

Schedule 1

Material Code	M0531420807
Material Description	<p>GASKET,SHEET MATERIAL : BONDED CORK NEOPRENE RUBBER MATERIAL SPEC : IS 4253 (2008) PART-2 GRADE RC70C ADDITIONAL INFORMATION : DIMENSION (L X W X T) :900 X 900 X 8 MM CORK SHEET GASKET FOR TRANSFORMER</p> <p>Additional Technical Specifications:</p> <p><u>GENERAL SPECIFICATION FOR NEOPRENE GASKETS</u></p> <ol style="list-style-type: none">1. Receipt inspection at Store by the indenter.2. Vendor to submit warranty/guarantee certificate against any manufacturing defects and bad workmanship.3. Material to conform as per specification given.4. Gasket should be transported in water proof packing , Preferably shall be kept in HDPE (high density poly Ethylene) bags.5. Vendor should clearly mention expiry date of gaskets which should be minimum 2 years from date of receipt at NTPC stores.6. Vendor will submit test certificate as required by technical specifications.7. Acceptance shall be based on visual inspection, and review of certificate of compliance or test certificate from the manufacturer on receipt at stores.8. MARKING

Sheets shall be marked with the following:

- Manufacturer's name or trade mark
- Date of manufacture
- Grade

9.Tolerance on length shall be -10 mm and width - 3 mm.

TECHNICAL SPECIFICATIONS

1	MECHANICAL PROPERTIES		
(a)	Shore A Hardness	75±5	
(b)	Tensile strength (min)	120 Kg/cm ²	Tensile testing should be done as per ASTM D 412 test method A.
(c)	Elongation at break(%), Max	250	
2	DENSITY	1.2-1.4 gm/cc	The density should be measured at 250 deg C as per ASTM D 297.
3	Compression set (max)	35%	The compression set should be determined as per the test method B of ASTM D 395
4	BASE MATERIAL	CHLOROPRENE	
5	Deterioration in air oven (Heat ageing)		
(a)	Change in Tensile strength (max)	-15%	The test shall be carried out as per the standard ASTM D 573
(b)	Change in % elongation (max)	-40%	
(c)	Change in	15 points	

		durometer hardness (max)		
	(d)	Change in compression set (max)	40%	
	6	Water absorption test		
	(a)	Change in hardness points	-15%	The test shall be carried out as per the standard ASTM D471
	(b)	% Change in tensile strength	-40%	
	(c)	% Change in elongation	15 points	
	7	Resistance to petrol and mineral oils	Good	
	8	Resistance to oxidising chemicals, acids	Moderate	
	9	Colour	Black (preferable)	

Schedule 2

Material Code	M0531420603
Material Description	<p>GASKET,SHEET TYPE : PLAIN MATERIAL : BLENDED CORK NEOPRENE RUBBER MATERIAL SPEC : IS 4253 PART-2 TYPE-C GRADE RC70C ADDITIONAL INFORMATION : DIMENSION (L X W X T) :900 X 600 X 6MM CORK SHEET GASKET FOR TRANSFORMER</p> <p>Additional Technical Specifications:</p> <p><u>GENERAL SPECIFICATION FOR NEOPRENE GASKETS</u></p> <ol style="list-style-type: none">1. Receipt inspection at Store by the indenter.2. Vendor to submit warranty/guarantee certificate against any manufacturing defects and bad workmanship.3. Material to conform as per specification given.4. Gasket should be transported in water proof packing , Preferably shall be kept in HDPE (high density poly Ethylene) bags.5. Vendor should clearly mention expiry date of gaskets which should be minimum 2 years from date of receipt at NTPC stores.6. Vendor will submit test certificate as required by technical specifications.7. Acceptance shall be based on visual inspection, and review of certificate of compliance or test certificate from the manufacturer on receipt at stores.8. MARKING <p>Sheets shall be marked with the following:</p>

- Manufacturer's name or trade mark
 - Date of manufacture
 - Grade
- 9.Tolerance on length shall be -10 mm and width - 3 mm.

