



संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी. - हरिद्वार)

FF06004 Rev 06

पृष्ठ का
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PLANT PURCHASE SPECIFICATION
(CFFP - HARDWAR)

PHENOL FORMALDEHYDE RESIN AND CATALYST SYSTEM

1.0 General

This specification governs the technical requirements for Phenol Formaldehyde Resin and Catalyst used in Foundries.

2.0 Application

- 2.1 The Resin and Catalyst shall be used as binder for sand mix for mould and core making in Foundries.
- 2.2 The resin and catalyst are to be procured from same source as a system. The supplier shall stand guarantee for the performance of combination and ensure the compatibility of resin and catalyst with sand.

3.0 Appearance

- 3.1 The Resin and Catalyst shall be clear liquid, free from dust and other visible impurities.
- 3.2 During storage, a separate layer at the top and sedimentation at the bottom should not be formed within the stipulated shelf life.

4.0 Properties

4.1 Resin

The Resin shall have the following typical properties.

Appearance	Clear liquid (Brown)
Viscosity at 25 ⁰ C	150-250 CP/ 50-80 seconds in B4 cup as per IS3944
pH value	4 to 6.5
Density at 25 ⁰ C	1.2 to 1.25 gms/cm ³
Nitrogen content	0.6 % max
Permission Free Phenol	6% max.
Permission Free Formaldehyde (Formalene)	0.3% max.
Solid Content	71% minimum
Shelf Life	Minimum 8 weeks from date of receipt in CFFP when stored at temperature upto 20 °C max.

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RMI	SOMNATH GHOSH	अनुवादक	TRANSLATED BY	
MPIC	SHANTANU	निर्माणकर्ता	WORKED BY	L AGARWAL
CHAIRMAN CPSC	VK AGARWAL	जांचकर्ता	CHECKED BY	TUSHAR DAVE
सहमत विभाग	नाम	पर्यवेक्षणकर्ता	APPROVED BY	TUSHAR DAVE
AGREED DEPTT	NAME	DATE & SIGNATURE		
स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE				
निर्माण		जारी	दिनांक	
PREPARED : FOUNDRY TECH		ISSUED : FOUNDRY TECHNOLOGY	DATE : 09.2.12	



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4.2 Catalyst (Typical)

The catalyst should be super saturated solution of para toluene sulphonic acid (PTSA). The minimum normality of the catalyst shall be 4 N.

4.3 Sand-Mixes

4.3.1 The sand mix prepared as per clause 5.0 shall be tested for compression strength, bench life and following requirement shall be met.

Time after making of AFS standard specimen		Minimum compression strength at ambient temperature of 25-30 ⁰ C
A	2 Hour	16 Kg/cm ² (indicative only)
	4 Hour	18 Kg/cm ²
	24 Hour	32 Kg/cm ²
B	Bench life	i) 15 minutes or more at temperature upto 30 ⁰ C, with or without dilution.
		ii) 10 minutes or more above 30 ⁰ C, with or without dilution.

4.3.2 Gas emission during pouring of the mould:

The fumes generated during sand preparation and mould/core making shall not be excessive which inhibit working on the shop floor.

5.0 Sampling and Method for Preparation of Sand Mix

5.1 Sampling

The composite samples of resin and catalyst shall be drawn from each batch of the consignment on random basis.

5.2 Method for preparation of sand mix.

The high silica sand to be used for determining the properties of the sand mix should be absolutely dry (max. 0.5% moisture) with AFS fineness no. between 40 to 50 and clay content not more than 0.20%.


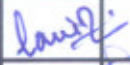

The sand binders shall be mixed in following proportions.



Sand	100 parts by weight
Resin	1.6% of sand
Catalyst	40% of resin.

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इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं आशयक रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो व किया जाए ।

निर्माणकर्ता WORKED BY	L AGARWAL	
जांचकर्ता CHECKED BY	T DAVE	

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सामग्री सूची संस्था को अतिरिक्त करना SUPERSEDES INVENTORY NO	<p>The catalyst should be added first to the sand and mixed in a sand mixer for 1.5 minutes, then resin to be added and mix for 1.5 min more before using the same for making the samples for determining the properties as per clauses 4.3.</p> <p>In summer above 30°C catalyst is to be diluted with water as and when suggested by manufacturer.</p> <p>In winter below 20° C catalyst addition may increase above 40% upto 60% of resin to obtain the required sand strength as suggested by manufacturer.</p>			
COPYRIGHT AND CONFIDENTIAL. The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	<p>6.0 Acceptance Test</p> <p>6.1 The supplier shall offer the material, batch wise to CFFP only after evaluating the suitability w.r.t. the properties detailed in clause No. 4.</p> <p>6.2 CFFP shall however reevaluate the properties as per clause 4.3 for each batch of consignment.</p> <p>6.3 To ascertain the properties of sand mix as per Clause 4.3.1, samples shall be prepared as mentioned in Clause 5.2. Following testing procedure is to be carried out for determining acceptance or rejection of the material. The procedure is to be followed, irrespective of any supplier's recommendation of dilution or increase of catalyst % alongwith the supply.</p> <p>6.3.1 The first tests to be performed should be based on 1.6% resin and 40% catalyst addition. The material shall be accepted, if the properties as mentioned in Clause 4.3.1 are achieved.</p> <p>6.3.2 If the bench life is found less than 8 minutes, the material is rejected.</p> <p>6.3.3 If the bench life is found to be less than 15 minutes; i.e., 15 minutes > (Bench Life) ≥ 8 minutes, catalyst to be diluted by adding water 10% (of catalyst) and DCS and bench life is to be ascertained. If the results are as given in 4.3.1, the material is accepted. If the bench life is still less than 15 minutes, further dilution 20% (of catalyst) to be carried out and DCS and bench life is to be checked.</p> <p>6.3.4 If the DCS at 4 or 24 hours is found to be less than minimum required, catalyst % to be increased to 50% of resin and all tests are to be carried out. If the results are as given in 4.3.1, the material is accepted. If the DCS is still low, catalyst addition can be increased to 60% of resin and retested.</p> <p>6.3.5 When ambient temperature falls below 20°C and development of strength is found slow, the bench life and strength after 24 hours as mentioned in Clause 4.3.1 shall be considered for acceptance.</p> <p>6.3.6 For testing under dilution or increasing % catalyst, acceptance shall be on the basis of results of all tests, i.e., DCS after 4 and 24 hours and bench life as per Clause 4.3.1.</p>			
स्वत्वधिकार एवं गोपनीयता इस प्रवेक्ष में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है। इसका प्रयोग एवं आगेकायण केवल ही बि.ए.ई.एल. के अधिकारियों के द्वारा ही किया जा सकता है। अन्य किसी व्यक्ति को इस सूचना का प्रयोग करने से निषेध है।	दिनांक एवं हस्ताक्षर SIGN & DATE			
सामग्री सूची संस्था		निर्माणकर्ता WORKED BY जांचकर्ता CHECKED BY	L AGARWAL T DAVE	 

