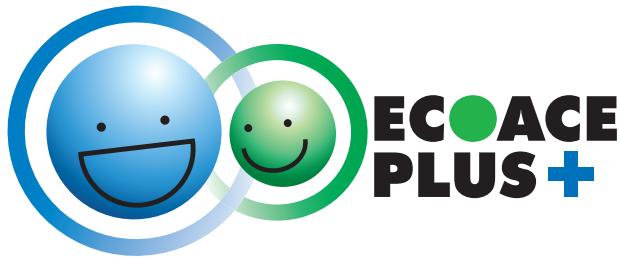


Environmentally Friendly Wiring Materials
for Electronic and Electric Equipment



ECOACEPLUS Series

ECOACE Series

ECOBEMEX Series

The ECOACEPLUS, ECOACE and ECOBEAMEX Series are a family of environmentally friendly halogen-free wiring materials that do not contain chlorine, bromine or fluorine, let alone hazardous heavy metals that adversely impact the environment such as lead, cadmium, hexavalent chromium and mercury. Therefore, they can be advantageously disposed of after use as described below.

- The wires can be disposed of by incineration in no danger of generating dioxins.
- The wires can be disposed of in landfills in no danger of leaching of heavy metals.
- The wires enable "thermal recycling," where the incineration heat is utilized as energy.

ECOACEPLUS, ECOACE and ECOBEAMEX Series



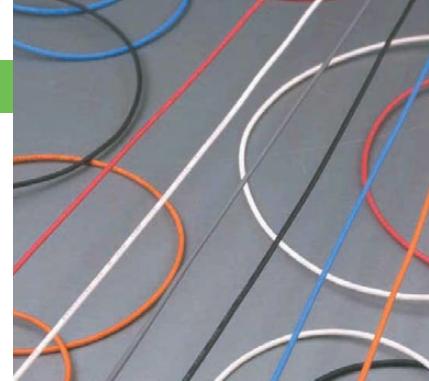
Safety is ensured when incinerated or in landfills

Environmentally friendly halogen-free electric wires

		Halogen-free wires	PVC wires
Recyclability	Material recycling	Possible Even if mixed with olefin resins such as PP, the mixture can be recycled.	Possible When mixed with olefin resins such as PP, sorting is needed, and degradation in quality cannot be avoided.
	Thermal recycling Chemical recycling	Possible	Generally impossible (Practical application of enabling technologies is under study) Selective elimination and dechlorination is needed.
	Disposal	Incineration is possible Harmless and safe even in landfills.	Incineration imposes a heavy load to the facilities In landfills, leaching of plasticizer and stabilizer is what to be worried about.

Environmentally friendly Halogen-free electric wires

Halogen-free electric wires are generally said environmentally friendly. But let us recheck if halogen-free electric wires are really environmentally friendly.



Q. Can halogen-free electric wires be recycled?

Recycling largely consists of two stages. Let us take a look at each of them.

A. 1. Material recycling

Both halogen-free electric wires and PVC electric wires can be material recycled if they are recovered unmixed.

When olefin resins such as polypropylene (PP) used for casings are mixed, halogen-free materials can be recycled without problems. But, PVC cannot be recycled unless the resins are separately removed, and what is more, the quality of the recycled material significantly degrades if a small amount remains.

2. Thermal recycling and chemical recycling

Since halogen-free electric wires do not emit toxic gases, they can be applied to thermal recycling to obtain heat energy, or to chemical recycling where they are converted into a chemical raw material. On the other hand, PVC is likely to generate corrosive gases or toxic gases in incineration, and its residual chlorine, moreover, adversely affects the recycled materials.

For this reason, in most recycling processes, it is necessary to provide a pre-process to separate and remove PVC from waste plastics or a post-process to remove chlorine.

