

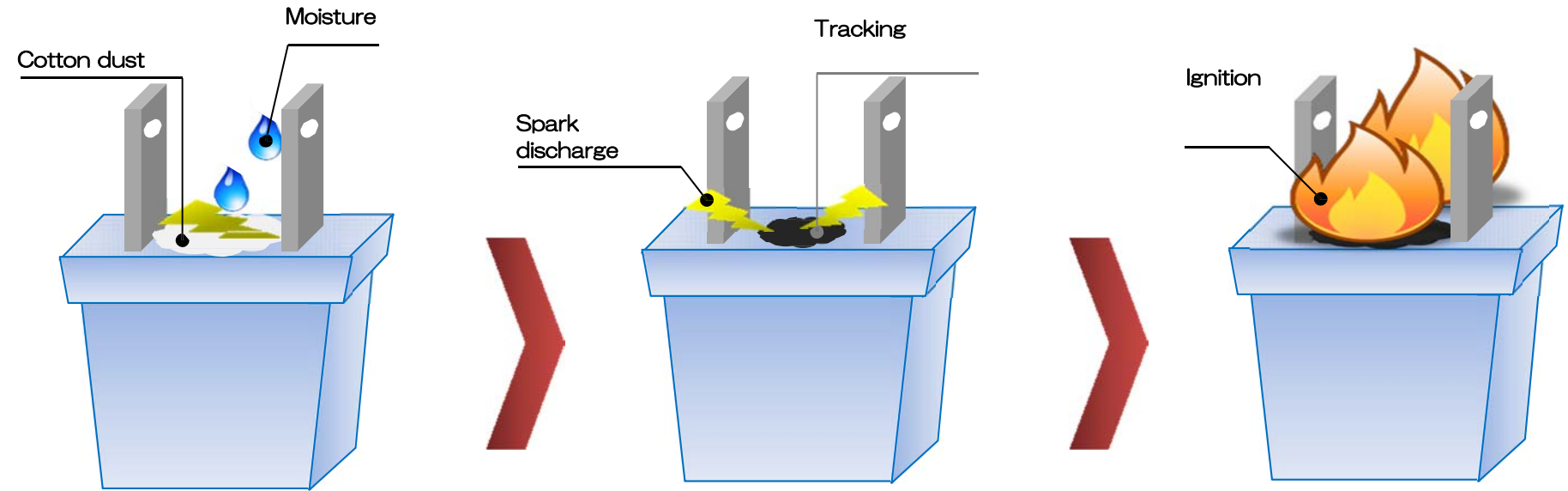
Expanded application of tracking test as countermeasure against tracking of Attachment plugs

2015-01-16

Translation of document related to Electrical Appliances and Materials Safety Act (Revised requirements for attachment plugs) presented by Product Safety Division of Commerce, Distribution and Industrial Safety Policy Group/METI (Translated by JET)*

*Please note that this translation is unofficial and only the original Japanese texts have effect.
The translation is to be used solely as reference materials to aid in the understanding of the Japanese texts

What is Tracking Phenomena



○ Tracking of attachment plugs is the phenomenon in which the surface of insulation materials between plug pins ignites, being carbonized due to repeated spark discharge caused by the current flow through matter such as moist cotton dust stacked on the surface of the plugs.

How this item has been handled

- Attachment plugs of Electric refrigerators • freezers are required to be tested on the tracking resistance (Amendment of technical requirements: 2009-09-11)
 - They are specified since the conditions of their installation are liable to cause tracking of them
 - Horizontal application must be considered as preventive action

It was difficult to specify other appliances liable to cause tracking phenomena

- Tracking test must be applied to attachment plugs regardless of type of appliances (Amendment of technical requirements: 2014-09-18)
 - More severe requirements are applied to attachment plugs themselves (limited to standard type and except those of rubber)
 - It must be applied also to others with integrated plug pins (Multiple socket-outlets, Residual current operated circuit breakers(RCDs), Appliances)



- Tracking test must be applied to all appliances with attachment plugs (Amendment of technical requirement: 2015-01-16)
 - Extended application of the test to all appliances for household use

Scope of Application

All appliances including attachment plugs for household use (Specified in Appendix 8*)

* See also the end of this presentation



Attachment plugs (Standard type)
(Specified in Appendix 4*)

