Independent testing center
TEST

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Independent Noncommercial Organization
“Independent testing center Test”
(INO “ITC Test”)
Testing laboratory of electroinsulating and foil-caoted materials (TL EFM INO “ITC Test”)
Accreditation certificate #POCC RU.0001.21MO59 (valid till 16/09.2014)
Location: Krasnokazarmennaya 12, Moscow

TEST REPORT
№1742-1/ЛЗ, dated 27/08/2010

Product	Lubricant for protection against moisture and corrosion NANOPROTECH Electric
Technical conditions	TU 2389-001-82216327-2008
Producer	Innovation Technologies LLC (INTECH LLC)
Address	Kamenoostrovsky pr. 22A-3H, Saint Petersburg,197101
Tax reference number	7813392117
Phone number	+7 (812) 309-35-33, +7 (812) 716-46-17
Customer	Innovation Technologies LLC
Purpose of the tests	Measurements of electric properties of the product. Adhering to these properties is required by GOST (all-Union State Standard) #6581-75
Tested object	Tested object is 3 liter of sample lubricant in the closed plastic jerrycan. TL EFM INO “ITC Test” got the sample lubricant from the customer. All information about the products and tested object is presented in the test report in accordance with commercial correspondence with the customer. TL EFM INO “ITC Test” did not carry out the authentication of the tested object. According to exterior the tested object is viscous cloudy whity brown oily liquid.
Test method	Tests were conducted in accordance with GOST #6581-75 with the following updates: There were no preliminary conditioning, normalization, and processing of the sample. The measurements were made at the temperature of 26°C and humidity of 55%. Loss-angle tangent, dielectric capacity, and specific insulation resistance were measured in three-terminal two-dimensional cell in accordance with drawing 1a (GOST #6581-75). The measurements were made in two cells. The average of two measurements was taken as final result. Loss-angle tangent and dielectric capacity were measured under voltage of 500V. When voltage was increased discharges occurred hampering the measurements. Resistance was measured by a teraohmmeter E6-13A under voltage of 100V. Technical specifications of the teraohmmeter did not allowed to make measurements under higher voltage. Breakdown voltage was determined for one sample portion. 6 tests were carried out every 5 minutes. The average of six measurements was taken as final result.

Test dates From 25/08/2010 to 26/08/2010
Location Laboratory of TL EFM INO “ITC Test”
Test equipment The list of test equipment is presented in the table #1

Table #1

#	Equipment	Type	Serial number	Measurement range, test conditions	Roughness
1	High-voltage test facility	ВИУ 10/35/100	5	1.3 – 10 kV 5 – 30 kV 5 – 75 kV	2.3 -3.8%
2	Psychrometer	ВИТ-2	32 (131)	(16…40)°C	0.2°C
3	Alternating-current bridge	Р5026М	768	Tangent from $1*10^{-4}$ to 1 Capacity from 10 to 10^6 pF	In accordance with GOST #6433.4-71
4	Teraohmmeter	Е6-13А	0225	$10 – 10^8$ Ω $10^8 – 10^{11}$ Ω $10^{11} – 10^{13}$ Ω $10^{13} – 10^{14}$ Ω	kl. 2.5 kl. 4.0 kl. 6.0 kl. 10.0

Test results are presented in the table #2

Table #2

Indicator	Test result
Specific insulation resistance under ac voltage, Ω·m	$5.3*10^7$
Breakdown voltage under frequency of 50 Hz, kV	29
Loss-angle tangent under frequency of 50 Hz	2.9
Dielectric capacity under frequency of 50 Hz	2.38

Comments to test results:

1. Tested object has medium high dielectric properties (except for loss-angle tangent). Typical value of this indicator usually does not exceed 0.1
2. Lubricant has the properties described in the Table #2 before application on the surface. After application, chemical composition and dielectric properties of the lubricant can change because of evaporation of low-boiling fractures and because of contact of the lubricant with environment and surface material.

Chief of TL EFM A. Panin

Chief specialist of the laboratory E. Stefanovich

Annex

The following documents were used in the present test report:

Number	Name
GOST #6433.4-71	Methods of measurement of a loss-angle tangent and dielectric capacity under frequency of 50 Hz
GOST #6581-75	Electroinsulating liquid materials. Methods of electric tests
TU 2389-001-82216327-2008	Lubricant for protection against moisture and corrosion NANOPROTECH. Technical conditions