

Specification no. : HEMRL/FS.&D/RESIN/01

# PROVISIONAL SPECIFICATION FOR PHENOLIC RESIN PR-104



High Energy Materials Research Laboratory

Sutarwadi, Pune-411021.

## PROVISIONAL SPECIFICATION FOR PHENOLIC RESIN PR-104

### 1) DESCRIPTION :

PR-104 is high flow unmodified phenolic resin premixed with hexamine in powder form.

### 2) GENERAL PRODUCT DATA & TEST METHODS

Sr. No.	Characteristics	Unit	Specification	Method of test
1	Appearance	-	Creamish colour powder	-----
2	Melting Point	°C	75-95	-----
3	Hexamine Content	%	5.8-6.8	Appendix-A
4	Solubility in Methyl Ethyl Ketone	%	Insoluble matter max. 0.6	Appendix-B
5	Sieve Analysis (+200#)	%	2.5 (Max.)	-----

### 3) Storage and Shelf Life

It should be stored at ambient temperatures. For best results, it is recommended that this product be used within 6 month of manufacture. All phenolic resins will become darker with age. PR-104 bags should never be stored double stacked.

Note: Resins of this type are known to agglomerate or sinter during storage. This condition doesn't affect the performance of the resin in its normal application and is not considered for rejection or return.

## APPENDIX-A

### DETERMINATION OF HEXAMINE CONTENT

#### Reagents:

- 1) Sulphuric acid approximately 1N
- 2) Standard NaOH solution 1N
- 3) Methyl red indicator-Dissolve-0.15 g of methyl red in 50 ml of distilled water.

#### Procedure:

Weigh accurately 1 g of the material and dissolve it in 10 ml of water, add 50 ml of sulphuric acid and boil gently until the odour of formaldehyde has disappeared, replacing from time to time the water lost by evaporation. Titrate the excess of sulphuric acid with standard sodium hydroxide solution using methyl red solution as indicator. Carry out a blank with 50 ml of sulphuric acid.

$$\text{Hexamethylene tetramine, \% by mass} = \frac{350.5 \times (V_1 - V_2) \times N}{M_1 \times (100 - M_2)}$$

Where,

$V_1$ - Volume in ml of standard NaOH used in blank titration.

$V_2$ - Volume in ml of standard NaOH used with material under test.

N- Normality of standard NaOH solution.

$M_1$ - Mass of the material taken for the test.

$M_2$ - Loss on drying, % by mass.

## APPENDIX-B

### SOLUBILITY TEST

1 g of sample is dissolved in 50 ml of methyl ethyl ketone and the contents are filtered through G<sub>4</sub> crucible.

$$\text{Insoluble matter} = \frac{M_2 \times 100}{M_1} \%$$

M<sub>1</sub> = Mass of the material taken for the test.

M<sub>2</sub> = Mass of the insoluble matter.