ВИПРОБУВАЛЬНА ЛАБОРАТОРІЯ
ТзОВ ВКФ «ЛІЗО»

TESTING LABORATORY
of the "LIZO Ltd."

201383
ДСТУ ISO/IEC 17025

Атестат акредитації
№ 201383
Дійсний до
16 червня 2021 року

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Accreditation certificate
№ 201383
Expiry date:
16 June, 2021

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ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ ВИРОБНИЧО-КОМЕРЦІЙНА ФІРМА ВИПРОБУВАЛЬНА ЛАБОРАТОРІЯ "ЛІЗО" 31892295 УКРАЇНА м.ЛЬВІВ

APPROVED BY
Head of the laboratory
of the «LIZO Ltd.»

_____ D. R. Dovhun
«_15_» _____06_____ 2021.

Protocol № 14/21

Tests of connecting coupling for rods.

Requirements and test methods: clause 5.4.2 IEC 62561-2,
clause 5.4.3 IEC 62561-2 (climatic tests only)

Product name:	***Connecting coupling for rods***
Producer:	**LLC "FS LIGHTNING PROTECTION"** **80383, Lviv region, Zhovkivsky r-n,** **Malekhiv 9/37, Vokzalna str.**
Ordering company:	**LLC "FS LIGHTNING PROTECTION"** **80383, Lviv region, Zhovkivsky r-n,** **Malekhiv 9/37, Vokzalna str.**
Reason:	**Agreement № 14-04-21 of 20.04.21**
Test result:	***Connecting couplings for rods withstood mechanical and climatic tests and meet the requirements clauses 5.4.2, 5.4.3 of IEC 62561-2:2019***

Lviv - 2021

Date of samples receipt:	12.05.2021
Number of samples:	6.
ID numbers of the samples:	№1 … №6.
Period of testing:	06.05.2021.
Environmental conditions:	
temperature:	21,8 °C;
atmospheric pressure:	97,9 kPa;
Relative humidity:	69 %.

Tested samples

Connecting coupling for rods

1. Compression tests by mechanical means

1.1 Method:

The tests are conducted in accordance with clause 5.4.2 IEC 62561-2.

Three assemblies are assembled with two rods each.

The tests are performed by using hammer heads and hammer tools provided by the customer, in accordance with the customer's instructions.

The upper part is exposed to the vibratory pile hammer for two minutes with the following parameters:

- Shock frequency (2000 ± 1000) minutes $^{-1}$;
- Energy of one shock pulse (50 ± 10) Nm.

The tests are shown in pic.1.

1.2 Requirements:

Samples are considered to have passed the test if their connection is not broken or if no cracks are observed under normal or corrected vision.