Q. But, some PVC electric wires are already material recycled, aren't they?

A. Currently, about 30% of PVC electric wires are recycled to be reused in mats, sheets, floor materials and water proof sheets. Since, however, recyclable PVC electric wires mostly come from those for power and communication uses allowing easy and single-product recovery, it can be said that only 30% is material recycled at the present time. When it comes to electric wires used in equipment and buildings, it is difficult to recover them as simple electric wires because of the fact that they are connected with solder and various components and that their recovery route is not established yet. These constitute a difficult aspect of increasing the material recycling rate.

Q. And what happens when they cannot be recycled? Are halogen-free electric wires easy to be disposed of?

A. Halogen-free electric wires do not emit toxic gases when incinerated, so that they can be disposed of by incineration using ordinary incineration facilities. PVC generates corrosive gases or toxic gases in incineration, and it is likely for these to remain in the incineration ashes, it imposes on the incineration facilities heavier loads than ordinary waste of plastics.

Q. But PVC electric wires can be disposed of in landfills, aren't they?

A. It is said that, among PVC electric wires, lead-free PVC electric wires that recently become common can be disposed of in landfills. However, suspicions are raised about the effects of a plasticizer (phthalate compounds) as an endocrine-disrupting compound on the genital system. For example, there is a movement to place a ban on using PVC containing specified plasticizers to the toys that infants might convey to their mouth. Disposal of PVC electric wires in landfills involves, should these hazardous substances leach out of the disposal station, the risk of exerting a harmful influence on ecosystems. In addition, the remaining capacity of terminal waste treatment plants is decreasing these days, so that it is anticipated that not only the cost of landfill disposal rises, but also landfill disposal in itself becomes difficult.

Replacement of non-cross-linked PVC products,
promoting eco compatibility

Environmentally Friendly Wiring Electric Equipment

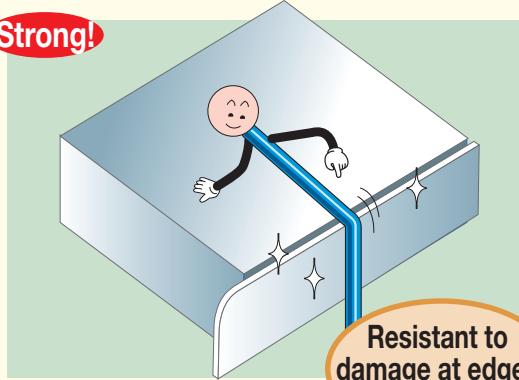
Unique chemically cross-linked products



ECOACEPLUS Series

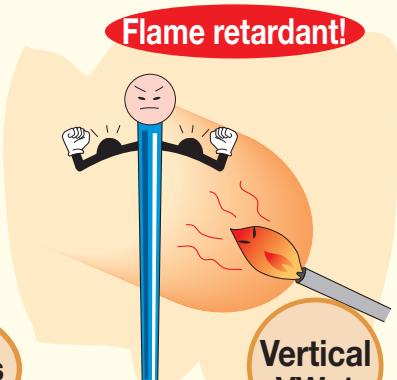
Features A newly developed cross-linking agent is used, realizing high strength comparable to that of PVC.

Strong!



Resistant to
damage at edges
in the wiring work

Flame retardant!