TECHNICAL SPECIFICATIONS

1	MECHANICAL PROPERTIES		
(a)	Shore A Hardness	75±5	
(b)	Tensile strength (min)	120 Kg/cm ²	Tensile testing should be done as per ASTM D 412 test method A.
(c)	Elongation at break(%), Max	250	
2	DENSITY	1.2-1.4 gm/cc	The density should be measured at 250 deg C as per ASTM D 297.
3	Compression set (max)	35%	The compression set should be determined as per the test method B of ASTM D 395
4	BASE MATERIAL	CHLOROPRENE	
5	Deterioration in air oven (Heat ageing)		
(a)	Change in Tensile strength (max)	-15%	The test shall be carried out as per the standard ASTM D 573
(b)	Change in % elongation (max)	-40%	
(c)	Change in durometer hardness (max)	15 points	

	(d)	Change in compression set (max)	40%	
	6	Water absorption test		
	(a)	Change in hardness points	-15%	The test shall be carried out as per the standard ASTM D471
	(b)	% Change in tensile strength	-40%	
	(c)	% Change in elongation	15 points	
	7	Resistance to petrol and mineral oils	Good	
	8	Resistance to oxidising chemicals, acids	Moderate	
	9	Colour	Black (preferable)	

Schedule 3	
Material Code	M0519630602
Material Description	<p>SHEET/STRIP,PACKING TYPE :GASKET MATERIAL :NITRILE RUBBER THICKNESS :6 MM DIMENSION (L X WD) :1800 X 900 MM HARDNESS:70 SHORE A,TENSILE STRENGTH (IS 3400):12.5 N/MM2,MINELGATION AT BREAK (IS 3400):250 %,MIN COMPRESSION SET (IS 3400):20%,MAXAGEING IN OIL/INSULATING OIL IS 335 AT 100 DEG.C,FOR 168 HR SOIL ABSORPTION:10% MAX THICKNESS:4% LENGTH AND WIDTH:6%,FOR OIL RESISTANCE AS PER IS 3400"</p> <p>Additional Technical Specifications: <u>GENERAL SPECIFICATION FOR NITRILE GASKETS</u></p>

1. Receipt inspection at Store by the indenter.
2. Vendor to submit warranty/guarantee certificate against any manufacturing defects and bad workmanship.
3. Material to conform as per specification given.
4. Gasket should be transported in water proof packing , Preferably shall be kept in HDPE (high density poly Ethylene) bags.
5. Vendor should clearly mention expiry date of gaskets which should be minimum 2 years from date of receipt at NTPC stores.
6. Vendor will submit test certificate as required by technical specifications.
7. Acceptance shall be based on visual inspection, and review of certificate of compliance or test certificate from the manufacturer on receipt at stores.
8. MARKING
Sheets shall be marked with the following:
 - Manufacturer's name or trade mark
 - Date of manufacture
 - Grade
9. Tolerance on length shall be -10 mm and width - 3 mm.

TECHNICAL SPECIFICATIONS				
SL.NO.		UNIT	VALUE	TEST METHOD
A	MANDATORY			
1	Durometer hardness	Shore A	70-79	ASTM D 2240/ISO 2783
2	Compression set @ 25% deflection	%	20	ASTM D 395/ ISO 815
3	Variation of volume 71 hrs, 100 deg C	%	0 to +60	ASTM D 471
4	Base rubber	-	Nitrile rubber	ASTM D 3677

B	INFORMATIVE			
1	Specific gravity	-	1.3	ASTM D 297/ISO 2781
2	Tensile strength	Mpa	Min. 10	ASTM D 412/ ISO 37
3	Ultimate elongation	%	250	ASTM D412/ISO 37
4	Brittle point	°C	Max. -30	ISO 812
5	Change in properties after ageing in air, 70 hrs. 100°C Increase in hardness		Max 10	ASTM D 573/ISO 188
6	Reduction in Tensile strength		Max 20	
7	Reduction in elongation of		Max 35	
8	Change of hardness points during 70 hrs at 100°C	Shore A	-20 to 0	ASTM D2000
9	Resistance to ozone	-	Poor	
10	Resistance to petrol and mineral oils		Good	
11	Resistance to oxidising chemicals, acids		Moderate	
12	Colour	N.A.	Black	