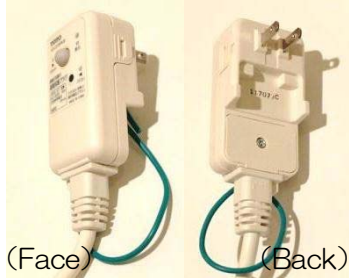


(Former scope)
Electrical refrigerators and freezers
(Specified in Appendix 8*)

Pins integrated-in



Multiple socket-outlets
(Appendix 4*)



(Face) (Back)
RCDs
(Appendix 4*)



Appliances with integrated plug pins
(Appendix 8*)

○ Pole configuration of Attachment plugs (Standard type) is as shown in the following table (Specified in Appendix 4*)

Pole configuration	
	○
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┌	┌
— —	┌ —
┌ —	┌ —
()	

○ The attachment plugs except for listed above and those made of rubber wholly (see below) are not applicable



New requirement added into current one

Tracking test

The insulation materials of attachment plugs which come into contact with socket-outlets and directly contact with the plug pins on their surface shall have a PTI value, as specified in JIS C 2134(Method for the determination of the proof and the comparative tracking indices of solid insulation materials), not less than

400(Attachment plugs, Multiple socket-outlets)
250(RCDs)
100(Appliances with integrated plug pins)

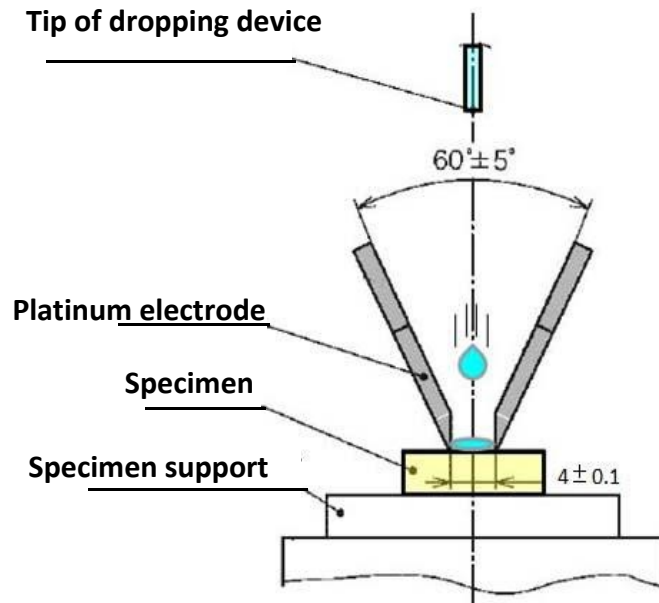
Glow-wire flammability test

The insulation materials supporting plug pins between them shall comply with the requirements when tested as specified in JIS C 60695-2-11(2004) or JIS C 60695-2-12(2013) at the test temperature **750°C**. It does not apply provided Glow Wire Ignition Temperature of the materials tested according to JIS C 60695-2-13 is at 775°C level or more.

※ JIS C 60695-2-12/13 (Glowing/hot-wire based test methods-GWFI/GWIT test method for materials)