Vertical
VW-1

Friendly
Environmental impact substances free

Insulation stripping property
for pressure bonding

**Excellent
workability**



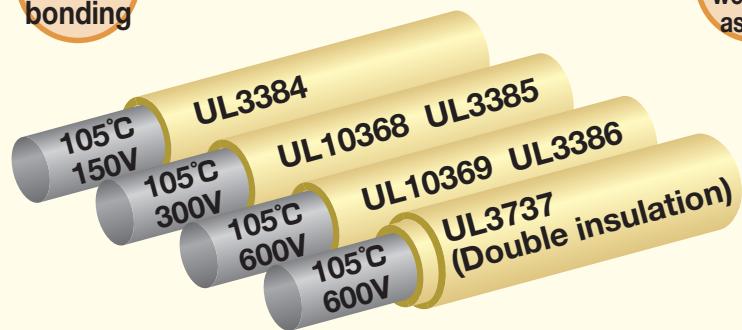
Pressure welding workability

**Ideal for
pressure
bonding**

ECOACEPLUS -105

**Suitable
for pressure
welding
as well**

ECOACEPLUS -105R

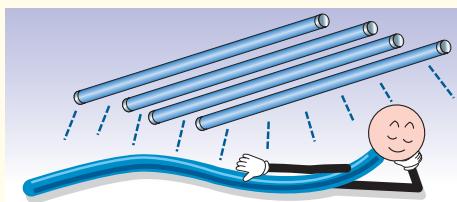


ECOACE Series

Features

Superior ultraviolet
ray resistance

Domestic
standards



Materials for Electronic and
of Furukawa Electric

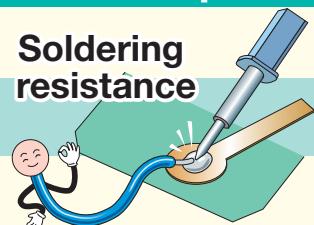
In case of placing importance to
soldering-resistance and heat-resistance

Electron beam cross-linked products

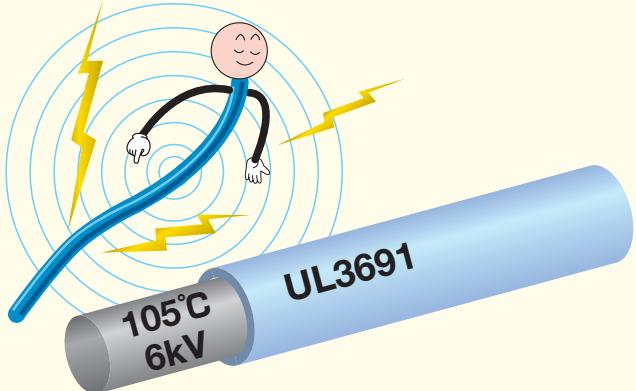
ECOBEEAMEX Series



Soldering
resistance

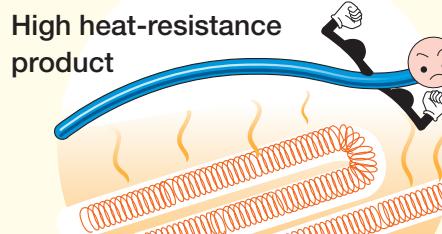


Features
High voltage-compatible product



Features

High heat-resistance
product



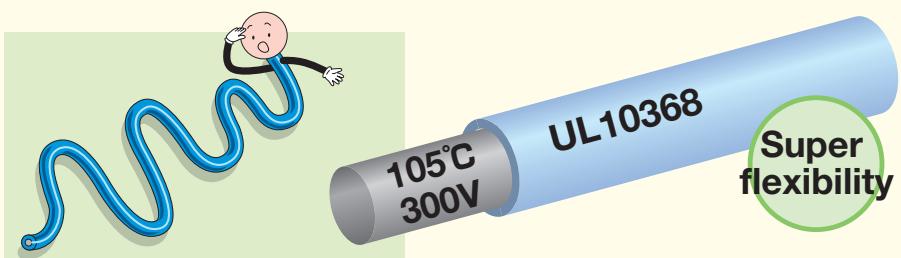
125°C
heat
resistance



ECOSOFLEX Series

Features

Due to its increased
flexibility, it is highly
bendable allowing easy
wiring in limited spaces.