1.3 Testing results:

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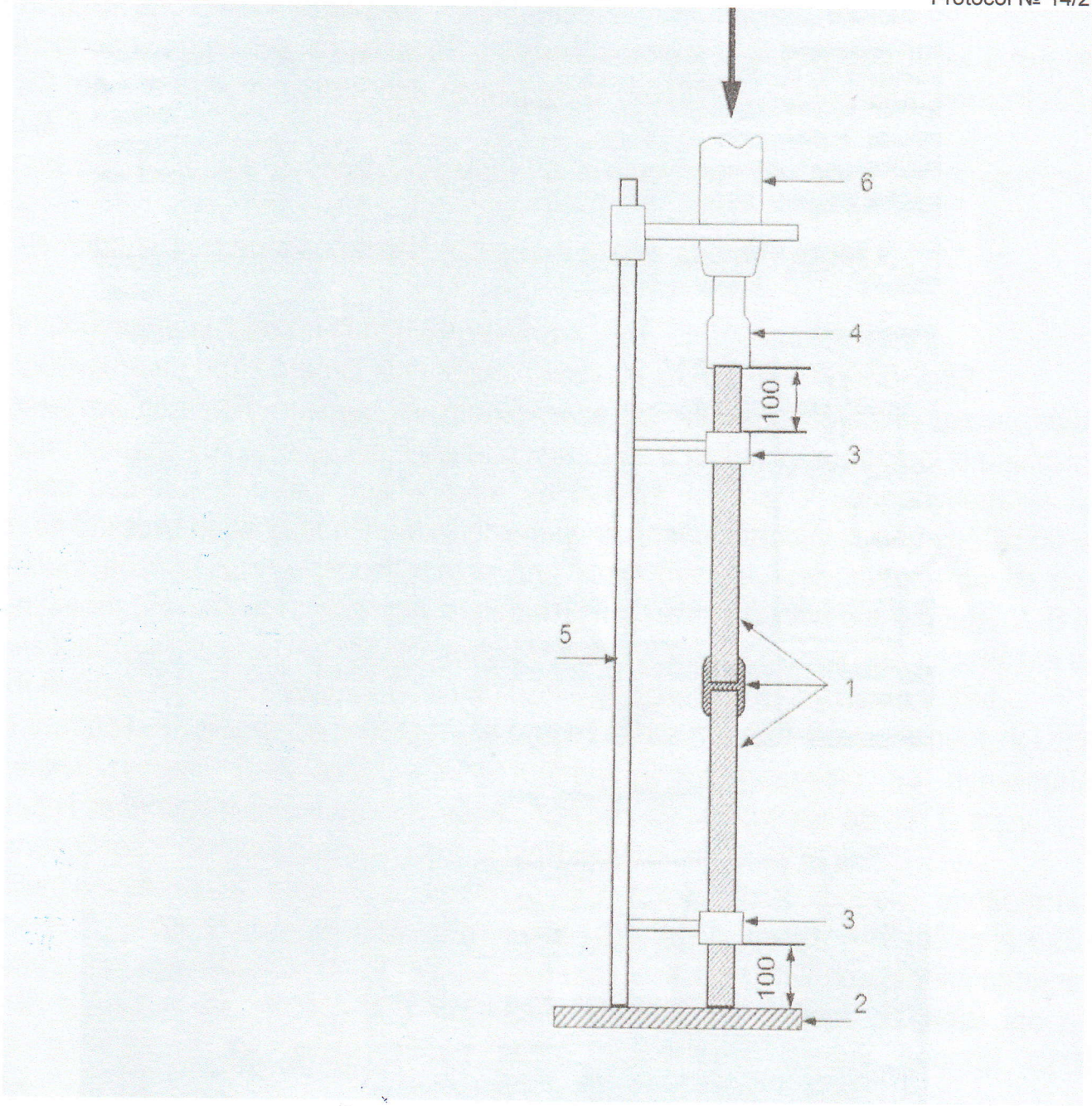

1 - sample,
2 - metal plate
3 - support
4 - driving head
5 - sample holder
6 - vibrating submersible

Pic.1 – Earthing electrodes during compression tests by mechanical means

Connecting couplings for rods are not broken and have no visible cracks after the compression test by mechanical means.

2. Climatic tests

2.1 3 samples of connecting couplings for rods were provided for testing.

2.2 Test procedure:

Climatic tests of connecting couplings for rods shall be performed for compliance clous 5.4.3.2 in the salt fog chamber in accordance with the Appendix A1 EN 62561-2 followed by testing in a humid sulfur medium as specified in Appendix A2 EN 62561-2.

Samples connecting couplings for rods with zinc coating that meets the requirements clouse 5.3.2 EN 62561-2.

2.2.1 Samples of parts in the salt fog chamber are tested for 2 hours, then for 22 hours - in humidity chamber at temperature (40±2)°C and relative humidity (93±2)%, such cycles 3.

The parts were placed in a salt fog chamber on a rack so that they did not touch each other, drops of saline solution from the ceiling and other parts did not fall on the parts

2.2.2 Testing salt fog chamber.

The test equipment meets the requirements of IEC 60068-2-52

Dispersion of the salt fog are controlled during the tests by two prefabricated manifolds with area 80 cm^2 of each. The fog gathered in each manifold with speed (1 – 2) ml/hour with average time of dispersion not less than 16 hours. The test chamber consumes about 80 ml / h of saline solution for the area of the chamber pallet 550x550 mm.