Summary of Tracking test

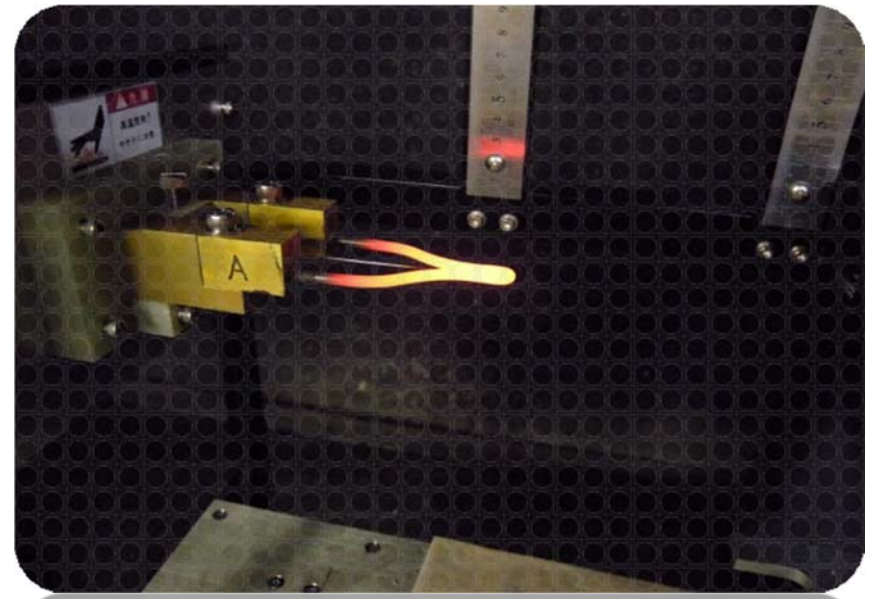
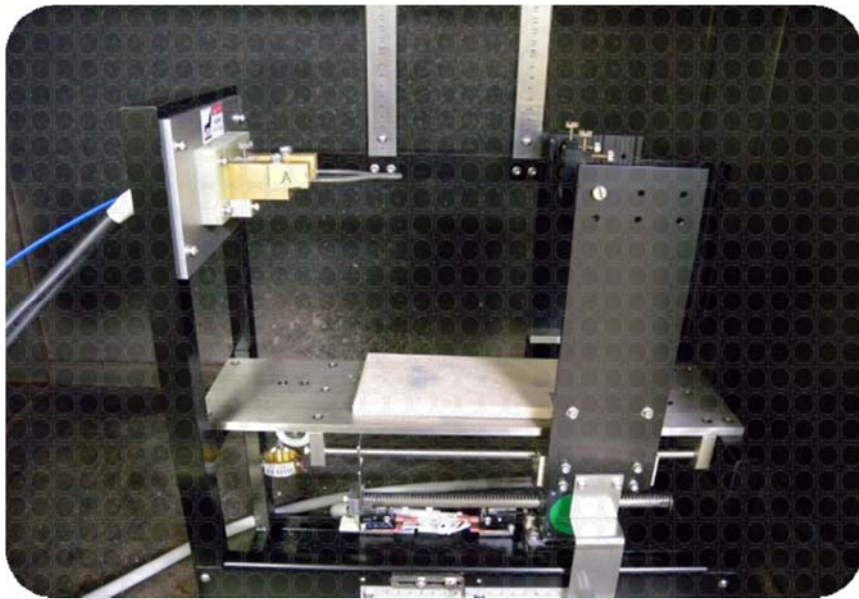
- Set a specimen keeping its top surface horizontal on a support and apply voltage between electrodes (e.g. 400V for PTI400)
- Apply 50 drops of electrolyte. Neither tracking erosion nor persistent flame can be determined at least for 25 seconds.
