

**MULTILAYERED CROSS LAMINATED POLYETHYLENE FILM****1.0 GENERAL:**

This specification governs the quality requirements of multilayered cross laminated polyethylene film. The cross lamination gives qualities of extra toughness, together With flexibility and lightness coupled with good weather resistance to ultra violet rays.

2.0 APPLICATION:

Used for packing and allied purposes.

3.0 COMPLIANCE WITH NATIONAL STANDARDS:

There is no Indian Standard covering this type of material.

4.0 AVERAGE WEIGHT, DIMENSIONS AND TOLERANCES:**4.1 Average weight & Sizes:**

Average weight (G.S.M), Width and Length shall be as stated on the order.

4.2 Average Weight & Tolerance:

45, 60, 70, 90, 105, 120, 150, 200, & 250 GSM with a tolerance of $\pm 10\%$.

4.3 Width and tolerance:**4.3.1 Preferred widths:**

900, 1000, 1500, 2000, 2500, 3000 and 3660 mm.

4.3.2 Tolerance on width:

Width, mm		Tolerance(\pm) mm
Above	Upto & Includ.	
900	1250	8
1250	2500	20
2500	3000	40
3000	3660	50

Revisions :
As per e-mail dt. 4-08-2008 from Shri.Gopal Bhat,
SDGM, Bhopal

APPROVED:
INTERPLANT MATERIAL RATIONALISATION
COMMITTEE- WG (T&PM)

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Dr:

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**5.0 MANUFACTURE:**

The film shall be comprised of several layers of plastic film placed criss-cross over one another and bonded by a special cold-roll technique. Film shall be resistant to most of organic & inorganic chemicals.

'BHEL' emblem of size A40 shall be embossed by thermostatic control on the film at an interval of 1000 mm along the length of the film.

The colour of the emblem shall be Air Craft Blue (Shade No. 108) as per IS: 5 or Black / Red.

One vertical heat sealing joint will be acceptable for films between 1200 mm and 2400 mm at the interval of 1200 mm width.

Two vertical heat sealing joint will be acceptable for films above 2400 mm at the interval of 1200 mm width.

6.0 APPEARANCE AND FINISH:

The film shall be uniform in colour, texture and finish. And also shall be free from pinholes, undispersed raw material, streaks and foreign particles and holes, tears or blisters. The edge shall be free of nicks and cuts to unaided eye.

7.0 COLOUR:

Unless otherwise specified, the film shall be supplied in Natural Colour (essentially colourless) for 45 GSM, yellow colour for 70 GSM & Blue colour for 90 GSM. Any other colour can also be ordered, if agreed mutually.

For film of other average weights, colour shall be as stated on the order.

8.0 ODOUR:

The film shall be free from any objectionable odour.

9.0 TEST METHOD:

Unless otherwise specified, the test shall be conducted in accordance with the relevant methods of IS : 2508.

10.0 TEST SAMPLES:

One Square metre (1 sq.m) of ordered thickness shall be supplied for testing purpose.

**11.0 PHYSICAL PROPERTIES:**

Substance (GSM): 45, 50, 60, 70, 90, 105, 120, 150, 200, & 250.

Tolerance: $\pm 10\%$.

12.0 MECHANICAL PROPERTIES:**12.1 Tensile Strength at Break:**

Direction N/mm^2 , min.

Direction - I 35

Direction - II 37

12.2 Elongation at Break:

Direction - I 500 percent, min.

Direction - II 400 percent, min.

12.3 Tear Resistance in/grams (ASTM – D 1922):

GSM 45 60 70 90 105 120 150 200 250

Direction I 800 1800 1800 2150 2500 3200 3500 4500 5500

Direction II 650 1500 1500 1950 2000 2000 2500 3500 4500

13.0 INSPECTION AT SUPPLIERS' WORKS:

Whenever specified, tests and inspection are to be conducted in the presence of BHEL'S representative.

BHEL'S representative shall have free access at all times while the work on the contract is being performed, to all parts of the manufacturer's works.

The manufacturer shall offer BHEL's representative all reasonable facilities without charge to satisfy the latter that the material is being furnished in accordance with this specification. The manufacturer shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities do not exist at his works, the manufacturer shall make necessary arrangements for carrying out the prescribed tests elsewhere.

The manufacturer shall notify BHEL's representative in advance about the readiness of the material for inspection and testing.

BHEL reserves the right to test the material at BHEL's works and the final acceptance of the material shall be based on these test results.

AA 514 20

Rev. No. 02

PAGE 4 OF 4

CORPORATE PURCHASING
SPECIFICATION



14.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied unless otherwise stated on the order.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material. The test certificate shall bear the following information:

AA 514 20: Multilayered Cross Laminated Polyethylene Film.

Rev. No. 02

BHEL Order No.

Batch / Lot No.

Results of dimensional inspection.

Test results of clauses 11 and 12.

15.0 PACKING AND MARKING:

To be supplied in bundles / packages suitably packed to prevent damage during transit and storage.

AA 514 20

BHEL Order No.

Manufacturer's name and grade

Batch No. / Lot No. and date of manufacture

Average weight, Width, Length and colour

Net weight of the Bundle / Package

16.0 REJECTION AND REPLACEMENT:

In the event of any film proving defective during the course of preparation, testing, subsequent use, etc such material shall be rejected notwithstanding any previous certification of satisfactory testing and / or inspection.

The supplier shall under take to replace the rejected film at his own cost and the rejected material shall be taken by the supplier after fulfilling the commercial terms and conditions.

17.0 REFERRED STANDARDS (Latest Publications Including Amendments) :

1. IS: 5 2. IS: 2508 3. ASTM - D 1992