Specifications of ECOACEPLUS-105 Series

Name	Rated temp.	Rated voltage	UL style	Size (AWG)	Conductor (Tinned annealed copper wire)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks	
					Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)			
ECOACEPLUS-105	105°C	300V	3385	28	7/0.127	0.38	0.42	1.22	915-m bundle	UL 1007 (PVC) equivalent	
				26	7/0.16	0.48	0.42	1.32			
				24	11/0.16	0.62	0.42	1.46			
				22	17/0.16	0.76	0.42	1.60			
				20	21/0.18	0.95	0.42	1.79	610-m bundle		
				18	34/0.18	1.21	0.42	2.05			
				16	26/0.26	1.53	0.44	2.41			
		600V	10368	32	7/0.08	0.24	0.27	0.78	915-m bundle	UL 1061 (PVC) equivalent	
				30	7/0.10	0.30	0.27	0.84			
				28	7/0.127	0.38	0.27	0.92			
				26	7/0.16	0.48	0.27	1.02			
				24	7/0.20	0.60	0.27	1.14			
				22	7/0.26	0.78	0.27	1.32			
				20	7/0.32	0.96	0.27	1.50			
				18	34/0.18	1.21	0.30	1.81			
				16	26/0.26	1.53	0.30	2.13			
		3386	3386	28	7/0.127	0.38	0.84	2.06	610-m bundle	UL 1015 (PVC) equivalent	
				26	7/0.16	0.48	0.84	2.16			
				24	11/0.16	0.62	0.84	2.30			
				22	17/0.16	0.76	0.84	2.44			
				20	21/0.18	0.95	0.84	2.63			
				18	34/0.18	1.21	0.84	2.89	305-m bundle		
				16	26/0.26	1.53	0.84	3.21			
				14	41/0.26	1.92	0.85	3.62			
				12	43/0.32	2.42	0.85	4.12			
				10	43/0.40	3.03	0.85	4.73			
		3737 (Double insulation)	10369	26	7/0.16	0.48	0.55	1.58	915-m bundle	UL 10097 (PVC) equivalent	
				24	11/0.16	0.62	0.55	1.72			
				22	17/0.16	0.76	0.55	1.86			
				20	21/0.18	0.95	0.55	2.05			
				18	34/0.18	1.21	0.55	2.31	610-m bundle		
				16	26/0.26	1.53	0.55	2.63			
				14	41/0.26	1.92	0.85	3.62			
				12	43/0.32	2.42	0.84	5.00	305-m bundle		
				22	17/0.16	0.76	Primary 0.84 Secondary 0.45	3.34	153-m bundle	UL 1673 (PVC) equivalent	
				20	21/0.18	0.95	Primary 0.84 Secondary 0.45	3.53			
				18	34/0.18	1.21	Primary 0.84 Secondary 0.45	3.79			
				16	54/0.18	1.53	Primary 0.84 Secondary 0.45	4.11			
				14	43/0.32	2.42	Primary 0.84 Secondary 0.45	5.00	153-m bundle		

Specifications of ECOACEPLUS-105R Series

Name	Rated temp.	Rated voltage	UL style	Size (AWG)	Conductor (Tinned annealed copper wire)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks
					Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)		
ECOACEPLUS-105R	105°C	150V	3619	28	7/0.127	0.38	0.20	0.78	6100-m bobbin	* UL 10272 (PVC) equivalent
				26	7/0.16	0.48	0.20	0.88	6100-m bobbin	* Suitable for pressure welding
				24	7/0.20	0.60	0.20	1.00	4880-m bobbin	* Temp. upper limit: 105°C, approved by Electrical Appliance and Material Safety Law
			3619J	26	7/0.16	0.48	0.16	0.80	6100-m bobbin	* UL 1061 (PVC) equivalent
			300V	28	7/0.127	0.38	0.25	0.88	4880-m bobbin	* Suitable for pressure welding
				26	7/0.16	0.48	0.25	0.98	4880-m bobbin	* Temp. upper limit: 105°C, approved by Electrical Appliance and Material Safety Law
				24	7/0.20	0.60	0.25	1.10	3050-m bobbin	
				22	7/0.16	0.48	0.16	0.80	6100-m bobbin	
				20	7/0.16	0.48	0.16	0.80	6100-m bobbin	