Saline solution, which is used for testing, has weight-part concentration

(5 ± 2) %. The pH of the brine is within the normal range of 6,5 to 7,2. As the salt used for the test, we use high-quality sodium chloride (NaCl), which contains in dry form no more than 0.03% of all impurities (allowable 0.3%).

Compressed air without impurities of dust and oils with maintaining pressure (120 ± 50) kPa is used to generate the fog. The air is warmed and moistened before feeding to the pulverizer by passing through the heated to 40 ^{0}C water.

The temperature in the testing chamber is maintained (35 ± 2) ^{0}C.

2.2.3 Tests in a chamber with a humid sulfur atmosphere are carried out in accordance with ISO 6988 in 7 cycles with a sulfur dioxide concentration of 667 · 10-6 (object) ± 25 · 10^{-6}.

Each 24-hour cycle consists of a heating period of 8 hours at a temperature of 40 °C ± 3 °C in a saturated humid atmosphere, followed by a rest period of 16 hours. After that, the humid sulfur atmosphere changes.

Note: White rust is not considered corrosion damage.

2.3 Requirements

Sample assemblies must remain intact.

2.4 Testing results

After the action of climatic factors, the sample assemblies remained intact.

3. Conclusion

Connecting couplings for rods withstood mechanical and climatic tests and meet the requirements clauses 5.4.2, 5.4.3 IEC 62561-2:2019.

