

# **JECTEC**

*PROFILE*



# JECTEC

## Supports Environmental-friendly Technologies and Safe Societies

Since the establishment of JECTEC, our organization has been serving as an institution specializing in technologies related to electric wires and cables, and we have been developing our business in a flexible manner in line with the changing times, with a focus on research and development, testing and certification, technology services, and information services.

In recent years, with the growing interest in Japanese society regarding energy issues, environmental consciousness, recycling, and ensuring safety and reliability, technological innovations have been accelerating, an advanced technological society is steadily being realized, and further progress continues to be made.

Amid such circumstances, electric wires and cables have become one of the most fundamental parts of infrastructure in our society—functioning like our civilization’s arteries and nerves—so it is becoming increasingly important to make sure that these wires and cables are reliable and safe to use. As such, we at JECTEC will further promote initiatives such as the following:

- Implementing testing and certification based on a system of compliance with international standards
- Providing technical services for responding to new technologies, new markets, and so on
- Promoting effective research and development that is focused on the cable industry and the needs of society
- Conducting information services centering on developing global human resources and exchanging information

Based on this, going forward, JECTEC will work hard to enhance wire and cable technologies and quality levels, with a view to ensuring safety and developing industries in Japanese society.



# History

- 1991 • Chartered by Ministry of International Trade and Industry (MITI)
  - Joint research project with six major electric wire companies: “development of a recovery system for electric wire and cable coating materials that converts them into oil and powder”(AIST subsidy project lasting for 5 years)
- 1992 • New building completed in the current site (Hamamatsu City), Moving of the office
- 1993 • Overseas training program started (Bangkok, Thailand)
- 1994 • CSA Standards verification test started (Certification body: CSA)
- 1998 • Joint research project with NEDO:
  - Development of fuel conversion system for wire and cable covering materials (for 2 years)
- 2000 • CENELEC Standards verification test started (Certification body: TÜV)
- 2001 • Recognition as an inspection body for specified electrical products (electric wires) based on the Electrical Appliances and Material Safety Law
- 2002 • Accreditation as ISO/IEC17025 testing laboratory for testing the fire and heat resistance of electric wires
- 2004 • Registration as an accreditation body with regard to the fire and heat resistance of electric wires based on the Fire Service Law
- 2005 • Registration as a JNLA testing laboratory based on the Industrial Standardization Law
- 2006 • Registration as a JIS mark certification body based on the Industrial Standardization Law
- 2008 • Receipt of Japan Copper Development Association Award for “activities aimed at reducing CO<sub>2</sub> emissions based on optimizing the conductor sizes of electric wires and cables”
  - Receipt of Encouragement Prize at 2008 Eco-Efficiency Awards for “activities to spread and promote environmental efficiency in the area of electric wires”
- 2010 • Receipt of IWCS Best Poster Paper Award for “multiclient research related to the recycling of electric wire coating materials”
- 2011 • The 20th anniversary of JECTEC’s founding
  - Transition to general incorporated association based on approval from the Cabinet Office
- 2013 • Accreditation as ISO/IEC17025 testing laboratory in relation to various types of combustion tests
  - Conclusion of contract with JAB regarding ILAC (International Laboratory Accreditation Cooperation) -MRA (Mutual Recognition Arrangement) testing laboratory, in relation to fire and heat resistance tests on electric wires and fire protecting tests on railway vehicles
- 2015 • Approval by CERTIFER of France to perform tests according to EN45545-2 related to the fire protection of railway vehicles



# Testing and Certification Services

We provide electric wire and cable product certification services in accordance with the needs of wire and cable product manufacturers in Japan and abroad, based on a quality control system rooted in JIS Q 17065. We also offer product-testing services for electric wire and cable product certification, based on a quality control system rooted in JIS Q 17025.

## Product certification

### Conformity assessments for specific electronic appliances

We are registered as an inspection body based on the Electrical Appliances and Material Safety Law, and conduct conformity assessments on wires and cables and issue certificates in accordance with the law.



### JIS mark certification

As a registered certification body based on the Industrial Standardization Law, we assess the conformity of wires and cables with quality control systems based on JIS standards and laws, and issue certificates.



### Certification of fire resistant and heat resistant cables

As a registered certification body of the Fire and Disaster Management Agency, we conduct assessments including type testing on conformity with technical specifications related to fire resistant and heat resistant cables, etc., and issue certificates.

### Unit cable certification

We conduct quality performance assessments on unit cables and issue assessment reports.

## Tests related to product certification

### Type testing of cables for European market

We conduct product testing based on EN standards, etc., for the purpose of certifying wire and cable products for the EU.

### Type testing of CV cable splices (accessories)

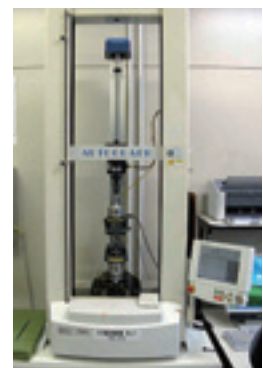
We carry out type testing for the certification of CV cable splices, as provided by the Japan Power Cable Accessories Association (JCAA).