Specifications of ECOBEAMEX-105 Series

Name	Rated temp.	Rated voltage	UL style	Size (AWG)	Conductor (Tinned annealed copper wire)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks
					Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)		
ECOBEAMEX-105	105°C	30V	3302	32	7/0.08	0.24	0.15	0.54	610-m bobbin	UL 1571 UL 1685 (PVC) equivalent
				30	7/0.10	0.30	0.20	0.70		
				28	7/0.127	0.38	0.25	0.88		
				26	7/0.16	0.48	0.25	0.98		
		150V	3384	30	7/0.10	0.30	0.30	0.90	915-m bundle	UL 1429 (PVC) equivalent
				28	7/0.127	0.38	0.30	0.98		
				26	7/0.16	0.48	0.30	1.08		
				24	11/0.16	0.62	0.30	1.22		
				22	17/0.16	0.76	0.30	1.36		
				20	21/0.18	0.95	0.30	1.55		
				18	34/0.18	1.21	0.30	1.91		
				16	26/0.26	1.53	0.30	2.23	610-m bundle	
		300V	3385	28	7/0.127	0.38	0.42	1.22	915-m bundle	UL 1007 UL 1430 (PVC) equivalent
				26	7/0.16	0.48	0.42	1.32		
				24	11/0.16	0.62	0.42	1.46		
				22	17/0.16	0.76	0.42	1.60		
				20	21/0.18	0.95	0.42	1.79	610-m bundle	UL 1007 UL 1430 (PVC) equivalent
				18	34/0.18	1.21	0.42	2.05		
				16	26/0.26	1.53	0.44	2.41		
		10368	10368	32	7/0.08	0.24	0.27	0.78	915-m bundle	UL 1061 UL 3443 (PVC) equivalent
				30	7/0.10	0.30	0.27	0.84		
				28	7/0.127	0.38	0.27	0.92		
				26	7/0.16	0.48	0.27	1.02		
				24	7/0.20	0.60	0.27	1.14		
				22	7/0.26	0.78	0.27	1.32		
				20	7/0.32	0.96	0.27	1.50		
				18	34/0.18	1.21	0.30	1.81		
				16	26/0.26	1.53	0.30	2.13		
		600V	3386	28	7/0.127	0.38	0.84	2.06	610-m bundle	UL 1015 UL 1431 (PVC) equivalent
				26	7/0.16	0.48	0.84	2.16		
				24	11/0.16	0.62	0.84	2.30		
				22	17/0.16	0.76	0.84	2.44		
				20	21/0.18	0.95	0.84	2.63		
				18	34/0.18	1.21	0.84	2.89	305-m bundle	UL 1015 UL 1431 (PVC) equivalent
				16	26/0.26	1.53	0.84	3.21		
				14	41/0.26	1.92	0.85	3.62		
				12	43/0.32	2.42	0.85	4.12	153-m bundle	
				10	43/0.40	3.03	0.85	4.73	610-m bundle	UL 10097 (PVC) equivalent
		10369	10369	26	7/0.16	0.48	0.55	1.58		
				24	11/0.16	0.62	0.55	1.72		
				22	17/0.16	0.76	0.55	1.86		
				20	21/0.18	0.95	0.55	2.05		
				18	34/0.18	1.21	0.55	2.31		
				16	26/0.26	1.53	0.55	2.63		