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4. Pictures

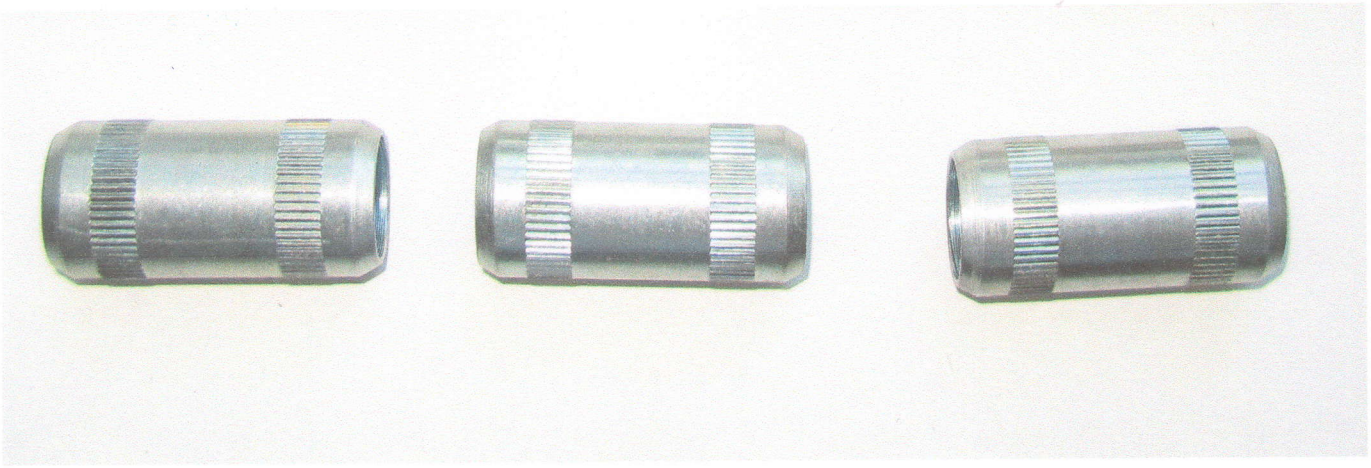

Fig.2 - Earthing electrodes during compression tests by mechanical means

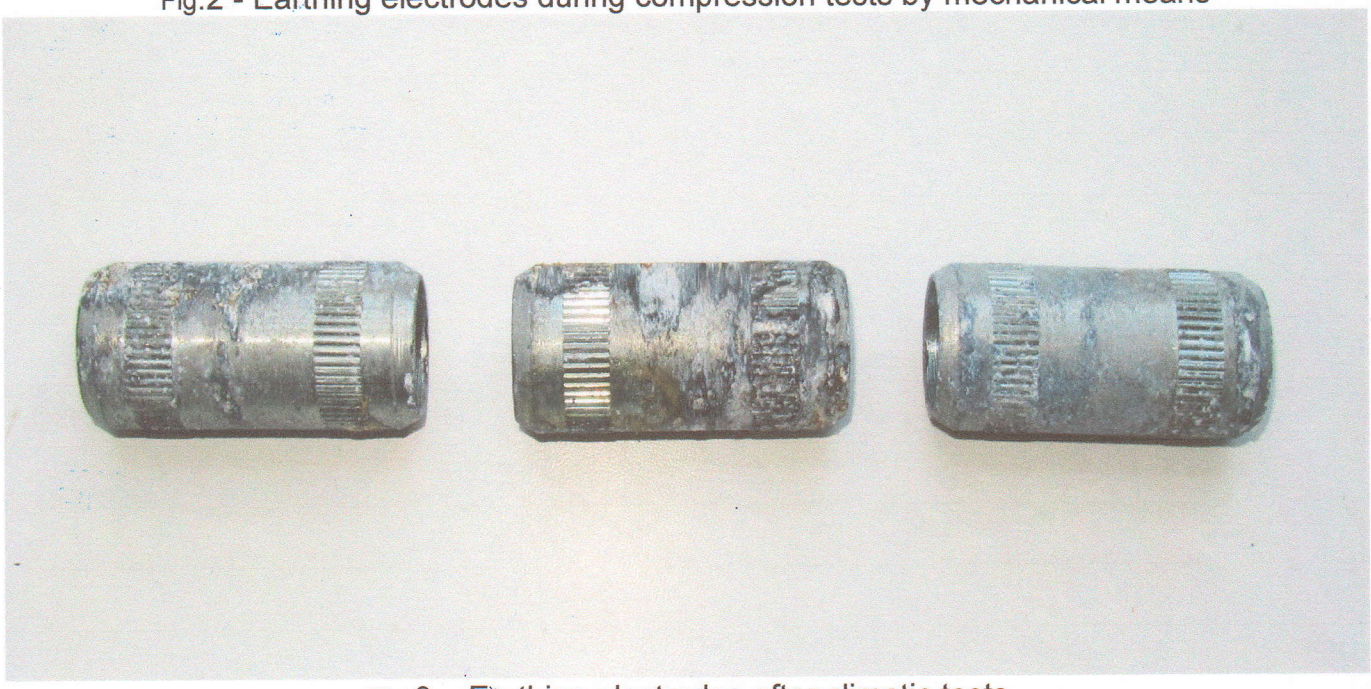

Fig.3 – Earthing electrodes after climatic tests

5. Means of measurement and tests:

№ п/п	Name	Model	Calibration date
1	Salt spray chamber	LIZO №OO1	No calibration
2	Chamber of high humidity with the impact of sulfur dioxide	LIZO №OO1	No calibration
3	Meter regulator	RT 0102 №14-557	08.04.2021
4	Resistive temperature transducer	TSP-1388 №15-202	08.04.2021
5	Ruler 1 m	VaGo-Tools №003	08.04.2021.
6	Meter regulator	RT 0102 №14-558	08.04.2021
7	Resistive temperature transducer	TSP-1388 №15-201	08.04.2021
8	Perforator		No calibration

The tests were performed by:

Deputy Head of the laboratory: _____ S. S. Lakhovskyi

engineer: _____ O. O. Nepyivoda

engineer: _____ D. S. Denys

engineer: _____ A. S. Shevtsiv

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