- ✕ Tracking erosion: Actuating overcurrent relay due to consecutive current flow not less than 0.5A for two seconds or more



Summary of Glow-wire flammability test

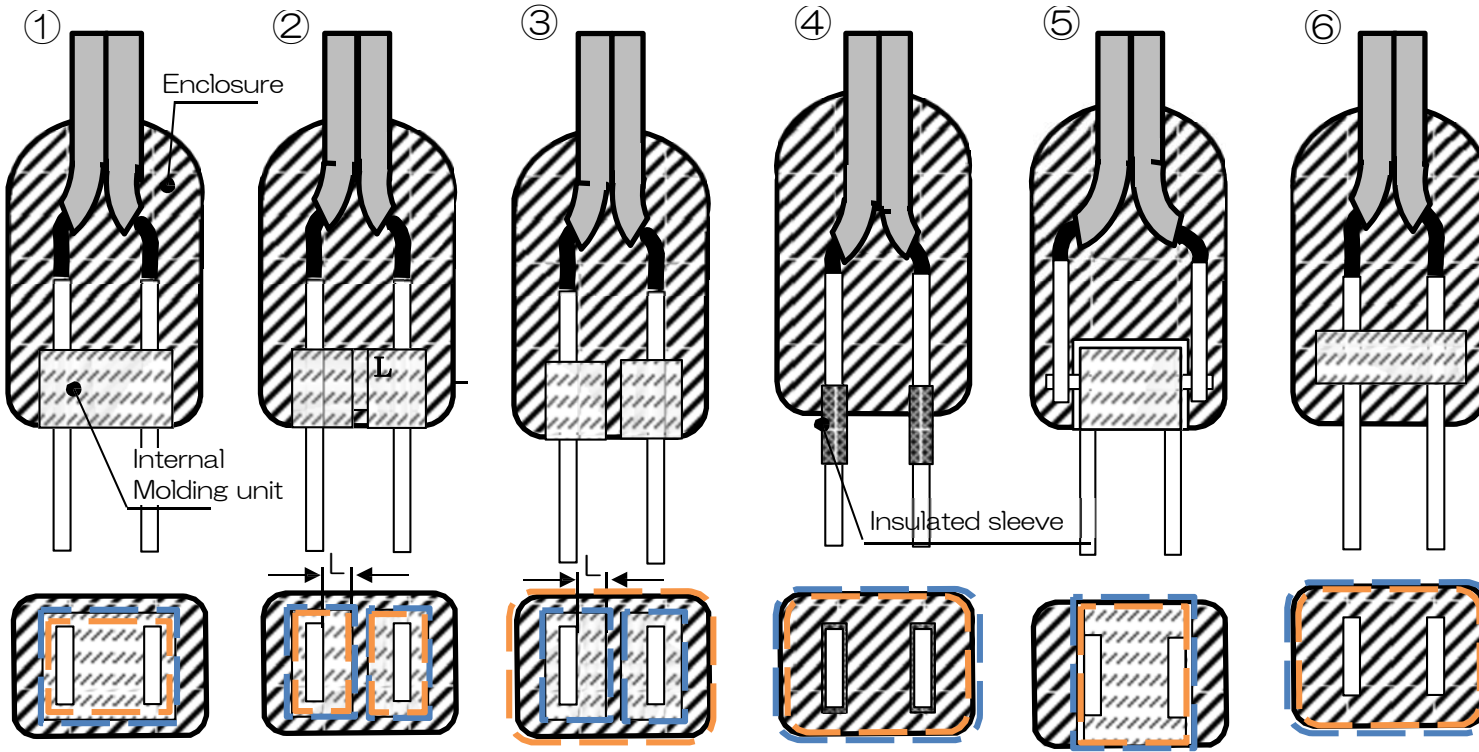
○ When applying glow-wire heated at 750°C to a specimen for 30 seconds, the following requirements shall be met;

