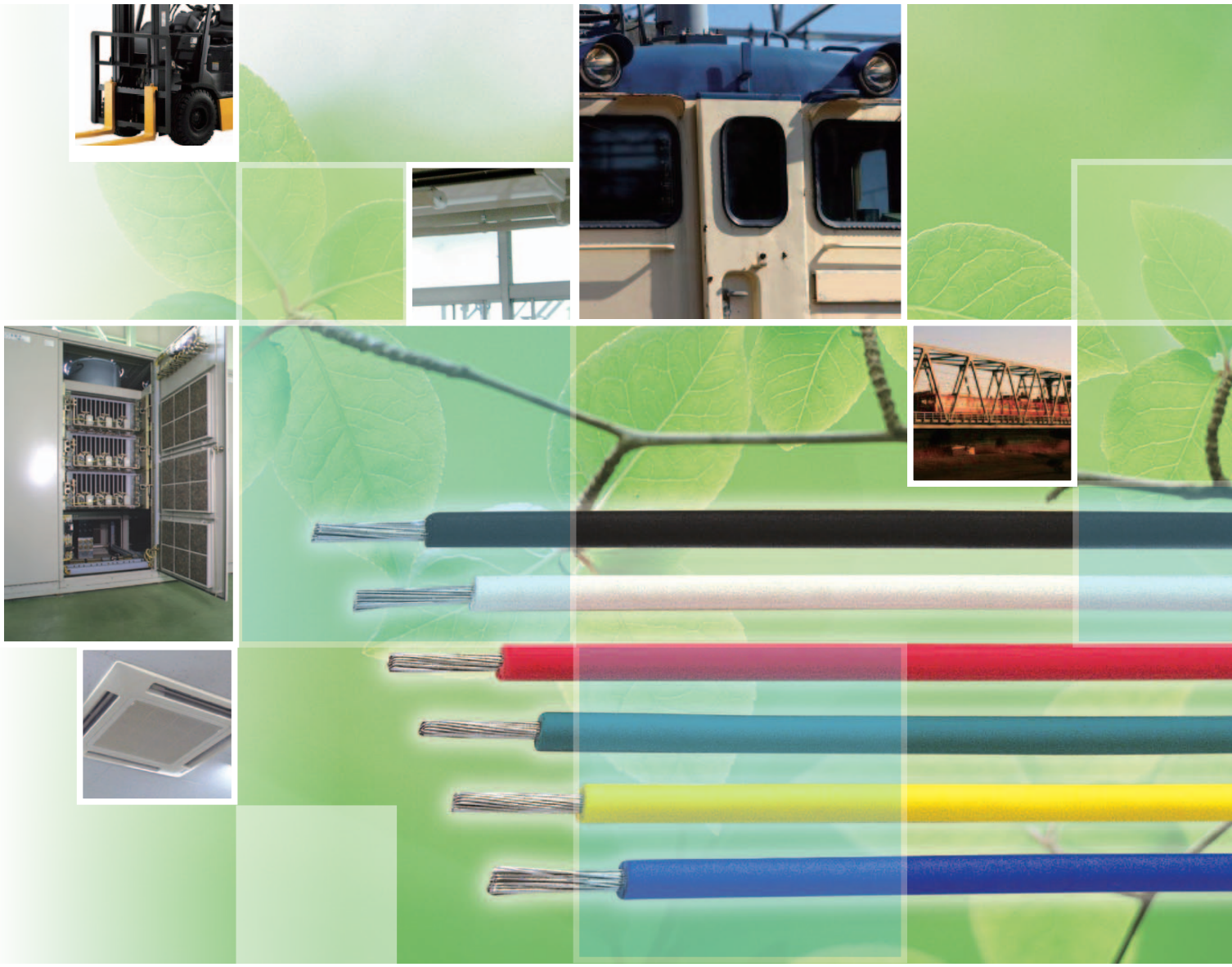
FEIC

Non-Halogen, Flame-Retardant, Flexible,
Cross-Linked Polyethylene Insulated Electric Wire

EM-LMFC

e-Friendly
Environmental impact substances free



FURUKAWA ELECTRIC INDUSTRIAL CABLE CO., LTD.

EM-LMFC

-An environmentally friendly electric wire that streamlines wiring on boards, etc.

Environmental performance
RoHS compliant
Non-halogen
Flame-retardant

Streamlined wiring
Unified wiring material and reduced size
⬇
Lower cost

It allows IV wires to be smaller!

Although the EM-LMFC is an eco wire, it is as flexible as a conventional wire. What is more, its price is identical to that of the previous LMFC.

A highly acclaimed electric wire, the EM-LMFC is now widely used for railway vehicles and various electric devices, as well as for wiring on boards. In addition, the EM-LMFC offers superior heat resistance. This means that its allowable current is higher than that of IV and KIV, permitting smaller electric wires. It therefore enables cost reductions, and contributes to boards with a lighter weight and smaller dimensions.

