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(GOVERNMENT OF INDIA)

SPECIFICATION FOR PLEATED PAPER AIR
FILTER CARTRIDGE FOR COMPRESSED
AIR 'J' TYPE FILTERS.

MP.0-2600-06
(DECEMBER, 1987)

MINISTRY OF RAILWAYS
RESEARCH, DESIGNS AND STANDARDS ORGANISATION
LUCKNOW-226011.

SPECIFICATION FOR PLEATED PAPER AIR FILTER CARTRIDGE
FOR COMPRESSED AIR 'J' TYPE FILTERS.

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1. SCOPE.

- .1 This specification covers resin impregnated pleated paper type disposable air filter cartridge for compressed air 'j' type filters used on following types of diesel locomotives :-

Broad Gauge :- WDM-1, WDM-2, WDM-4, WDM-6,
WDM-7, WDS-4, WDS-5 and WDS-6.

Metre Gauge :- YDM-3, YDM-4/4A and YDM-5.
- .2 This specification supersedes R.D.S.O. Specification No.04.003 (1970).

2. CONSTRUCTIONAL FEATURES.

- .1 The finished filter cartridge shall conform to the dimensions and details given on drawing No. SKDP-827.
- .2 Structural strength of the filter cartridge shall be such that -
 - i) it does not get damaged in handling and transportation.
 - ii) it does not collapse in service.
 - iii) it prevents the air to by-pass the filter media.
- .3 The filter media shall be a highly refined corrugated filter paper which shall not become embrittled or get ruptured in use with air pressure upto 1 Kg/cm². It shall have good dust retention and moisture absorption properties.
- .4 The paper shall be adequately treated with synthetic resin and cured and shall have the physical properties as indicated in Annexure I.
- .5 The paper pleats shall be uniformly distributed around the centre tube and the ends fastened together by a tin clip joint as shown in the drawing.

- .6 The centre tube, outer wrapper and the end caps shall be made from steel sheet to IS:4030 Grade 'D'. The sheet thickness shall be minimum 0.4 mm, without plating, with minimum hardness of 140 VPN.
- .7 The metal centre tube shall have a minimum of 4 spot welds on the 6 mm lap joint. The centre tube shall be perforated by 12 rows of 6 mm dia holes at 8 mm pitch. The complete tube shall then be galvanised.
- .8 The outer wrapper shall have a minimum of 4 spot welds on the 6 mm lap joint. The perforations shall be provided by 10 rows of 6 mm holes at 8 mm pitch. The completed wrap shall then be galvanised.
- .9 The end caps shall be bonded to the cartridge with a suitable adhesive and be able to with-²stand the compressed air pressure of 10 Kg/cm².
- .10 A 10 mm thick compressed felt/wool/sponge rubber sealing gasket with inside dia 40 mm and outside dia 83 mm shall be fixed to each of the end caps with suitable adhesive.

3. PERFORMANCE REQUIREMENTS.

The finished filter cartridge shall provide efficient filtration for a minimum 60 days service on a locomotive and shall be unaffected by moisture. At the end of the 60 days service on a locomotive the cartridge should be mechanically strong and pleated paper element should not be ruptured.

4. INSPECTION.

- .1 The Inspecting Officer or the purchaser shall have free access to the works of manufacturer at all reasonable times. He shall be at liberty to inspect the manufacture at any stage and to reject any material that does not conform to the terms of this specification.
- .2 The filter cartridges offered for supply shall be subjected to a 1% check to test the various physical requirements of this specification and a minimum 1 in 500 check subject to a minimum of 1 per batch of manufacture in respect of properties of

paper media, filtration area and material specification of metal parts.

- .3 Samples for such testing and inspection shall be selected by the Inspecting Officer at random from the lot of filters offered.
- .4 Testing for properties of filter paper media and material specification of metallic parts shall be carried out in an independent test house at the cost of manufacturer.
- .5 The manufacturer shall at his own cost supply samples, labour and appliances and arrange for carrying out of such tests as may be necessary in accordance with this specification on his premises. Failing facilities at his own works for the making of these tests, the manufacturer shall bear the cost of carrying out the same elsewhere.
- .6 All filters constituting the lot rejected during inspection shall be suitably marked by the Inspecting Officer to prevent their being offered again to the Railways.

5. MARKING.

Manufacturers' name/trade marks, batch No., S.No., and month and year of manufacture shall be marked on end cap of the filter.

6. WARRANTY.

The supplier shall furnish a warranty bond ^{that} the service life of the filter shall not be less than 60 days. Failing which all the filter cartridges belonging to the particular batch shall be replaced free of cost.

7. PACKING.

Each filter element shall be placed in water proof poly-bag and then placed in a paper carton. The carton shall also indicate the marking as indicated above.