- No ignition or ignition goes out within 30 s after removal of the glow-wire and the specimen does not burn out completely.
- No ignition of the tissue paper placed below the test specimen, if it is melted.



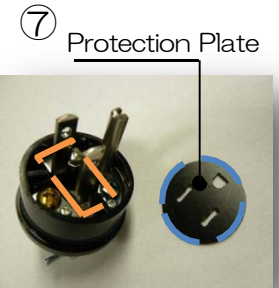
Details of Parts to be tested ①

○ As for attachment plugs in which more than one material are used around the pins, the applicable parts to be tested are as shown below. Actual test is conducted with the test specimen made of the same materials as the attachment plugs. For appliances with pins directly plugged into socket outlets are also tested in the same manner.



- If the distance L is under the specified value, test shall be applied also to the enclosure
- If the internal molding unit supports plug pins, the test shall be applied to the unit.

- Insulated sleeves are not regarded as electrical insulation due to insufficient thickness



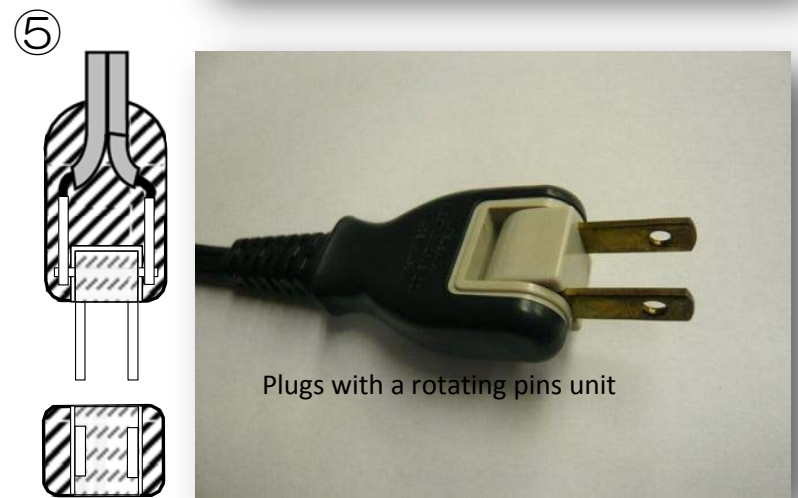
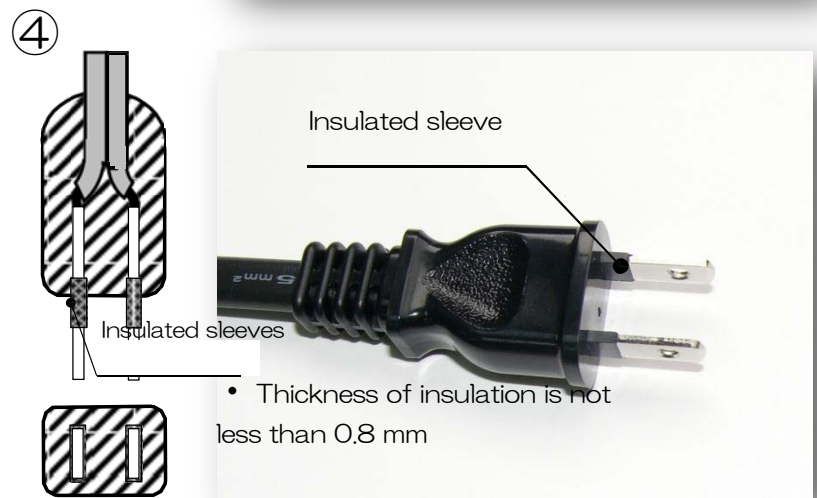
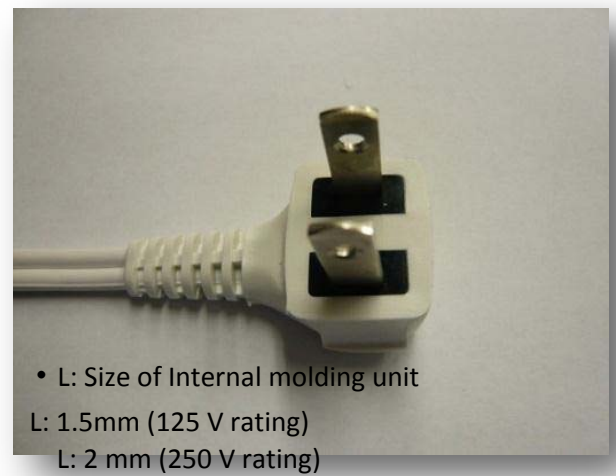
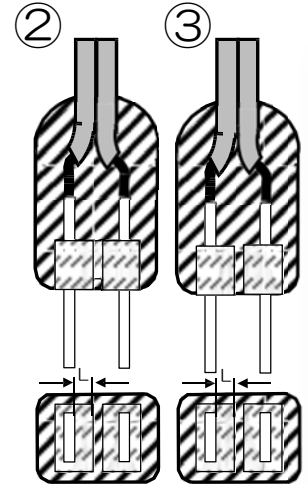
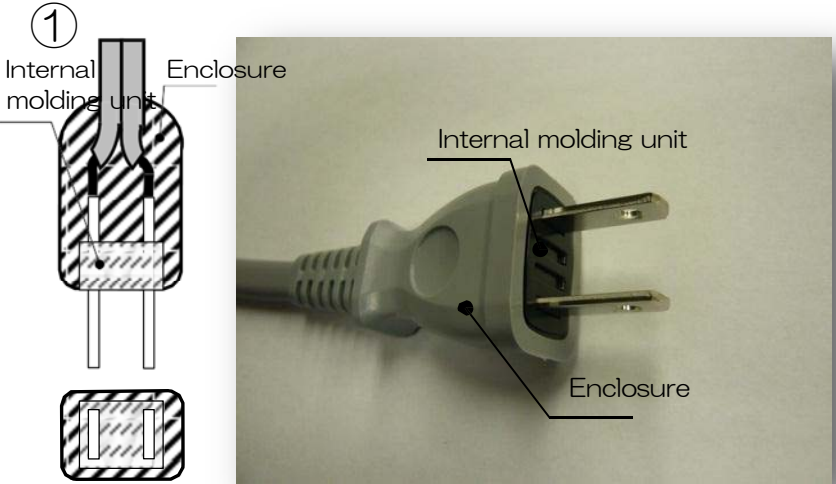
- If the plate is removable without tools, test is applied to the material supporting pins

Parts: Tracking test to be applied

Parts: Glow-wire test to be applied

Details of Parts to be tested ②

○ Appearances of attachment plugs in which more than one material are used around the pins are as shown below. The specified values for the plugs ②, ③ and ④ in the previous page are also shown.



