



CORPORATE PURCHASING SPECIFICATION

AA59802

Rev No. 06

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SYNTHETIC RUBBER BONDED CORK SHEETS, STRIPS & GASKETS

1.0 GENERAL:

This specification governs the quality requirements of flexible resilient synthetic rubber bonded cork sheets and strips gaskets composed of uniformly granulated cork bonded with synthetic rubber of nitrile butadiene or neoprene rubber or a suitable mixture of these two.

2.0 APPLICATION:

Used as gasket material in transformers, switchgears, bushings, oil rigs etc.

3.0 COMPLIANCES WITH NATIONAL STANDARDS:

There is no National Standard covering this material. However, assistance has been drawn from the following National Standard.

IS: 4253 – Part – 2 – 1980
Gr: RC70A-Type C

: Cork Composition Sheets –
Cork and Rubber.

4.0 DIMENSIONS AND TOLERANCES :

4.1 Sizes :

Length width and thickness of the sheet/strip shall be stated on the order. All the four edges of the sheet/strip shall be uniformly trimmed. Gaskets shall be supplied as per drawing accompanying the order.

Preferred Dimensions are given below:

Thickness

1, 1.6, 3, 5, 6, 10, 12, 15, 16 mm.

Width : Sheet : 610 & 925 mm, Strip : 60 mm.

Length : Sheet : 915mm, Strip : 20 metre without joints

4.2 Tolerances :

Unless otherwise stated on the order/drawing, tolerances shall be as given below:

4.2.1 On Length and Width :

4.2.1.1 For Sheets

Length and width: ± 3 mm

Revisions: Preface sheet & Clause 3.0, 8.1, 8.3 & 8.5

APPROVED:
INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(CPO+NM)

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4.2.1.2 For Strips

Width: ± 0.5 mm, Length: ± 10.0 mm

4.2.1.3 On Thickness :

The permissible variation in thickness at any point on the sheet shall be as given below:

Thickness, mm	Tolerance
UP to 2.5	± 10 %
Above 2.5	± 0.25 mm

5.0 MANUFACTURE:

Cork sheets manufactured by moulding and slicing process only are acceptable. 100/150 mm thick block is first moulded and cured under temperature and pressure. Then individual thicknesses are cut from the block on the slicing machine. Raw materials used shall be free from all impurities such as hard board, wood flour, dust, metallic particles and other foreign materials which may be detrimental to the serviceability of the gaskets. The material shall be capable of being cut or punched without cracking or tearing and shall have very good oil resistant properties.

Note:

- 1) Cork sheets manufactured by moulding individual thicknesses are not acceptable.
- 2) Fresh cork granules shall be used and grain size shall preferably be Fine.
i.e. passing through 1.00 mm IS sieve and retained by 425 micron IS sieve.

6.0 FINISH:

Shall be uniform in texture and colour, free from cracks and shall have a smooth finish.

7.0 TEST SAMPLES:

Following test samples in ordered thickness shall be supplied for testing

7.1 **Sheets:** 300 X 300 mm: 3 Nos.

7.2 **Strip:** 2 metre long 1 No in ordered width

7.3 **Gaskets:** 300 X 300 mm: 3 Nos, from the sheet used for making gaskets with proper correlation, along with 3 gaskets.

8.0 PROPERTIES:

When tested in accordance with the methods shown against each, the test samples shall show the following properties:

8.1 Hardness (IS : 3400-Part II) :

70 ± 5 shore hardness A & D



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8.2 Compression Set $110 \pm 2^\circ\text{C}$, (IS : 3400 - Part X):

85% maximum when tested on small type test specimens, except that duration of test shall be 24, +0, -2 hours and recovery time shall be 1 hour.

8.3 Tensile Strength (IS : 4253-Part II):

1550 kPa

8.4 Flexibility (IS : 4253-Part II) :

There shall be no breakage though the granules of cork or separation of the granules.

8.5 Compressibility And Recovery (IS : 4253-Part II):

Compressibility : 25 to 35%

Recovery : 80% Minimum.

Thickness of test piece shall be thickness of sheet/strip under test except that for sheet/strip of less than 6mm thickness sufficient no. of test pieces shall be stacked so as to built up thickness up to at least 6 mm.

8.6 pH Value of 5% Aqueous Extract (IS : 4253-Part II):

5 to 8.5

8.7 Density (Weight/Volume Method) :

0.65 to 0.9 g/cc.

Test shall be carried out on a sample of size 50cm² Min.

8.8 Side Flow Under Compression (For 6 mm thick sheets/strips and above) :

18% Max.

Test shall be carried out on a sample of size 22mm dia disc (4 cm²). This is compressed by 40% between the machined oil free flanges of a press at ambient temperature and diametric side flow shall be measured. The load shall be increased at a uniform rate to achieve 40% compression which shall be reached within 30±10 seconds, after which the load shall be maintained for a further period of 30±5 seconds. The side flow measurement shall be immediately determined. Thickness of test piece shall be thickness of sheet/strip under test.

8.9 Ageing In Oil :

Two test specimens of size at least 50 cm² and three test specimens of size 25 mm wide and 200 mm length from each direction in case of sheet & in longitudinal direction only for strips (for flexibility test) shall be cut from each sheet/strip in the sample from widely separated positions. The specimens shall be aged in insulating oil conforming to IS: 335 at 90 ± 2 deg. C for 72 ± 1 hour. After the oil is wiped by blotting paper. The specimens shall show the following properties

8.9.1 Finish :

Shall be free from cracks and blisters and there shall not be any disintegration of rubber and cork.

8.9.2 Flexibility :

There shall be no breakage through the granules of cork or separation of granules.

8.9.3 Change In Volume :

8% , maximum

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9.0 KEPING PROPERTY:

When stored under cover in a dry place in the original packing under normal temperature conditions, the material shall retain the properties prescribed in this specification for a period of not less than 24 months after the date of manufacture which shall not be earlier than one month of the scheduled delivery date mentioned in BHEL order.

The expiry date shall be marked clearly on each sheet/gasket/strip

10.0 TEST CERTIFICATES:

Unless otherwise stated three copies of test certificates shall be supplied along with each consignment.

In addition, the supplier shall ensure to enclose one copy of test certificates along with their despatch documents/packing or shipping list to facilitate quick clearance of the material. The test certificates shall bear the following information

AA59802, (Rev. 06): SYNTHETIC RUBBER BONDED CORK SHEETS, STRIPS & GASKETS
BHEL Order No.

Batch/lot no.

Manufacturer's / Supplier's name and grade.

Trade mark, if any.

No. of sheets/gaskets/strips supplied.

Size of sheet/strip

Drawing No. and item No (for Gaskets).

Date of manufacture and expiry

Tests Results of clauses 4.0, 6.0 and 8.0

11.0 PACKING AND MARKING:

The material shall be suitably packed to prevent damage during transit. Each package shall be legibly marked with the following information.

Individual sheet, strip at an interval of one meter and gasket shall be marked with supplier's Trade mark and Date of expiry using a permanent legible marking:

AA59802: SYNTHETIC RUBBER BONDED CORK SHEETS, STRIPS & GASKETS

BHEL Order No

Batch / lot no.

Manufacturer's/Supplier's name and grade.

Trade mark, if any

No. of sheets/gaskets/strip supplied.

Size of sheet/Strip

Drawing No. and item No (for Gaskets).

Date of manufacture and expiry.

12.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1) IS:3400

2) IS:4253