### Type testing of PV cables

We conduct product testing for the S-mark certification of PV cables based on Technical Requirements under the Electrical Appliances and Materials Safety Act or JCS4517 on “halogen-free cables for photovoltaic power generating systems.”



Ozone test machine



Tensile test machine

## Accreditation as testing laboratory

### ■ JNLA testing laboratory

We have acquired certification as a registered test operator to carry out product testing on electric wires and cables based on the Industrial Standardization Law.

### ■ JAB accredited laboratory

We have been certified by the Japan Accreditation Board (JAB) as a testing lab compliant with ISO/IEC17025 in relation to various combustion tests regarding electric wires and cables. Furthermore, we are able to issue test reports showing an ILAC-MRA Mark, and thus our reports are valid internationally among nations that have concluded a mutual recognition arrangement.

#### What is ILAC-MRA?

ILAC (International Laboratory Accreditation Cooperation):  
International organization for testing lab accreditation bodies

MRA (Mutual Recognition Arrangement):

Testing lab mutual recognition agreement between  
ILAC-affiliated accreditation bodies

Over 70 testing lab accreditation bodies worldwide are participating  
in this arrangement.



## ISO/IEC international standardization activities

JECTEC dispatches experts to the following IEC and ISO technical committees (TC), subcommittees (SC), and Japanese national committees, and participates in international standardization related to electric wires and cables and fire safety testing based on the provision of technical data and so on.

- (1) IEC/TC20/WG17  
(low-voltage power cables)
- (2) IEC/TC20/WG18  
(combustion characteristics of electric wires and cables)
- (3) IEC/TC89  
(fire hazard assessment regarding electrical and electronic products)
- (4) ISO/TC61/SC4  
(fire behavior of plastics)
- (5) ISO/TC92/SC1  
(fire initiation and growth)



# Testing & Engineering Services

JECTEC carries out various kinds of fire tests for cables, rubber, plastics materials, vehicle parts, building materials and so on.

Evaluation items	Type of test	Applicable standards
Flame propagation characteristics	Single cable flame propagation test	JIS C 3005, IEC 60332-1 UL 1581(VW-1)
	Multiple cables vertical tray flame propagation test	JIS C 3521, IEC 60332-3 IEEE 1202
	Riser cable flame propagation test	UL 1666
	Steiner tunnel surface/cable burning test	NFPA 262, ASTM E 84
Smoke generation characteristics	Single chamber smoke density test	ASTM E 662, ISO 5659-2
	3 m cube smoke density test	BS 6853_D, IEC 61034
Gases evolved during material combustion	Toxic gas qualitative /quantitative analysis	EN 50305_9.2, BS 6853_B EN 45545-2 Annex C
Heat release characteristics	Cone calorimeter heat release test	ASTM E 1354, ISO 5660-1
Fire and heat resistance	Small/large heating furnace test	Regulation No.10, and No.11 issued in 1997, Fire and Disaster Management Agency
Flame retardant characteristics	Oxygen index test	JIS K 7201, ISO 4589-2
Other	Various full-scale fire tests (customer's use of equipment)	Customer-specified method

Blue text: ILAC-MRA covered, CERTIFER approved  
Green text: ILAC-MRA covered

## CERTIFER approval

JECTEC got a meaningful approval from CERTIFER (French certification organization) as a reliable testing laboratory regarding EN45545-2, a fire safety test for European railway vehicles.





Single cable flame propagation test



Multiple cables vertical tray flame propagation test



Riser cable flame propagation test



Steiner tunnel surface/cable burning test



3 m cube smoke density test



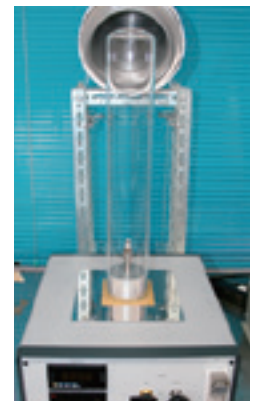
Toxic gas qualitative/quantitative analysis



Cone calorimeter heat release test



Small heating furnace test



Oxygen index test

# Testing & Engineering Services

JECTEC carries out various kinds of tests, such as tests on the electrical characteristics, mechanical characteristics, material characteristics, and environmental characteristics of wires, cables, and materials.