Transition period

Attachment plugs, Multiple socket-outlets, RCDs and Appliances with integrated plug pins

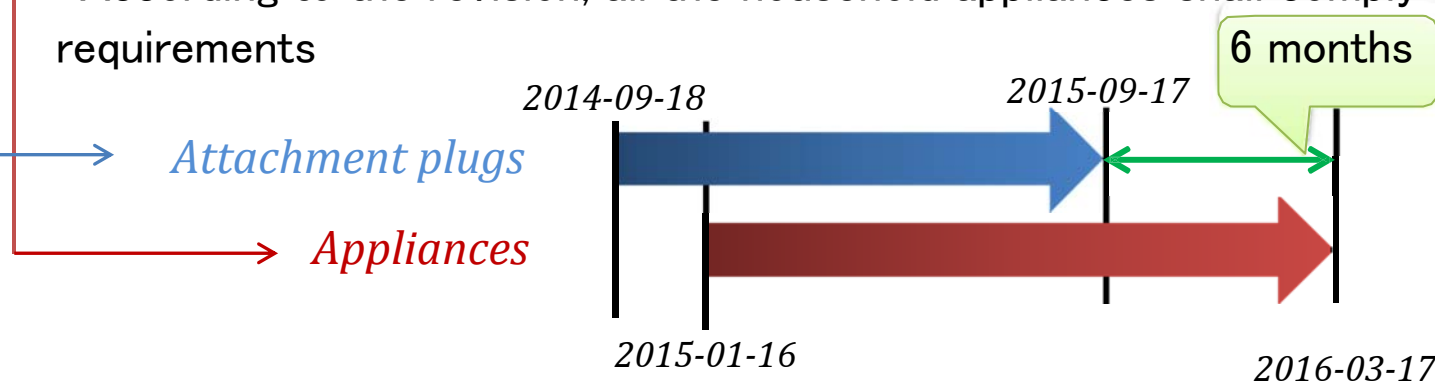
(Revision: 2014-09-18)

- Conformity to the revised requirements must be ensured for those produced or imported on or after 2015-09-18.
- This revision is not applicable to the attachment plugs assembled into appliances of Appendix 8*. (The revised requirements described below are to be applied)

Attachment plugs assembled into appliances of Appendix 8

(Revision: 2015-01-16)

- Conformity to the revised requirements must be ensured for those produced or imported on or after 2016-03-18
- According to the revision, all the household appliances shall comply with the tracking requirements

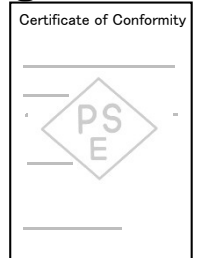


*In general, most of electrical appliances which are wholly assembled and housed such as household appliances, appliances for commercial use, IT equipment, etc. are included in the Appendix (Supplemented by JET)

Frequently Asked Question (FAQ)

Q: Is it necessary to get a certificate of conformity again for the product newly covered by the requirements according to the expanded application of tracking test even if we have already the valid certificate of conformity for it?

A: It is not necessary to get the certificate again as far as the existing one is still valid. However, self-confirmation test by notifying suppliers must be carried out in order to ensure conformity of the product to the technical requirements



Q: Is it necessary to carry out testing according to the revised requirements additionally if the safety of attachment plugs are evaluated according to the technical requirements for appliances in Appendix 12(Japanese standards harmonized to IEC)?

A: It is not necessary if the technical requirements in Appendix 12 are applied, since the requirements equivalent to the revised ones are already included in the requirements adopted as harmonized standards such as JIS.

As for the updated information, please see the following home page.
(Electrical Appliances and Materials Safety Act)

<http://www.meti.go.jp/policy/consumer/seian/denan/index.htm>

Supplementary explanation “Appendix” by JET

Technical requirements , “Interpretation of Technical requirements for the regulated electrical products” based on the “Electrical Appliances and Materials Safety Act” and their related information are specified in 12 Appendices as follows.

Appendix 1: Electric Wires and Electric floor heating wires.

Appendix 2: Conduits, floor ducts and raceways including their accessories.

Appendix 3: Fuses.

Appendix 4: Wiring devices.

Appendix 5: Current limiters. Continued to the next page

Appendix 6: Single-phase small power transformers and electric-discharge lamp ballasts.

Appendix 7: Small AC motors

Appendix 8: AC Electric/Mechanical Appliances and Portable power generators

Appendix 9: Secondary lithium ion batteries.

Appendix 10: Electro Magnetic Interference.

Appendix 11: Maximum limit of the temperatures used of the Insulations used in the Electrical Appliance and Materials.

Appendix 12: Standards harmonized with the international standards or the equivalent.