Comparison of allowable currents

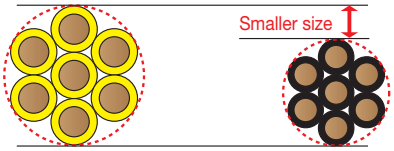
Conductor size	Allowable current (ambient temperature: 40°C) For the allowable currents of the EM-LMFC, values that apply to a maximum conductor temperature of 110°C were adopted and converted into values that apply to an ambient temperature of 40°C.		
	EM-LMFC (A)	EM IE/F (A)	IV (A)
2	41	29	22
3.5	56	39	30
5.5	75	51	40
8	93	65	49
14	134	94	71
22	175	123	93
38	247	173	132
60	331	232	177
100	455	319	243
150	604	424	322
200	717	503	382
250	850	596	453
325	994	697	530

1. Space-saving

The EM-LMFC comes in a smaller size, enabling space to be saved.

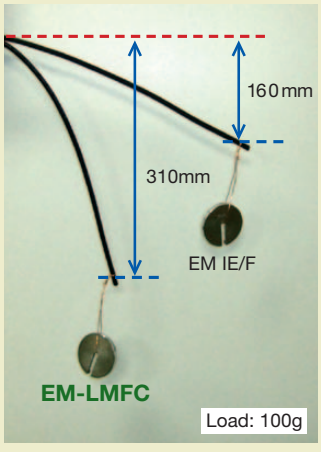
IV wire 8mm²
(use of 7 wires with an external diameter of 6.0mm each)

EM-LMFC 3.5mm²
(use of 7 wires with an external diameter of 4.6mm each)



2. Flexible

The EM-LMFC does not suffer from the reduction in flexibility typically caused by the use of environmentally friendly materials. This means that it permits easy wiring.



Comparison of deflection

3. Heat resistance

With the conduction of a current at 60A, the EM-LMFC does not suffer from deformation or fusion, and does not cause the insulation lock to dig into the wires.

IV wire 8mm²
Conduction of current at 60A

EM-LMFC 5.5mm²
Conduction of current at 60A

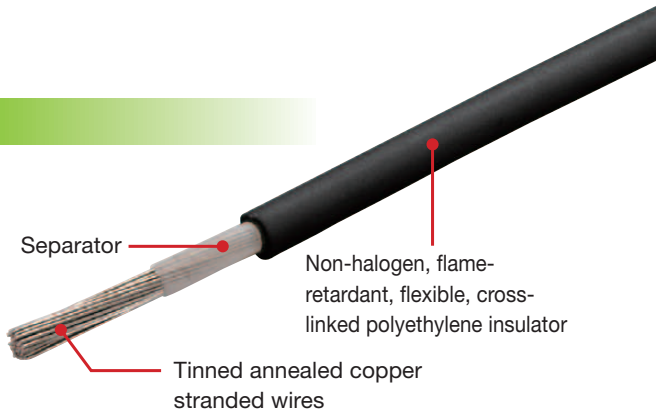
Wiring is easy, even in narrow spaces or when the wires are dense.

Applications

❶ **Wiring on boards/Lead wires of electric devices**
Distribution boards, motors, power generators, welding machines, transformers

❷ **Railway vehicles (black only)**
Vehicles for conventional railways, subways, and industrial railways

❸ **High-voltage distribution**



Features

RoHS

❶ Halogen gas is not generated during its combustion.

❷ RoHS substances are not used.

❸ Upper temperature limit: 110°C (registered as the upper temperature limit for insulating material used with an electrical appliance).

❹ Flame retardancy
The EM-LMFC meets the criteria of “flame retardancy” in accordance with the railway vehicle material combustion test undertaken by the Japan Railway Rollingstock & Machinery Association.

❺ Superior varnish resistance.
*Proven in our own test.

❻ It is highly flexible and has little odor.

❼ It complies with the standards and specifications of WL, HF-WL, LMFC, and EM-LMFC.

❽ Six different colors are available in each size, ensuring ease of use.

Labeling example

FURUKAWA 600V HF-WL1
<PS> E FEIC TAINEN Year of Manufacture EcoAce 600V EM-LMFC 2mm^2
The “HF-WL1” symbol for railway vehicles is available in black only.

