

GIG-PIB TESTING AND CALIBRATION LABORATORIES
(ZESPÓŁ LABORATORIÓW BADAWCZYCH I WZORCUJĄCYCH GIG-PIB)

Laboratory of Technical Acoustics
(Laboratorium Akustyki Technicznej)

www.elektrostatyka.gig.eu



AB 005

Katowice, 21 October 2023

Test Report No. BR-1/190/2023

Copy No. 1

Testing of surface resistance
according to PN-EN 61340-2-3:2016-11
of compostable foil NBF ESD C/PLA

Requested by:

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GŁÓWNEGO INSTYTUTU GÓRNICTWA –
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Results reviewed and
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1. Basis for measurements

The testing was made using standards PN-EN 61340-2-3:2016-11 – „Elektryczność statyczna Część 2-3: Metody badań stosowane do wyznaczania rezystancji i rezystywności płaskich materiałów stałych, używanych do zapobiegania gromadzeniu się ładunku elektrostatycznego”;

The national document PN-EN 61340-2-3:2016-11 is identical with IEC 61340-2-3:2016 – “Electrostatics – Part 2-3: Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation”.

2. Equipment

The whole equipment utilized in the tests was in accordance with the requirements of the standards, and had current certificates of metrological control:

- Resistance meter (ohmmeter) Metrisko - last calibration made on 01.10.2021 (Instytut Łączności AP015, certificate No. 193/A/2021);
- Electrode model 880,
- Electrode model 850;
- Teflon plate.

3. Climatic conditions, description of testing

The following conditions were assumed in the course of conditioning and tests:

PARAMETER	
Temperature, °C	23 ± 2
Relative humidity, %RH	12 ± 3
Time, s	48

Test voltage 10V for resistance $<1 \times 10^6 \Omega$ and 100V for resistance $\geq 1 \times 10^6 \Omega$.

4. Characteristics of samples

The Orderer delivered for investigation the samples of a ready-made product: compostable foil NBF ESD C/PLA.

The Orderer didn't give the date of manufacturing of samples.

The samples met the requirements of item 8.3 of the standard, relative to dimensions.

5. Results

Presented below are the test results.

	SURFACE RESISTANCE [Ω]
Sample 190_3/1	3,12E+09
	2,87E+09
	2,98E+09
Sample 190_3/2	3,01E+09
	3,14E+09
	2,48E+09
Sample 190_3/3	2,99E+09
	3,00E+09
	3,03E+09
arithmetic average and its uncertainty	(2,96±0,49) x 10⁹

The uncertainty quoted was determined in accordance with the document EA-04/16 „EA guidelines relative to expressing the uncertainty in quantitative investigations”, and procedure BR-1/ZLGIG/PN-04 „Estimation of uncertainty in electrostatic testing”. The quoted value of uncertainty is an extended uncertainty with the extension probability of ca. 95%, and extension factor $k=2$.

6. Executor of investigations

*English: Central Mining Institute – National Research Institute
GIG-PIB Testing and Calibrations Laboratories
Laboratory of Technical Acoustics*

*Polish: Główny Instytut Górnictwa – Państwowy Instytut Badawczy
Zespół Laboratoriów Badawczych i Wzorcujących GIG-PIB
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*Accreditation certificate No. AB 005
Certificate valid through 30 December 2026*

*The Laboratory declares that the test results relate exclusively to the sample tests.
Without written permit of the Head of Laboratory, this report can only be copied in full text.*

Scope of accreditation in the field of testing electrostatic properties:

1	PN-EN ISO 284:2013	Conveyor belts
2	PN-EN 1149-1:2008	Protective clothing
3	PN-EN 1149-2:1999	Protective clothing
4	PN-E 05203:1992	Products used in explosion-hazard zones
5	PN-EN ISO 8031:2010	Pipes and hoses
6	PN-EN 13463-1:2010	Non electrical equipment for explosion-hazard zones
7	PN-EN 60079-0:2009	Electrical equipment for explosion-hazard zones
8	PN-EN 61340-2-1:2004	Solid materials
9	PN-EN 61340-2-3:2002	Flat solid materials
10	PN-EN 61340-4-1:2006	Flooring covers and ready-made floors
11	PN-EN 61340-4-4:2012	FIBC containers
12	PN-EN 61340-4-5:2006	System: Man-footwear-floor
13	IEC 61340-4-10:2012	Solid materials
14	Opinions and interpretation formulated based on test results	