



TME/2010

BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

TRACTION MACHINES ENGINEERING DIVISION

PRODUCT STANDARD CONCURRENT SHEET





GENERAL INFORMATION

DATE: 01.08.2009

PRODUCT STANDARD NO. : **TM98262**

DESCRIPTION

CARBON BRUSHES FOR TRACTION MACHINES

REVISION NO.	DETAILS OF REVISION			
02	Table-A updated with new grades of carbon brushes which are presently used in Traction machines.			
	NAME	SIGNATURE	DATE	
PREPARED BY:	K. K. DAS		01.08.2009	
AGREED BY	REMARK	DEPTT./SEC	SIGNATURE	DATE
S.K. Yadav	OK.	TME		05/08/09
B.K. Tamrekar	OK.	TME		06.08.09
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CARBON BRUSHES FOR TRACTION MACHINES**1.0 General:**

This specification covers the properties required for carbon brushes and relevant test methods to be followed for accepting the carbon brushes for Traction machines.

2.0 Application:

To be used as either commutator or slip ring carbon brush for Traction machines.

3.0 Approved grades:

Shall be stated on the relevant carbon brush drawings.

4.0 Compliance with national standard:

This shall be carried out generally in line with IS13466, IS13584 & IS 13586.

5.0 Information to be provided by brush manufactures:

In accordance with IS 13466 Clause 1.3.

6.0 BHEL acceptance tests on carbon brushes:

Shall be carried out at the time of accepting supplies of carbon brushes in line with IS 13466 Clause 16.2 and also hardness test in line with IS 13584 Clause 7.1.

6.1 Workmanship:

In accordance with IS13466 Clause 16.5.

6.2 Dimensional accuracy:

Shall be stated on the drawing or in the purchase order. Dimensions shall be measured in accordance with IS 13466 Clause 16.5.

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Date: 01.08.2009	TME - 2 TNX - 1 TXM - 1 TAM - 1 QMX - 1 TSD - 1	 (K. K. DAS)	 (S. P. SINGH)	 (M. BHAKTA)

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6.3 Hardness (Rebound method):

Test to be conducted in accordance with IS 13584 Cl. 7.2 .

Refer TABLE A , of this specification for hardness values against each brush grade.

For grades not covered contact TME department for the nominal value of hardness.

6.4 Connection drop test across flexible to carbon joint:

In accordance with IS 13466 Cl. 16.6.

Acceptance criteria as per Table 2 of IS 13466 .

For pig tail overall diameter sizes not specifically covered in the above IS 13466 , limits / reference values of next higher sizes pig tail diameter shall form the basis of acceptance.

6.5 Pigtail pull out strength test:

In accordance with IS13466 Cl. 16.7.

Acceptance criteria as per Table 3 of IS 13466.

For pig tail overall diameter sizes not specifically covered in the above IS 13466 , limits / reference values of next higher sizes pig tail diameter shall form the basis of acceptance.

7.0 Test certificate:

Unless otherwise stated, the supplier shall submit three copies each of Type and BHEL acceptance test results in accordance with IS13466 Clause 16.1 and 16.2 for each individual consignment.



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TABLE-A

Shore hardness value for various grades of carbon brushes are given below:
Tolerance on nominal value of hardness is as per clause 4 Table 1 of IS 13584.

A. Brush grades supplied by M/s Assam Carbon Products Ltd. (Morgans):

Grade Group	Brush grade	Shore hardness limits (Nominal)
Electro Graphite	EGO	37.0
Electro Graphite	EG-14D(l)	66.0
Electro Graphite	EG-105S	70.0
Electro Graphite	EG-225	43.0
Electro Graphite	EG-251	60.0
Electro Graphite	EG-284	68.0
Natural Graphite	HM-6	16.0
Metal Graphite	BM-51	11.0

B. Imported brush grades of M/s Carbone Lorraine - France, manufactured by M/s Carbone Lorraine India Pvt. Ltd.:

Grade Group	Brush grade	Shore hardness limits (Nominal)
Electro Graphite	E-49X(l)	55.0
Electro Graphite	E-55(l)	52.5
Electro Graphite	E-88X(l)	65.0
Electro Graphite	EG-326	42.5
Electro Graphite	EG-353D	60.0
Electro Graphite	EG-353T	57.5
Electro Graphite	EG-6754	87.0
Electro Graphite	EG-8220	90.0
-	BE-14Z1	17.5

C. Brush grades supplied by M/s Carbone Lorraine India Pvt. Ltd.:

Grade Group	Brush grade	Shore hardness limits (Nominal)
Electro Graphite	EG-98B	65.5
Electro Graphite	EG-389	25.0
Electro Graphite	EG-6754	87.0
Electro Graphite	EG-7097	76.0
Electro Graphite	EG-9049	74.0

(Ref: Letter "Grade Hardness Details", dated 28/02/09 from SCI Carbon brushes Pvt. Ltd. and Email "Carbon brush grade properties", dated 22/07/09 from Carbone Lorraine India Pvt. Ltd.)

- NOTE:** 1. The above mentioned brush grades are only to check the hardness test results not to ensure the approved grade for any machine.
2. For approved brush grade, please check the drawing of a particular machine.