



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 6553-2024

**Electrical insulating materials used under severe ambient
conditions - Test methods for evaluating resistance to tracking
and erosion**

(English Translation)

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Table of Contents

Preface

1 Scope

2 Normative references

3 Terms and Definitions

4 Sample

5 Device

6 Test Procedure

7 Test Report

Reference

Figure 1 Specimen 2 with fixed electrode holes

Figure 2 Circuit diagram

Figure 3 Typical circuit example of overcurrent delay relay (ODR)

Figure 4 Schematic diagram of sample assembly installation

Figure 5 Upper electrode size

Figure 6 Lower electrode size

Figure 7 Filter paper stack

Figure 8 Schematic diagram of sample assembly installation

Figure 9 Schematic diagram of sample holder

Figure 10 Sample holder example

Table 1 Sample preparation sequence

Table 2 Test parameters

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 6553-2014 "Test Method for Assessing Resistance to Tracking and Corrosion of Electrical Insulating Materials Used in Severe Environmental Conditions" Compared with GB/T 6553-2014, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) Changed the term "surface" in the definition of tracking to "surface or interior" (see 3.2, 2.2 of the 2014 edition);

- b) The term "electrical erosion" was changed to "erosion" (see 3.3, 2.3 of the 2014 edition);
- c) The terms and definitions of tracking time have been deleted (see 2.4 of the 2014 edition);
- d) Added machining of the specimen according to the dimensions shown in Figure 1 to meet the electrode installation requirements and test environment conditions, replacing the punching Description of the grinding method (see 4.2, 3.2 of the 2014 edition);
- e) Added the sample preparation sequence (see Table 1);
- f) Added an overview of the test device composition (see 5.1);
- g) The description and structure of electrical equipment have been changed from "electrical equipment" to "electrical device", and the test circuit has been adjusted in a list manner. Expression (see 5.2, 4.1 of the 2014 edition);
- h) Added the composition of the sample assembly, electrode material and size requirements, filter paper stacking requirements for storing and outputting pollutants, and sample Component installation method (see 5.3);
- i) The electrode device in Figure 6 was changed to the schematic diagram of the specimen assembly installation in Figure 4 (see Figure 4, Figure 6 of the 2014 edition);
- j) Changed the filter paper in Figure 9 (eight sheets for each electrode) to the filter paper stack in Figure 7 (see Figure 7, Figure 9 of the 2014 edition);
- k) Changed the test device schematic diagram in Figure 7 to the specimen assembly installation schematic diagram in Figure 8 (see Figure 8, Figure 7 of the 2014 edition);
- l) The bracket in Figure 8 was changed to the schematic diagram of the specimen holder in Figure 9 (see Figure 9, Figure 8 in the 2014 edition);
- m) Added Figure 10, Example of a specimen support (see Figure 10);
- n) Deleted the content about the number and thickness of filter paper layers (see 4.3 of the 2014 edition);
- o) Added that when feeding pollutants into the filter paper stack, it should be ensured that the pollutants in the pipeline/reservoir and supply equipment do not contact the upper electrode High voltage regulations (see 5.4);
- p) The added weight of the depth gauge shall not affect the measurement results (see 5.6);
- q) Added an overview of the test procedure (see 6.1);
- r) Added judgment standard A---current assessment (preferred) (see 6.2);
- s) Added criterion B---track length assessment (see 6.3);

- t) Changed "Method 1.Constant tracking voltage method" to "Material classification according to method 1 test" (see 6.4, 2014 edition) 5.2);
 - u) Changed "Method 2.Stepwise Tracking Voltage Method" to "Material Classification Tested According to Method 2" (see 6.5, 2014 Edition) 5.3);
 - v) The endpoint criteria have been deleted (see 5.4 of the 2014 edition);
 - w) The direction of the specimen relative to the electrode (i.e. longitudinal, transverse, oblique, etc.) was changed to the fiber direction of the composite specimen (such as fiber reinforced plastic).
- Direction relative to the electrodes (i.e. longitudinally coincident, transversely perpendicular, oblique, etc.) (see Chapter 7, Chapter 6 of the 2014 edition);
- x) Added test results and material classification for each material (see Chapter 7).

This document is equivalent to IEC 60587:2022 "Electrical insulating materials for use under severe environmental conditions - Assessment of resistance to tracking and corrosion" "Test Methods".

The following minimal editorial changes were made to this document.

---5.4 Added explanatory notes.

1 Scope

This document describes the use of liquid contaminants and inclined specimens at power frequencies (45Hz~65Hz) to evaluate the performance of the product under severe environmental conditions.

Two methods to test the tracking and corrosion resistance of electrical insulating materials.

---Method 1.Constant voltage method.

---Method 2.Step-by-step voltage boost method.

Method 1 is the more widely used method because it does not require continuous observation.

The test conditions are designed to accelerate the production of the effects but are not intended to reproduce all conditions encountered in actual use.

2 Normative references

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

The terminology databases used for standardization maintained by ISO and IEC are located at.

Track

Local conductive paths are produced on the surface of insulating materials due to local degradation.

Tracking

Under the combined effects of electrical stress and electrolytic pollution, conductive channels are gradually formed on the surface or inside of solid insulating materials.

Note 1: Tracking usually occurs due to surface contamination.

NOTE 2 Remaining degraded material need not remain conductive, particularly after it has cooled.

[Source. GB/T 2900.5-2013, 212-11-56, modified. added Note 2] 3.3 Erosion Electrical loss of material due to leakage current or discharge.

4.1 Size

A flat specimen with a size of at least 50 mm x 120 mm and a thickness of 6 mm should be used.

The dimensions of the sample with fixed electrode holes are shown in Figure 1.