

	PLANT PURCHASING SPECIFICATION		HW 27870
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01	CONDUCTING VARNISH (LOW OHMIC GRADE) 1.0 GENERAL: This specification governs the requirements of conducting varnish consisting of alkyd resin as binding agent, solvents and graphite powder. 2.0 APPLICATION: This is used for outer Corona protection on the surface of coils/bars of high voltage electrical rotating machines. The varnish is applied with the brush or roller/ on the insulation surface. / or spray gun 3.0 BASED ON: BHEL experience and interaction with supplier e.g. Von Roll, Isola 4.0 COMPLIANCE WITH NATIONAL STANDARDS: There is no Indian standard covering this type of material. 5.0 SAMPLING: A 1/2 liter sample shall be taken for testing from every ten containers, after stirring well its contents. If the test results of this sample do not conform to this standard, then double samples from the remaining containers or sample from each remaining container as the case may be are taken. Where the samples produce deviating results, the material from the corresponding consentment shall be considered not conforming to the requirements of this standard. 6.0 PROPERTIES: 6.1 GENERAL QUALITY: The varnish can be applied, with or without thinning, by means of brush or roller/. The film shall be smooth and uniform with no hair line marks. The material shall conform to the following properties: / or spray gun		
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OAX	S C JAIN		DRAWN	NAME	SIGN & DATE
TSX	P. S. Saxena		WORKED	VIRENDRA KUMAR	Virendra Kumar 24.6.93
TGE	N.L. Chugh		CHECKED	V. C. GOYAL	V. C. Goyal 24.6.93
AGREED DEPTT.	NAME	SIGN & DATE	SUPERVISED	GL ANAND	GL Anand 24.6.93
REVISION:			APPROVED:		
			PLANT		
			STANDARDIZATION COMMITTEE		
Rev. No. C2 (REAFFIRMED)			PREPARED:		
Dt. 27-4-07			CPX		
			ISSUED:		
			STANDARDS DIVISION		
			DATE		
			7-7-93		

SIGN & DATE

SUPERSEDES
INVENTORY No.

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6.1.1 Colour : Black

6.2.2 Viscosity (Cup No.4 of IS 3944) at 27±2°C : 110± 10 Sec.

6.2.3 Specific Gravity: 1,1 g/cm³ (Approx.)

6.2.4 Solid contents (2 gm/100°C/3Hrs.) : 50 % (Approx.)
(as per test method of ~~clause 26 of IS 101-1964~~)
IS 101: Part 2: Sec. 2

6.2.5 Pigment contents (Type test): 25% (min.)
As per test method of IS 101 (Part 8/Sec. 2): 1990

6.2.6 Drying time (as per test method indicated in
Annex.—1

6.2.6.1 Surface drying time at RT: 30 Minutes (Max.)

6.2.6.2 Complete drying time at RT: 4-6 Hrs.

6.2.7 Surface Resistance: 200 - 1000 ohm per square
As per test method indicated in Annexure-1

6.2.8 Flash point as per IS: 101 (Type test): 24±6 ≥ 20°C
(For information only)

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7.0 SHELF LIFE:

Minimum 6 months at Room Temperature ≤ 25°C when stored in
the original sealed container under cover in a dry place.

8.0 Test certificate ^{and compliance} Compliance

Four copies of test ^{and compliance} certificate shall be supplied with each
lot bearing the following information:

- 1) Conducting varnish to spec. HW
- 2) BHEL P.O.No.
- 3) Supplier's reference and batch/lot No.
- 4) Date of manufacture/expiry
- 5) Test results obtained for clause No.5

9.0 PACKING:

The varnish shall be packed in air-tight Tin container of
5 kg. Each container shall be marked with following
information.

- 1) Conducting varnish to spec. HW
- 2) BHEL P.O.No.
- 3) Supplier's reference and batch/lot No.
- 4) Date of manufacture/expiry
- 5) Storage conditions
- 6) Net weight and gross weight

REV. No. 02

WORKED BY V. KUMAR

V. Kumar

24.6.93

CHECKED BY V. C. GOYAL

V. C. Goyal

24.6.93



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REVISION 02

WORKED BY V. KUMAR

V. Kumar

24.6.93

CHECKED BY V. C. GOYAL

V. C. Goyal

24.6.93

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10.0 REJECTION:

BHEL reserves the right to reject the entire lot, if the material does not conform to this specification. Parts of the lot not subjected to testing but found to be defective or to contain hidden defects can be rejected at a later stage.

11.0 ACCEPTANCE CRITERION

- 01 a The material shall be accepted on the basis of the following:
- a) Compliance Certificate furnished by the supplier, OR
 - b) Test certificate furnished by the supplier and /or testing carried out at BHEL.

12.0 ENVIRONMENTAL REQUIREMENTS :

The supplier shall furnish Material Safety Data Sheet (MSDS) covering all aspects of human safety and environmental impacts, particularly during transportation, handling, storage and disposal. Containers shall be accordingly marked appropriately.

13.0 CROSS REFERRED STANDARDS :

IS 3944, IS 101: Part 2, Sec. 2, IS 101: Part 8, Sec. 2



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Annexure-1

TESTS METHODS:**1.0 TEST METHOD FOR SURFACE RESISTANCE:**

Stir thoroughly the varnish in original container. Coat a glass epoxy sheet of size approximately 120 x 60 x 2 mm by dipping in properly mixed varnish of viscosity 25-30 Sec. Dry this coated laminate at room temperature for about 24 hrs. Surface resistivity of this dried laminate shall be measured at 5 Volts DC with electrodes assembly having 100 mm long electrodes at 10 mm apart. Electrode may be tong type as per VDE 0303 or strip type.

Surface resistivity = $10 \times \text{surface resistance (ohm per square)}$

Average of 5 readings shall be reported.

2. DETERMINATION OF DRYING TIME:

Preparation of test panel:

Take a glass panel of size 150 x 150 x 2 mm, plane and free from surface irregularities. Clean the same by the following method to remove oil or grease.

The panel is dipped in trichloroethylene/carbon tetra chloride and rubbed with a soft and clean cloth. The panel shall be rinsed thoroughly with water and washed with soap and water until the wetted panel shows no water breaks when held in vertical position. Then the panel is allowed to dry in dust free air.

Apply the conducting varnish on the test panel prepared as above either by a flat brush or spraying carefully, so as to obtain an even and uniform coat. Then the panel shall be dried in horizontal position at a temperature 27°C for the specified time period. After allowing the film on test panel to dry for specified times, place a 20 mm dia piece of tissue paper (Type writing paper) on the film and load it with the weight as indicated below for one minutes. The paper shall not stick to the film when lifted after removal of the load. 100 gm weight is to be used for surface drying time and 200 gm weight is to be used for hard drying time.

REVISION 02

WORKED BY V. KUMAR *V. Kumar* 24.6.93CHECKED BY V.C. GOYAL *V. C. Goyal* 24.6.93