



SLOVENSKI STANDARD
SIST-TS CLC/TS 50703-1:2020

01-februar-2020

Elementi za zaščito pred strelo (LPSC) - 1. del: Zahteve za preskušanje spojev kovinskih plošč, uporabljenih v LPS

Lightning Protection System Components (LPSC) - Part 1: Testing requirements for metal sheets' joints used in LPS

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Ta slovenski standard je istoveten z: ~~SIST-TS CLC/TS 50703-1:2020~~ CLC/TS 50703-1:2019
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ICS:

91.120.40 Zaščita pred strelo Lightning protection

SIST-TS CLC/TS 50703-1:2020 **en,fr**

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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CLC/TS 50703

December 2019

ICS 91.120.40

English Version

**Lightning Protection System Components (LPSC) - Part 1:
Testing requirements for metal sheets' joints used in LPS**

Composants des systèmes de protection contre la foudre
(CSPF) - Partie 1: Exigences d'essais relatives aux
jonctions des bandes métalliques utilisées dans les SPF

To be completed

This Technical Specification was approved by CENELEC on 2019-11-04.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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European foreword

This document (CLC/TS 50703-1:2019) has been prepared by CLC/TC 81X “Lightning protection”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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1 Scope

This document defines the requirements and testing for joints of metal sheets, with or without insulating coatings, used as natural components in roofs, facades or walls of buildings, suitable to conduct lightning current in LPS where the interconnection of these metal sheets does not ensure durable electrical connection.

NOTE This document does not deal with the lightning interception capabilities of these components. The connection clamps for connecting the metallic sheet with the down conductor to the earth termination system are LPSC, tested according to EN 62561-1.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

metal sheets' joint

electrical and mechanical coupling between metal sheets

Note 1 to entry: Typical joints are shown in Annex A

3.2

metal sheet with insulating coating

metal sheet with a coating insulating protective paint or coating, typically with a thickness of some ten to some hundred micrometres, not regarded as an insulator for a lightning current

3.3

metal sheet without insulating coating

metal sheet without any insulating protective paint or coating

3.4

non-durable electrical joint

jointing of two metal sheets with or without insulating coating connected as typically shown in Annex A

3.5

type test

test required to be made before supplying a type of material covered by this standard on a general commercial basis, in order to demonstrate satisfactory performance characteristics to meet the intended application

Note 1 to entry: These tests are of such a nature that, after they have been done, they don't need to be repeated unless changes are made to the accessory materials, design or type of manufacturing process which might change the performance characteristics.

4 Classification

Classification of metal sheets' joints according to the ability to withstand lightning current as follows:

- class H for heavy duty;
- class N for normal duty.

The selection of classes H and N should be performed by the manufacturer in accordance with the test parameters identified in Table 1.

5 Requirements

5.1 Installation instructions

The manufacturer of the metal sheet shall provide at least the following information:

- a) the classification of the metal sheet;
- b) the joint configuration;
- c) the connection configuration.

Compliance is checked by review as per 6.4.

5.2 Lightning current carrying capability

Metal sheet and metal sheet's joint shall have sufficient lightning current carrying capability.

Compliance is checked in accordance with 6.3 following the manufacturer's declaration for the class (H or N) of the metal sheet in accordance with 4-1:2020

5.3 Marking

Metal sheet shall be marked at least with the following:

- a) manufacturer's or responsible vendor's name or trade mark;
- b) identifying symbol (picture, product number, etc.);
- c) classification, i.e. class N or H.

Where this proves to be impractical the marking in accordance with b) and c) may be given on the accompanying documentation.

The marking shall be durable and legible.

NOTE Marking can be applied for example by moulding, pressing, engraving, printing adhesive labels or water slide transfers.

Compliance is checked in accordance with Tests 6.5.

6 Tests

6.1 General

The tests in accordance with this standard are type tests (see 3.5).

- Unless otherwise specified, tests are carried out with the specimens assembled and installed as in normal use according to the manufacturer's or supplier's installation instructions.

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- All tests are carried out on new specimens.
- Unless otherwise specified, three specimens are subjected to the tests and the requirements are satisfied if all the tests are met.

If only one of the specimens does not satisfy the test due to an assembly or a manufacturing fault, that test shall be repeated, on another full set of specimens, all of which shall comply with the requirements. The applicant, when submitting the sets of specimens, may also submit an additional set of specimens which may be necessary should one specimen fail. The testing laboratory will then, without further request, test the additional set of specimens and will reject only if a further failure occurs. If the additional set of specimens is not submitted at the same time, the failure of one specimen will entail rejection.

