

TECHNICAL SPECIFICATIONS OF WASHABLE FILTER

1.0 SCOPE:

The scope of this specification covers design, manufacture, testing at works, inspection, packing and safe delivery to the BARC Trombay (Maharashtra) site as per the specifications given below:

2.0 SPECIFIC RATING & PERFORMANCE:

2.1	Air flow	1700 CMH
2.2	Quantity	250 nos.
2.3	Pressure Drop	Initial pressure drop not more than 6 mm of WG at rated capacity
2.4	Face velocity	76m/min.
2.5	Efficiency	Not less than 95% for particles down to 10 microns as measured by Standard testing method at rated airflow (1700 CMH) as per BIS 7613 fine dust (test result by particle size distribution. SAE fine dust manufactured by Automotive Research Association India Government of India, Pune
2.6	Dust holding capacity	Not less than 800 grams. at 800 cfm capacity and 3 times initial pressure drop.
2.7	Humidity resistance	100% RH.
2.8	Temperature resistance	Up to 120-degree C
2.9	Overall Dimensions	609mm x 609mm x 300mm including folded face of 19 mm on which the gasket of 19 mm width and 6 mm thick to be pasted on folded face of filter frame. Over all filter media size shall be more than (575 mm x 575 mm x 298 mm.).

3.0 PRE- ELIGIBILITY CRITERIA:

- Bidder shall be manufacturer of pre filters and shall have testing rig at manufacturer site. Supporting documents shall be attached.
- The bidder should have supplied similar filters to any PSU or DAE units. PO copies shall be attached.
- The details of filter testing facilities & a sample filter; **Sample filter stands for a complete manufactured Filter as per Technical specification mentioned below. Test report of the sample filter shall be furnished with quotation. The sample should accompany the quotation.** The supplier shall also forward complete design of construction of filter frame, separator, adhesives/sealants, gaskets etc., Schematic diagram and photographs of Test Rig shall also be provided.
- **Note: Failing to meet above criteria, offer will not be considered.**

3.0 MATERIAL OF CONSTRUCTION

3.1 **Pleated Filter Media:**

High density polyethylene cloth of 4 layer (4 ply), first layer consists of course fabric, second layer consist of 4 mm thick diamond shape HDPE for better dust holding capacity, Third and Fourth layer consist of Fine and Very fine layer of HDPE to retain arrested dust. Epoxy painted CI Square wire mesh should be provided on both the faces of the filters as protective Guard. Minimum number of folds shall be 12 at upstream and 11 at downstream.

3.2 **Filter Casing:**

G.I. of 18 SWG, (G.I. shall be of reputed make or approved by B.A.R.C.) with one coat of epoxy primer and two coats of chemical resistant epoxy paint on all exposed surfaces.

3.3 Media support: The filter media assembly shall be supported by Aluminum expanded metal wire mesh of wire diameter 30 swg. Long way of diamond opening (LWO) to be 0.2 inch & Short way of diamond opening (SWO) to be 0.2 inch. Approx. The support shall be provided at both side.

3.4 Face Guard: Epoxy painted CI Square wire mesh (20 mm X 20 mm) should be provided on both the faces of the filters as protective Guard.

3.5 Sealing:

Sealant used for sealing the filter pack with filter frame shall be oil resistant and shall be adequate to meet temperature and humidity conditions specified, when set. The set sealant shall not show cracks or tendency to peel off from the filter frame. Each fold of media should be sealed with casing by Fevicol or similar adhesive.

3.6 Gasket:

Soft, impermeable, closed pore neoprene rubber gaskets with shore 'A' hardness less than 5 and shall be of size 19mm width and 6mm thick The gasket shall be a single piece or with dovetail joints at four corners. Gasket shall be provided on DOWN-STREAM SIDE of filter frame only.

4.0 FILTER ASSEMBLY:

4.1 The filter medium shall not have splices and shall not be spot patched to repair holes or cracks.

4.2 The filter pack shall consist of minimum 12 nos. of pleats.

4.3 The 4mm separator rods shall be 6 nos. on upstream side and 5 nos. at downstream side. The separator rods shall be fixed 12 mm away from the edges of the filter frame. The separators and the plates shall be straight.

4.4 The filters shall have adequate corner strength to avoid racking or skewing during handling, transportation and installation.

4.5 The sealant shall be uniformly applied and the sealant shall be perfectly dry and set.

4.6 The gasket shall be firmly pasted onto the faces of the filters with suitable adhesive and dovetail joints, if any, shall be without any gap. (The gasket shall be pasted on the downstream side.)