Table of allowable currents

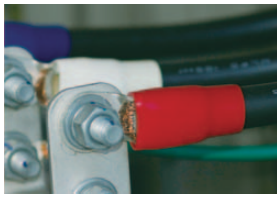
600V/6600V EM-LMFC

Conductor temperature (°C) / Cross-section area of the conductor (mm^2)	110°C Rated temperature	105°C Reference temperature	90°C Reference temperature
0.75	22	22	19
1.25	29	28	24
2	41	39	35
3.5	56	54	48
5.5	75	72	63
8	93	90	79
14	134	129	113
22	175	169	148
(30)	212	204	179
38	247	238	209
(50)	290	279	245
60	331	319	280
(80)	392	378	332
100	455	438	384
(125)	525	506	444
150	604	581	510
200	717	690	605
250	850	818	718
325	994	957	839

Note: Values in ( ) indicate quasi-standard sizes.


Wiring in dense wires


Wiring in a railway vehicle


Wiring of lead wires


Wiring on a board

Table of structural dimensions

600V EM-LMFC

Conductor			Insulation thickness (mm)	Approximate finished external diameter (mm)	Maximum conductor resistance (at 20°C) (Ω/km)	Test voltage (V/minute)	Minimum insulation resistance (MΩ·km)	Surface leakage resistance (MΩ)	Approximate mass (kg/km)
Cross-section area (mm^2)	Structure Number of wires/ Wire diameter (mm)	Approximate external diameter (mm)							
0.75	30/0.18	1.1	1.0	3.2	25.8	2,200	80	300	16
1.25	50/0.18	1.5	1.0	3.6	15.5	2,200	70	300	22
2	37/0.26	1.8	1.0	3.9	9.91	2,200	60	300	30
3.5	45/0.32	2.5	1.0	4.6	5.38	2,200	50	300	48
5.5	35/0.45	3.1	1.0	5.2	3.50	2,200	50	200	68
8	50/0.45	3.7	1.0	5.8	2.45	2,200	50	200	92
14	88/0.45	4.9	1.0	7.0	1.39	2,200	40	200	155
22	7/20/0.45	6.7	1.2	9.6	0.892	2,200	40	100	255
(30)	7/27/0.45	7.8	1.2	10.7	0.661	2,200	40	100	335
38	7/34/0.45	8.7	1.2	11.7	0.525	2,200	40	100	410
(50)	19/16/0.45	10.0	1.5	13.6	0.411	2,500	30	100	530
60	19/20/0.45	11.2	1.5	14.8	0.329	2,500	30	100	650
(80)	19/27/0.45	13.0	1.5	16.7	0.243	2,500	30	90	860
100	19/34/0.45	14.6	2.0	19.4	0.193	3,000	30	80	1,110
(125)	19/42/0.45	16.3	2.0	20.5	0.156	3,000	20	70	1,350
150	27/34/0.45	18.0	2.0	22.2	0.136	3,000	20	60	1,540
200	37/34/0.45	20.4	2.5	25.6	0.0993	3,000	20	60	2,120
250	37/42/0.45	22.7	2.5	27.9	0.0803	3,000	15	50	2,580
325	37/55/0.45	26.0	2.5	31.1	0.0614	3,000	15	50	3,360

Note: Values in ( ) indicate quasi-standard sizes.

6600V EM-LMFC

Conductor			Insulation thickness (mm)	Approximate finished external diameter (mm)	Maximum conductor resistance (at 20°C) (Ω/km)	Test voltage (V/minute)	Minimum insulation resistance (MΩ·km)	Surface leakage resistance (MΩ)	Approximate mass (kg/km)
Cross-section area (mm^2)	Structure Number of wires/ Wire diameter (mm)	Approximate external diameter (mm)							
3.5	45/0.32	2.5	4.0	10.5	5.38	18,000	110	100	140
5.5	35/0.45	3.1	4.0	11.1	3.50	18,000	100	100	170
8	50/0.45	3.7	4.0	11.7	2.45	18,000	90	100	200
14	88/0.45	4.9	4.0	12.9	1.39	18,000	75	100	275
22	7/20/0.45	6.7	4.0	14.7	0.892	18,000	60	100	385
(30)	7/27/0.45	7.8	4.0	15.8	0.661	18,000	55	90	480
38	7/34/0.45	8.7	4.0	16.7	0.525	18,000	50	90	565
(50)	19/16/0.45	10.0	4.0	18.0	0.411	18,000	45	80	685
60	19/20/0.45	11.2	4.0	19.2	0.329	18,000	40	70	815
(80)	19/27/0.45	13.0	4.0	21.0	0.243	18,000	35	60	1,050
100	19/34/0.45	14.6	4.0	22.6	0.193	18,000	35	60	1,270
(125)	19/42/0.45	16.3	4.0	24.3	0.156	18,000	30	60	1,520
150	27/34/0.45	18.0	4.0	26.0	0.136	18,000	30	50	1,740

Note: Values in ( ) indicate quasi-standard sizes.

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Furukawa Electric Group strives to develop environmentally considerate products.

eFriendly

eFriendly Logo Mark

This logo mark indicates that the products and services satisfy the standards of environmentally friendly products of the Furukawa Electric Group.

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