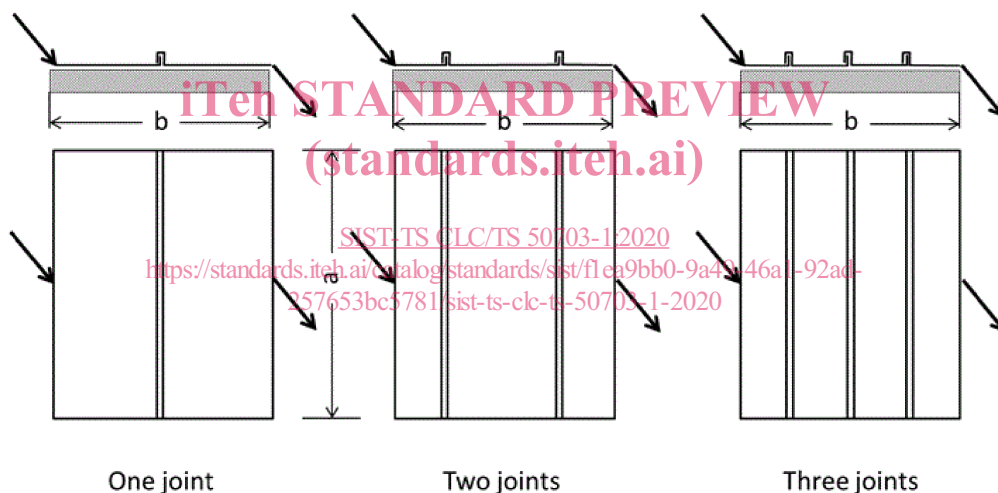
6.2 Test preparation

According to choice of the test laboratory up to four sheet metal panels could be arranged in a series connection. This allows up to three joints are tested at the same time.

The specimen(s) shall be connected to the generator as indicated by the arrows in Figure 1 at the position of $a/2$.

Dimension a of the specimen arrangement shall not exceed a length of 1 m.

Dimension b of the specimen arrangement results from the dimensions of the components.



Key

→ current injection point

Figure 1 — Basic arrangements of specimens with 1, 2 and 3 joints

NOTE The connection clamps are not part of this test.

6.3 Electrical test

The arrangement, of the specimens shall be stressed three times by a test current as given in Table 1. The time interval between individual shots shall allow the arrangement of the specimen to cool down to approximately ambient temperature.

Table 1 — Parameters of the test current

Classification	I_{imp} (peak value) within 50 μ s kA	Q within 5 ms As	W/R within 5 ms kJ/ Ω
H	100	50	2500
N	50	25	625
NOTE One of the possible test impulses which meet the above parameters is the 10/350 wave shape proposed in EN 62305-1.			

Pass criteria

The test is deemed to have been passed if no perforation of the sheet metal has occurred or the largest perforation does not have a bigger size than 2 cm² and none of the joints are interrupted mechanically by the force of the impulse current.

In case of failure and additional set of specimens has been submitted, procedure of 6.1 should be followed.

6.4 Installation instructions

The content of the installation instructions is checked as per its completeness by review.

Pass criteria

Installation instructions are deemed to have passed the test if they contain at least the following:

- classification as per 4;
- lightning current capability (I_{imp});
- assembly instructions.

6.5 Marking test

The marking is checked by inspection for its completeness and its durability / legibility by test:

Pass criteria

- the content of the marking shall be in line with 5.3;
- durability/legibility of the marking is checked by rubbing it by hand for 15 s with a piece of cloth soaked with water and again for another 15 s with a piece of cloth soaked with white spirit/mineral spirit. The test is deemed to have been passed if the marking remains durable and legible on all specimens, Markings made by moulding, pressing or engraving are not subjected to this test.

7 Structure and content of the test report**7.1 General**

The purpose of this clause is to provide general requirements for laboratory test reports. It is intended to promote clear, complete reporting procedures for laboratories submitting test reports.

The results of each test carried out by the laboratory shall be reported accurately, clearly, unambiguously and objectively, in accordance with any instructions in the test methods. The results shall be reported in a test report and shall include all the information necessary for the interpretation of the test results and all information required by the method used.