4.7 The topside of the filter shall be marked with airflow direction.

4.8 The protective color shall be of reputed make or approved by B.A.R.C.

5.0 ASSEMBLY TOLERANCES

5.1 Face dimensions : + 0mm, -3mm

5.2 Depth : +1.5mm, -0mm

5.3 Square ness : Face diagonals shall be equal within 3mm.

6.0 TESTING:

Each filter shall be checked for its dimensions and overall finish. The whole lot shall be rejected in event of random samples getting rejected. The maximum nos. of such filters to be tested will be limited to Five (05) out of fifty (50). Randomly selected samples from the lot shall be evaluated for their initial pressure drop at the rated flow of 1700 SCM/H and one filter will be tested to check dust holding capacity of the filter at 3 times the initial pressure drop. Evaluation of sample filters for its number count efficiency as specified. Testing documents need to be submitted at the time supply.

7.0 PACKING:

The individual filter shall be packed in polyethylene bag and then into a rigid cardboard carton. The filter shall be placed in the carton in such a way that filter pleats are vertical when the carton is in the normal shipping orientation with appropriate markings onto the carton. Weight of every filter and flow direction shall be marked.

8.0 DELIVERY:

The supplier shall be fully responsible for the delivery of the filters in our stores with no physical damage either to the carton or to the filter. Any damage of material during handling

and transportation will be supplier's responsibility and they shall be replaced at free of cost within one month.

Delivery Period: 03 calendar months

9.0 OFFER:

The details of filter testing facilities & constructional detail of filter shall be enclosed with the offer. The supplier shall also forward complete design and construction details and materials of construction as filter frame, separator, and adhesive/sealant etc. The supplier has to submit the fabrication drawing for the approval to BARC within 1 week (One Week) after the issue of purchase order.

10.0 ACCEPTANCE & REJECTION CRITERIA:

The offer from the vendor will be only accepted that will fall within the allowable and acceptable deviation mention in Technical Specification. In case of, Deviation beyond the above mentioned parts the decision of Engineer In-Charge will be final. Testing documents and final fabrication drawing need to be submitted at the time supply by the firm.

DETAILS FILLED BY THE VENDOR

THE OFFER SHALL INCLUDE THE FOLLOWING DETAILS:

- MATERILS OF CONSTRUCTION
- ALL DIMENSIONS
- FILTER FABRICATION DRAWING
- THICKNESS INCLUDING MEDIA
- NUMBER OF PLY
- PROPERTIES OF MEDIA
- SPACERS AND SEPARATION USED AND THEIR SIZES
- OVERALL WEIGHT
- SURFACE AREA OF MEDIA USED
- NO OF FOLDS USED
- AIR FLOW RESISTANCE
- AIR FLOW CHARACTERISTICS
- DUST LOADING CHARACTERISTICS AGAINST FLOW
- SAMPLE FILTER
- COST BREAK UP FOR DESIGEN, MANUFACTURING, TESTING, DESPATCH, PACKING AND SUPPLY.

THE PROFORMA CONTAINING FOLLOWING DETAILS SHALL BE FILLED.

- CAPACITY
- OVERALL DIMENSIONS
- INITIAL PRESSURE DROP
- MATERIAL OF CONSTRUCTION
- FILTER FRAMETHICKNESS
- FILTER MEDIA
- BASIC WEIGHT
- NUMBER OF PLATE
- WIREMESH SUPPORT MATERIAL
- MESH SIZE
- SIZE OF GAUGE
- AIR FLOW RESISTANCE INITIAL
- IGNITION LOSS
- WEIGHT OF FILTERS
- LIST OF MANUFACTURING FACILITIES
- MANUFACTURING CENTRE
- TESTING FACILITIES
- TECH AND SKILLED MANPOWER
- CAPABILITY OF LARGE SIZE ORDER
- FILTERS ASSEMBLY
- WEIGHT TOTAL IN KG
- WEIGHT OF THE FRAME
- WEIGHT OF FILTER MEDIA
- AREA OF FILTER MEDIA IN SQ MT
- THICKNESS OF MEDIA
- THICKNESS OF SEPARATORS AND SPACERS
- NUMBER OF FOLDS
- DENDSITY OF MEDIA IN GM/SQ MT
- CHARTS SHOWING FLOW CHARACTERISTICS
- VALIDITY
- PAYMENT
- DELIVERY