Schedule 4

Material Code	M0531420409
Material Description	<p>GASKET,SHEET MATERIAL :CORK RUBBER MATERIAL SPEC :IS 4253 TYPE-C GRADE RC70C DIMENSION (L X W X THK) :900 X 900 X 4 MM</p> <p>Additional Technical Specifications: <u>GENERAL SPECIFICATION FOR CORK GASKETS</u></p> <ol style="list-style-type: none"> 1. Receipt inspection at Store by the indenter. 2. Vendor to submit warranty/guarantee certificate against any manufacturing defects and bad workmanship. 3. Material to conform as per specification given. 4. Gasket should be transported in water proof packing , Preferably shall be kept in HDPE (high density poly Ethylene) bags. 5. Vendor should clearly mention expiry date of gaskets which should be minimum 2 years from date of receipt at NTPC stores. 6. Vendor will submit test certificate as per IS 4253/Part-2/1980 along with gaskets 7. Acceptance shall be based on visual inspection, and review of certificate of compliance or test certificate from the manufacturer on receipt at stores. 8. MARKING Cork composition sheets shall be marked with the following: <ul style="list-style-type: none"> •Manufacturer's name or trade mark •Date of manufacture •Grade 9. Tolerance on length shall be -10 mm and width - 3 mm.

The characteristics of RC70C and their values are given below as given

Sl.No.	Characteristics	Value	Test Method
1	Hardness (IRHD)/ (Shore A)	70 ±5	IS 3400 (Part 2): 1995
2	Dimensional changes, percent, Max.	1.5	IS 4253 (Part 2): 2008
3	Tensile strength, kPaMin	1550	
4	Compressibility (%) (at 2800 kPa) percentage	25 -35	
5	Recovery, percent, Min	80	
6	Compression set, percent, Max.	85	
7	Chemical test on water extract (a) pH, where applicable (b) Chloride content (as chloride ion) (c) Sulphatecontent (as sulphate ion)	5.0 –8.5 0.2 percent, Max. 0.2 percent, Max.	
8	Volume change in transformer oil as per IEC 60296, 70h/ 100°C	Max. 8	

Schedule 5

Material Code	M0531420205
Material Description	" GASKET,SHEET MATERIAL :CORK RUBBER MATERIAL SPEC :IS 4253 PART-2 TYPE-C GRADE RC70C DIMENSION (L X W X THK) :900 X 900 X 2 MM" Additional Technical Specifications: <u>GENERAL SPECIFICATION FOR CORK GASKETS</u> 6. Receipt inspection at Store by the indenter. 7. Vendor to submit warranty/guarantee certificate against any manufacturing defects and bad workmanship. 8. Material to conform as per specification given. 9. Gasket should be transported in water proof packing , Preferably shall be kept in HDPE (high density poly Ethylene) bags. 10. Vendor should clearly mention expiry date of gaskets which should be minimum 2 years from date of receipt at NTPC stores. 6. Vendor will submit test certificate as per IS 4253/Part-2/1980 along with gaskets 7. Acceptance shall be based on visual inspection, and review of certificate of compliance or test certificate from the manufacturer on receipt at stores. 8. MARKING Cork composition sheets shall be marked with the following: •Manufacturer's name or trade mark •Date of manufacture

•Grade

9.Tolerance on length shall be -10 mm and width - 3 mm.

The characteristics of RC70C and their values are given below as given

Sl.No.	Characteristics	Value	Test Method
1	Hardness (IRHD)/ (Shore A)	70 ±5	IS 3400 (Part 2): 1995
2	Dimensional changes, percent, Max.	1.5	IS 4253 (Part 2): 2008
3	Tensile strength, kPaMin	1550	
4	Compressibility (%) (at 2800 kPa) percentage	25 -35	
5	Recovery, percent, Min	80	
6	Compression set, percent, Max.	85	
7	Chemical test on water extract (d) pH, where applicable (e) Chloride content (as chloride ion) (f) Sulphatecontent (as sulphate ion)	5.0 –8.5 0.2 percent, Max. 0.2 percent, Max.	
8	Volume change in transformer oil as per IEC 60296, 70h/ 100°C	Max. 8	