Evaluation items	Type of test	Applicable standards
Electrical characteristics	AC/DC withstand voltage test	JIS C 3005, JIS K 6911
	DC current thermal cycle test	JASO D 609
	Tracking test	JIS C 3005
	Electro-magnetic compatibility test	IEC 1196-1
Mechanical characteristics	Cables torsion test	JCS 4522, JRIS J 1000
	Cable bending test	JIS C 3005, JIS C 8306, IEC 62196-1
	Abrasion test	ISO 6722-1, SAE J 1128, JASO D 618
Material characteristics	Halogen acid gas content test	IEC 60754-1, JCS 7397
	Acidity and conductivity test	IEC 60754-2, JIS C 3666-2, JCS 7397
	Differential scanning calorimeter analysis	JIS K 7121, JIS K 7122
	Energy dispersive X-ray spectrometer (EDX) analysis	JIS K 0119
Environmental characteristics	Heat shock test	JASO D 014-4, IEC 60068-2-14
	Ozone aging test	JIS C 3005, IEC 60811-403
	Accelerated weathering test	JIS K 7350-2, JIS A 1415
Other	Investigating the causes of the electrical/thermal deterioration of insulating materials, insulation breakage, disconnections, burnout accidents, and so on	

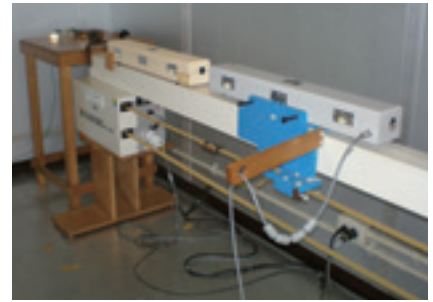




400 kV impulse voltage withstand test



Tracking test



Electro-magnetic compatibility test



Cables torsion test



Bending test



Scrape abrasion test



Sandpaper abrasion test



Test on gases evolved during material combustion



Heat shock test



Ozone aging test



Accelerated weathering test



LAN cable automated measurement



Partial discharge test

# Research and Development

JECTEC promotes research and development related to cables in accordance with the needs of society, and thereby establishes foundations for the wire industry.

## Fields of Research

### Basic technologies and basic evaluations

- Improving the performance and reliability of electric wires and cables, and improving evaluation technologies
- Building and expanding wire and cable databases
- Fire disaster prevention technologies

### New markets and new technologies

- Renewable energy fields (photovoltaic power generation, electric vehicle, wind power, etc.)
- Optimization of electric wire and cables

### Environmental technologies

- Electric wire and cable recycling technologies
- Responding to chemical substance regulations
- Life-cycle assessments (LCA)



Outdoor exposure testing on JECTEC ground (Implementation of evaluations regarding changes in physical properties, external appearance of samples, and so on)

## Recent Studies

### Basic technologies and basic evaluations

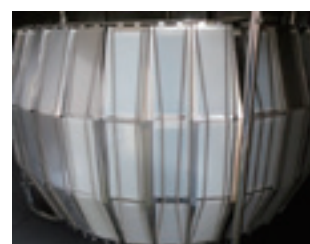
- Investigation of natural weathering test and accelerated weathering test database with regard to wire and cable insulation
- Investigation of the influence of the test environment in deterioration test

### New markets and new technologies

- Investigation on the optimum conductor size of wire and cable taking into environmental and economical aspect

### Environmental technologies

- Establishment of method for calculating the environmental impact of electric wires, and expansion of LCA database
- Investigation on the possibility for wire and cable insulation free from harmful substances



Weathering test (Xenon weather meter)



40 mm extruder at JECTEC Environment Building (implementation of electric wire trial production and evaluation)

Through training workshops and seminars, JECTEC works to promote human resource development and information exchanges in fields of technology related to electric wires and cables, as well as provide member companies with information on the latest materials and technologies, etc. JECTEC also carries out public relations activities such as the publication of a company newsletter and the provision of information via the JECTEC website.

## Seminars

### Training of new employees

We provide training to new employees that combines classes for the acquisition of basic knowledge about electric wires and cables, and hand-on practice regarding testing, evaluating, and analyzing electric wires and cables and their materials, making use of our various testing and research facilities.



Training of new employees  
(hands-on training)

### Skill improvement training

We hold a wide range of lectures for mid-level employees addressing technology trends and the electric wire industry so that these employees can acquire general knowledge regarding electric wires and cables and improve their skills.

### Training for the handing down of electric-wire techniques and skills

This is training in which participants learn about the technical elements of electric wire manufacturing such as “extrusion process techniques.”

Electric wire extrusion training consists of two types of training: <training through classroom lectures> and <hands-on training> in which participants actually handle extrusion equipment and master extrusion techniques.



Electric wire extrusion training  
(hands-on training)

### Seminars

We hold lecture meetings in which we invite outside experts to speak about timely topics, such as information on the latest materials and technologies in electric wire industry, and the abolition and revision of environmental and chemical substance regulations, laws, ordinances, and standards significantly impacting the business environment.



Seminar

## Public relations activities

We appropriately send out information regarding JECTEC activities, including information on JECTEC's technical services, research activities, and upcoming training workshops and seminars, through the publication of JECTEC NEWS (three times a year) and the JECTEC website.



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