Specifications of ECOBEAMEX-125 Series

Name	Rated temp.	Rated voltage	UL style	Size (AWG)	Conductor (Tinned annealed copper wire)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks
					Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)		
ECOBEAMEX-125	125°C	150V	3265	30	7/0.10	0.30	0.30	0.90	915-m bundle	* UL 3265 (non HF-XLPE) equivalent
				28	7/0.127	0.38	0.30	0.98		* Temp. upper limit: 125°C, approved by Electrical Appliance and Material Safety Law
				26	7/0.16	0.48	0.30	1.08		
				24	11/0.16	0.62	0.30	1.22		
				22	17/0.16	0.76	0.30	1.36		
				20	21/0.18	0.95	0.30	1.55		
				18	34/0.18	1.21	0.35	1.91		
				16	26/0.26	1.53	0.35	2.23	610-m bundle	
		300V	3266	28	7/0.127	0.38	0.42	1.22	915-m bundle	* UL 3266 (non HF-XLPE) equivalent
				26	7/0.16	0.48	0.42	1.32		* Temp. upper limit: 125°C, approved by Electrical Appliance and Material Safety Law
				24	11/0.16	0.62	0.42	1.46		
				22	17/0.16	0.76	0.42	1.60		
				20	21/0.18	0.95	0.42	1.79		
				18	34/0.18	1.21	0.42	2.05		
				16	26/0.26	1.53	0.44	2.41		
		600V	3271	28	7/0.127	0.38	0.84	2.06	610-m bundle	* UL 3271 (non HF-XLPE) equivalent
				26	7/0.16	0.48	0.84	2.16		* Temp. upper limit: 125°C, approved by Electrical Appliance and Material Safety Law
				24	11/0.16	0.62	0.84	2.30		
				22	17/0.16	0.76	0.84	2.44		
				20	21/0.18	0.95	0.84	2.63		
				18	34/0.18	1.21	0.84	2.89	305-m bundle	
				16	26/0.26	1.53	0.84	3.21		
				14	41/0.26	1.92	0.85	3.62		
				12	43/0.32	2.42	0.85	4.12		
				10	43/0.40	3.03	0.85	4.73	153-m bundle	

Specifications of ECOBEAMEX-HV Series

Name	Rated temp.	Rated voltage	UL style	Size (AWG)	Conductor (Tinned annealed copper wire)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks
					Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)		
ECOBEAMEX-HV	105°C	6kV	3691	28	7/0.127	0.38	0.60	1.58	915-m bundle	AC6kV
				27	7/0.14	0.42	0.60	1.62		
				26	7/0.16	0.48	0.60	1.68		
				26f	19/0.10	0.50	0.60	1.70		
				24	19/0.127	0.64	0.60	1.84		
				22	19/0.160	0.80	0.60	2.00		

Specifications of ECOSOFLEX Series

Name	Rated temp.	Rated voltage	UL style	Size (AWG)	Conductor (Tinned annealed copper wire)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks	
					Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)			
ECOSOFLEX	105°C	300V	10368	32	7/0.08	0.24	0.27	0.78	915-m bobbin	UL 3443 UL 1061 (PVC) equivalent	
				30	7/0.1	0.30	0.27	0.84			
				30/0.05	0.32	0.27	0.86				
				29	13/0.08	0.34	0.29	0.92			
				28	7/0.127	0.38	0.27	0.92			
				19/0.08	0.40	0.29	0.98				
				44/0.05	0.40	0.29	0.98				
				26	7/0.16	0.48	0.27	1.02	1220-m bobbin		
				19/0.10	0.50	0.27	1.05				
				30/0.08	0.50	0.29	1.09				

Specifications of ECOACE single polyethylene cord

Name	Size (SQ)	Conductor (Annealed copper wiree)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks
		Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)		
EM-CSF	0.5	20/0.18	0.93	0.80	2.53	915-m bundle	* HVSF (PVC) equivalent * <PS>E, -F- marks corresponding
	0.75	30/0.18	1.14	0.80	2.74		
	1.25	50/0.18	1.47	0.80	3.07		
	2.0	37/0.26	1.83	0.80	3.43	300-m bundle	