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सामग्री सूची संख्या सो. अतिरिक्तित संख्या SUPERSEDES INVENTORY NO.	<p>6.4 The material shall also be judged on shop floor for pungency of fumes as per clause 4.3.2.</p> <p>6.5 Within shelf life (i.e. period between the date of manufacturing and the date of expiry), if the binders do not meet the properties requirement as per clause 4.3 of this specification, it shall be rejected irrespective of its previous acceptance. The supplier shall be liable for replacing such materials free of cost.</p> <p>6.6 The properties as per Clause No. 4.1 and 4.2 shall be checked on surveillance basis.</p>			
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	<p>7.0 Inspection and Replacement</p> <p>7.1 BHEL reserves the right to inspect material at vendor/manufacturers' premises before despatch. The supplier shall intimate in advance about readiness of material enclosing a copy of test certificate of the material offered for inspection. However inspection at BHEL shall be final. The supplier shall offer BHEL representative all reasonable test facilities without charge to satisfy the latter that the material being furnished is in accordance with this specification. The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his works, the supplier shall make necessary arrangements for carrying out the prescribed tests elsewhere.</p> <p>7.2 If the material received is not found in accordance with these requirements, it shall be rejected and the supplier will have to replace it free of cost at the earliest.</p>			
स्वत्वाधिकार एवं गोपनीयता इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है। इसका प्रयोग एवं अनुवादक रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हकिमानक हो न किया जाए।	<p>8.0 Test Certificates</p> <p>8.1 Unless otherwise specified, one original and three copies of original manufacturer's test certificates shall be supplied with each consignment bearing the following information. In order to facilitate quick clearance of material, the supplier shall ensure to send a copy of test certificate along with despatch document.</p> <p>BHEL Reference:</p> <p>(a) PO No.</p> <p>(b) Specification No.</p> <p>Supplier's Reference</p> <p>(a) Supplier's name</p> <p>(b) Date of Manufacture</p> <p>(c) Date of expiry</p> <p>(d) Batch number</p> <p>(e) Test results as per Clause No. 4</p> <p>(f) Specific recommendations, such as dilution chart for summer and addition level for winter.</p>			
दिनांक एवं हस्ताक्षर SIGN & DATE	<p>8.2 Suppliers other than the original manufacturer shall ensure providing original manufacturer's test certificates with linkage to supplier's invoice stating the batch No., lot No., etc of the supply.</p>			
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			जांचकर्ता CHECKED BY	T DAVE
				

सामग्री सूची संख्या को अधिकतम करार
SUPERSEDES INVENTORY NO

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SIGN & DATE

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9.0 PACKING AND MARKING

The resin shall be supplied in blue coloured drums with net weight of 200 to 250 kg and the catalyst in suitable black colour containers with net weight of 100 to 125 kg. The packing shall be that of the original manufacturer. The containers should be of suitable material, which do not have any reaction with the resin/catalyst. Each drum/container shall be marked with the following information:

- (a) Supplier's name and trade mark, if any.
- (b) Item Description, Batch No.
- (c) Date of manufacture
- (d) Date of expiry
- (e) Net weight and gross weight

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PLANT PURCHASE SPECIFICATION
(CFFP - HARDWAR)

RECORD OF CHANGES

REV CODE	NO. OF CHANGES	DOCU. NO.	SHEET NO.	SIGN	DATE
02	Clause No. 2.2 added. Clause No. 4.1 - Appearance modified by adding Brown colour.		1 of 6		28.5.03
	Clause 4.3.1C - Deformation on bending test piece withdrawn		2 of 6		28.5.03
03	Clause No. 8 & 9 modified to incorporate original manufacturer's TC and packing condition. 2 Hour strength clause made indicative only.		2 of 6 5 of 6		03.09.09
04	Shelf life indicated. Material of packing drum "Steel" word removed. Clause 7.3 removed. Clarity brought in Clause 6.2.		1 of 5 3 of 5 4 of 5		08.12.10
05.	Acceptance clause rewritten		3 of 6		21.5.11
06.	Storage temperature was "around 20°C". Range defined. Packing weight specified		1 of 6 5 of 6		09.02.2012

DISTRIBUTION OF PRINTS

RMI	✓
STANDARD SECTION	✓
MPIC	✓

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SIGN & DATE

सुपेर्सेड इन्वेंट्री नंबर
INVENTORY NO

संशोधन नंबर
सूची

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