

	PLANT PURCHASING SPECIFICATION BHPAL		BP 22993
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			SUPERSEDES BP22993 Rev.03
<u>POLYAMIDE (ARAMID) UNCALENDERED PAPER</u>			
<p>1. General :</p> <p>This specification governs the quality of uncalendered Polyamide (Aramid) Paper made from specially formulated Polyamide fibers with a high degree of thermal stability. The material is used up to maximum operating temperature of 220 deg.C.</p>			
<p>2. APPLICATION:</p> <p>Used as inter-turn insulation of traction machines etc.</p>			
<p>3. COMPLIANCE WITH NATIONAL STANDARDS:</p> <p>There is no Indian standard covering this type of material.</p>			
<p>4. DIMENSIONS AND TOLERANCES:</p>			
<p>4.1 Sizes:</p> <p>Thickness, width and length of the sheet or tape shall be stated on order.</p>			
<p>4.2 Preferred Thickness and Tolerances: 0.13, 0.18, 0.25, 0.4 and 0.6 mm with Tolerances as per Annexure - I.</p>			
<p>4.3 Preferred width & Tolerance:</p>			
<p>4.3.1. Sheet : 500,600, 900 mm with tolerance of ± 5 mm</p>			
<p>4.3.2 Tape : 20, 25, 30 mm with tolerance of ± 0.5 mm.</p>			
<p>5. FINISH:</p> <p>The material shall be free from surface or edge defects, inclusions, voids, pin-holes, cracks which may affect its suitability, visual properties shall be consistent from lot to lot.</p>			
<p>6. TEST METHODS: As stated against each clause.</p>			
Revision : Reviewed & Brought upto-date		ISSUED by : <i>Sharda</i>	
		STANDARDS AND MATERIALS GROUP TECHNICAL SERVICES DEPARTMENT	
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7. SAMPLE FOR TEST:

A roll of at least 1 M length from sheet and 50M length in case of tape of ordered thickness from the same batch shall be supplied for testing and approval purposes.

8. PHYSICAL PROPERTIES:

8.1 Moisture Absorption : 15% Max.

A sample of 75 x 75 mm is kept at 90% RH at 27 ± 2 °C for 72 hours.

8.2 Shrinkage at 240 °c for 1 hour: As given in Annexure-I.

9. MECHANICAL PROPERTIES:

9.1 Breaking Strength (IS 7809 Part 2 : 1977) RA 2007 : See Annexure - I.

9.2 Elongation at Break (IS:7809 Part 2 : 1977 RA 2007 : See Annexure - I.

9.3 Tearing Strength: (For sheets only) ASTM-D:689 : See Annexure - I.

10. ELECTRICAL PROPERTIES:

10.1 Electric Strength (BDV) in air at Room Temp. 27 deg.C(IS:2584 -1963) RA 2007:

Upto & including 0.18 mm : 12 KV/mm, Min.

Above 0.18mm : 13 KV/mm, Min.

10.2 Dissipation Factor at 50 Hz & 500 volt(For sheets only) (BS:7663-1993) : 0.005, Max.

11. CHEMICAL PROPERTIES (Type Test):

The paper when identified by Infra Red Spectrophotometer shall confirm the presence of Polyamide fibres.

12. TEST CERTIFICATE:

Unless otherwise specified three copies of test certificates shall be supplied, with each consignment.

In addition, the supplier shall ensure to enclose one copy of test certificate along with their despatch documents to facilitate quick clearance of the material.



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The test certificate shall bear the following information:-

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BHEL Order No.

Batch No/Lot No.

Date of Manufacture

Thickness and Width

Test values obtained and certificate of compliance for clauses 4 and 8 to 11.

13. PACKING AND MARKING:

Rolls shall be suitably packed to prevent damage during transit and storage.

Packages shall be labelled with the following information:

BP 22993 : Polyamide (Aramid) uncalendered paper.

BHEL Order No.

Manufacturer's Name and Grade

Batch No./Lot No. & Date of Manufacture.

Thickness, Width & Length.

Net Weight.



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ANNEXURE-I

Nom Thk. (mm)	Tolerance (± mm)	Subs- tance (g/m ²) Min.	Breaking Strength N/Cm Width, Min.		Elongation % ,Min.		Tear Strength N,Min		Shrinkage at 240 ± 5 °C for 1 hour - %,Min.	
			MD	XMD	MD	XMD	MD	XMD	MD	XMD
0.13	0.02	41	17	9	3.5	4.8	1.3	1.8	1.2	1.5
0.18	0.02	64	28	17	3.5	5.0	1.7	2.6	0.9	1.0
0.25	0.03	78	35	21	3.4	5.2	2.4	3.4	0.8	0.8
0.40	0.04	130	56	35	3.2	5.2	4.9	6.7	0.9	0.8
0.60	0.06	200	80	52	3.2	4.8	6.2	9.6	0.9	0.7