Specifications of ECOACE equipment electric wire

Name	Size (SQ)	Conductor (Annealed copper wiree)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks	
		Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)			
EM-KIX	0.5	20/0.18	0.9	0.8	2.5	500-m bundle	<PS>E not corresponding for less than 0.75SQ Electrical Appliance and Material Safety Law compliant	
	0.75	30/0.18	1.1	0.8	2.7			
	1.25	50/0.18	1.5	0.8	3.1			
	2.0	37/0.26	1.8	0.8	3.4	300-m bundle		
	3.5	45/0.32	2.5	0.8	4.1	200-m bundle		
	5.5	70/0.32	3.1	1.0	5.1			
EM-KE	0.3	12/0.18	0.7	0.4	1.5	500-m bundle	JCS standards equivalent	
	0.4	16/0.18	0.8	0.4	1.6			
	0.5	20/0.18	0.9	0.5	1.9			
	0.75	30/0.18	1.1	0.5	2.1			
	1.25	50/0.18	1.5	0.6	2.7			
	2.0	37/0.26	1.8	0.6	3.0			

Specifications of ECOACE equipment electric wire with enhanced ultraviolet ray resistance

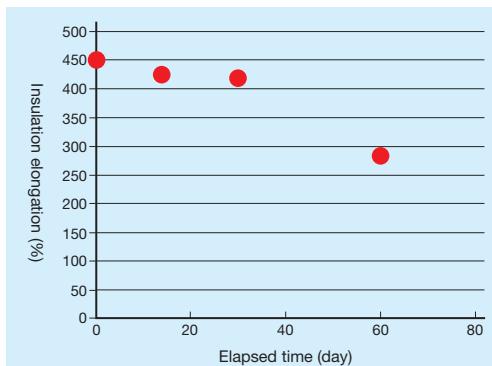
Name	Size	Conductor (Annealed copper wiree)		Insulation (Cross-linked polyolefin)		Standard length/ Standard packing	Remarks
		Structure (count/mm)	Standard outer dia. (mm)	Standard thickness (mm)	Standard outer dia. (mm)		
EM-IX (UV)	0.8mm	1/0.8	0.8	0.8	2.4	500-m bundle	HIV (PVC) equivalent
	1.0mm	1/1.0	1.0	0.8	2.6		
EM-KIX (UV)	0.5SQ	20/0.18	0.9	0.8	2.5		HKIV (PVC) equivalent
	0.75SQ	30/0.18	1.1	0.8	2.7		
	1.25SQ	50/0.18	1.5	0.8	3.1		

Measurement results of ultraviolet ray resistance of EM-IX (UV) and KIX (UV)

Measurement method:

Compliant with the Technical Information No. 130 of the Japanese Electric Wire & Cable Makers' Association, "Accelerated Degrading Test of Ultraviolet Ray Resistance of Electric Wires and Cables for Lighting Equipment."

Ambient temperature setting: 120°C



Name designation when ordering

When ordering, specify the following:

UL AWM () ECOACEPLUS- () () () ()

UL style number

Rated temperature

Size and conductor structure

Color

Example: UL AWM 3385 ECOACEPLUS-105 22AWG 17/0.16 black

**Product lineup and features of wiring materials for electronic and electric equipment,
ECOACEPLUS, ECOACE, ECOBEAMEX, and ECOSOFLEX**

Name	Cross-linking method	Insulation	Heat resistance	Flame retardance	Features	Corresponding conventional products
ECOACEPLUS-105	New chemical cross-linking (Unique technology)	Cross-linked polyolefin	105°C	UL VW-1	* Achieved PVC-comparable strength * Superior workability using a flat blade	UL1007, UL1015
ECOACEPLUS-105R			105°C	UL VW-1	* Rigid type suitable for pressure welding * Provides PVC-comparable strength and superior edge resistance	UL1061, UL10272
ECOACE EM-KIX ECOACE EM-KE			90°C	60° inclination	* Electrical Appliance and Material Safety Law compliant * JCS standards compliant	KIV, H-KIV IV, H-IV
ECOACE EM-CSF			105°C	-F- mark	* Electrical Appliance and Material Safety Law compliant * <PS>E corresponding	VSF, HVSF
ECOACE EM-KIX (UV) ECOACE EM-IX (UV)			105°C	60° inclination	* Superior ultraviolet ray resistance	KIV, H-KIV IV, H-IV
ECOBEAMEX-105			105°C	UL VW-1	* Superior soldering resistance * Superior flexibility suitable for wiring * Superior workability using a flat blade	UL1571, UL1685, UL1430, UL1431, UL3443
ECOBEAMEX-125	Electron beam cross-linking		125°C	UL VW-1	* Superior soldering resistance * Superior flexibility suitable for wiring	UL3265, UL3266, UL3271
ECOBEAMEX-HV			105°C	UL VW-1	* Superior soldering resistance * Superior flexibility suitable for wiring	—
ECOSOFLEX			105°C	UL VW-1	* Superior soldering resistance * Super flexibility type suitable for wiring in limited spaces	UL3443