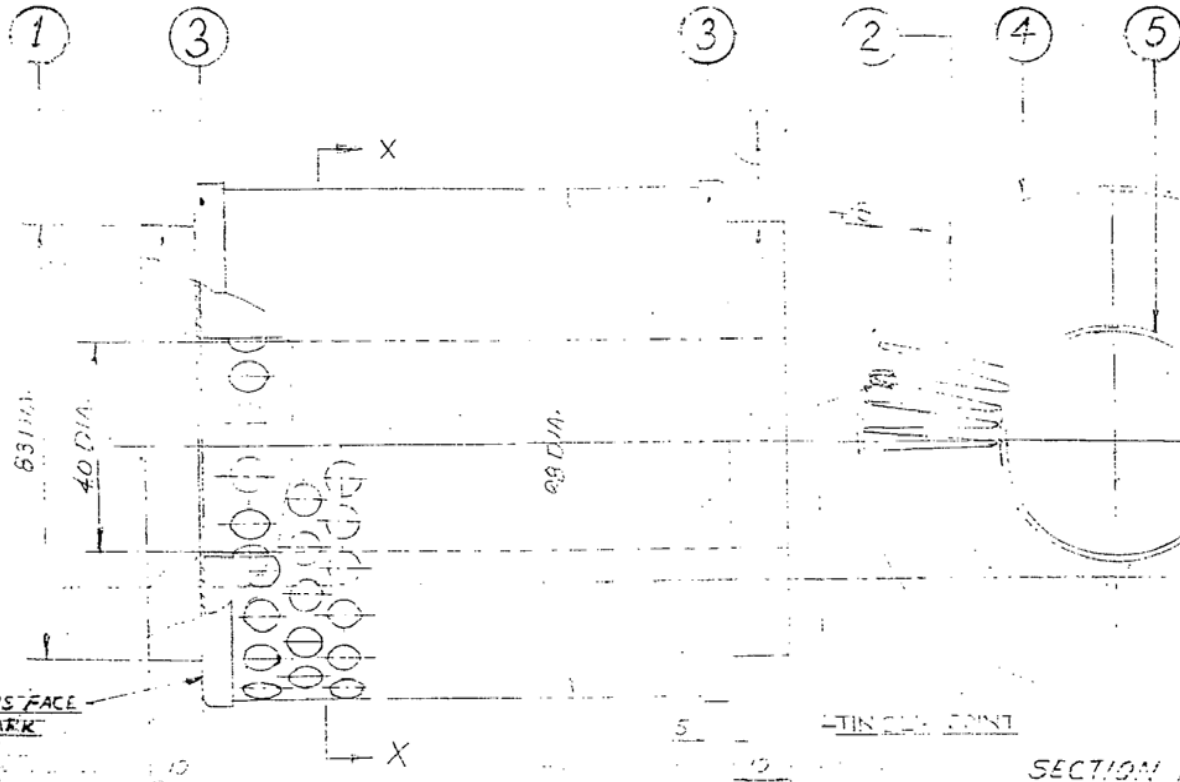
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ANNEXURE - I.

PHYSICAL PROPERTIES OF FILTER PAPER FOR 'J' TYPE FILTERS.

	<u>Uncured</u>	<u>Cured</u>
1. Basis Weight.	160 - 185 gm/m ²	130 - 150 gm/m ²
2. Thickness.	0.40 - 0.65 mm	-
3. Compaction Depth.	0.2 - 0.35 "	-
4. Tensile Strength. (Machine Direction)	7.0 - 7.5 Kg/15 mm	-
5. Tensile Strength. (Across Machine)	2.7 - 3.5 " "	-
6. Percentage Stretch.	2.5% Min.	-
7. Solid Contents.	18.5 - 21.5%	-
8. Volatiles.	4 - 6%	-
9. Bursting Strength.	-	1.5 - 2.0 Kg/Cm ²
10. Average Mean Pore Size.	-	10 ± 2 Microns.
11. Maximum Pore Size.	-	55 ± 5 "
12. Total Surface Area.	-	0.3 m ²

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PLEATED PAPER

AREA : 0.3 Sq. m
 NO OF PLEATES : 64 ± 1
 PLEAT DEPTH : 26 mm

LAP JOINTS TO BE SPOT WELDED AT 4 PLACES

PUNCH/ENGRAVE ON THIS FACE
 MFR'S NAME / TRADE MARK
 BATCH NO.
 MONTH/YEAR OF MFR:

TIN CAP POINT

SECTION X-X

MP NO. 3/188 DT. 13.11.91

NOTE:

- 1) FOR MORE DETAILS, SEE RDSO SPEC. NO. MP.C-2800-06.
- 2) INNER TUBE SHALL HAVE 12 ROWS OF PERFORATIONS OF 6mm DIA. AT 8mm PITCH.
- 3) OUTER WRAPPER SHALL HAVE 10 ROWS OF PERFORATIONS OF 6mm DIA. AT 8mm PITCH.
- 4) ITEM 3, 4 & 5 TO BE TINZING/CADMIUM PLATED.
- 5) STEEL SHEET IS: 513-0 USED FOR INNER TUBE SHALL BE OF "EMPER 2 (HALF HARD)

REF NO.	I.R. PART NO.	DESCRIPTION	NO. OFF	MATL & SPEC.
5		INNER TUBE	1	STEEL IS: 513-0 0.4 THICK MIN.
4		OUTER WRAPPER	1	STEEL IS: 513-0 0.4 THICK MIN.
3		END CAP	2	
2		PLEATED PAPER	1	SEE SPEC.
1		SEALING RING	2	FELT/SPONGE/RUBBER
REF. NO. I.R. PART NO. DESCRIPTION NO. OFF. MATL & SPEC.				
APPLICABLE FOR BG & MG DIESEL 'LOCOS'				
PLEATED PAPER FILTER ELEMENT FOR J TYPE AIR FILTER				
SCALE		REF	FIRST ISSUED	
3				
2				
MATERIAL SPEC. REVISED		13-254	3-88	
DRG REVISED & REDRAWN		10-87		
DESCRIPTION		INDIAN RLYS R.D.S.O.(MP)	DRG NO. SK DP-827	SUPERSEDES SUPERSEDED

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