Characteristics of ECOACEPLUS, ECOACE, ECOBEAMEX, and ECOSOFLEX

Item		ECOACEPLUS		ECOACE		ECOBEAMEX			ECOSOFLEX
		105	105R	EM-IX, KIX	EM-CSF	105	125	HV	
Mechanical strength	Edge resistance	○ ~ ○	○	○	○	○	○	○	○
	Damage resistance	○	○	○	○	○	○	○	○
Flexibility		○	△	○	○	○	○	○	○
Soldering resistance		○	○	○	○	○	○	○	○
Pressure bonding workability		—	Suitable	—	—	—	—	—	—
Pressure welding workability		Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Allowable temperature		105°C	105°C	105°C	105°C	105°C	125°C	105°C	105°C
Flame retardance		Vertical	Vertical	60° inclination	Vertical	Vertical	Vertical	Vertical	Vertical
Material recycling		Possible	Possible	Possible	Possible	Impossible	Impossible	Impossible	Impossible

Typical characteristics (UL products)

Item		Test conditions (UL758)	ECOACEPLUS		ECOBEMEX			ECOSOFLEX
			105	105R	105	125	HV	
Material characteristics	Tensile strength	Tensile speed: 500mm/min Gage length: 25.4mm	11.7MPa	30.0MPa	14.5MPa	15.1MPa	12.5MPa	12.8MPa
	Elongation		201%	185%	170%	176%	191%	180%
Aging characteristics	Residual tensile strength	Conditions 105°C rating: 136°C x 168H 125°C rating: 158°C x 168H	108%	101%	110%	112%	110%	74%
	Residual elongation		70%	60%	90%	70%	85%	83%
Winding and heating		After winding 6 turns 105°C rating: 136°C x 1H 125°C rating: 158°C x 1H Mandrel dia.: Self dia. x 2	No cracking or breakage on the surface					
Low temp. winding		6-turn winding with: -10°C x 4H Mandrel dia.: Self dia. x 2	No cracking or breakage on the surface					
Deformation in heating		105°C rating: 120°C x 1H 125°C rating: 158°C x 1H Load: 2.45N for insulation thickness less than 0.76mm, or 3.92N for 0.76mm or more	28%	5%	25%	17%	19%	39%
Flame retardance		VW-1	Passed	Passed	Passed	Passed	Passed	Passed

Quantitative analysis on the six substances restricted by the RoHS

1) ICP analysis: Cd, Pb, Cr (VI), and Hg

A mix acid consisting of nitric acid, fluorinated acid, and hydrogen peroxide solution is added to the test sample, and then after complete decomposition by using a microwave preprocessor, a part of the solution is used for quantitative analysis by means of ICP emission spectrophotometry.

2) GC/MS analysis: PBB, and PBDEs

The test sample is frozen and pulverized, subsequently condensed by boiling and extraction using toluene, and then a standard sample is added to be quantitatively analyzed for PBB and PBDEs by using GC/MS instrument.

Unit: ppm

	ECOACEPLUS		ECOACE		ECOBEMEX			ECOSOFLEX
	105	105R	EM-IX, KIX	EM-CSF	105	125	HV	
Cd	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Pb	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Cr(VI)	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Hg	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
PBB	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
PBDEs	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10



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