



 **BINA EPC Contractor Co.**
(Executor of Oil, Gas, Petrochemical & Power Industries)

Toase-ehe Park Sanati Gohar Ofogh Petrochemical Co.

**CONCEPTUAL, BASIC and DETAIL DESIGN
ENGINEERING OF STYRENE PARK OFFSITE**

Document Title: Equipment Data Sheet-Active Carbon Filter

Document No. : EI0127-HRC-VD-ME-DSH-001-R0

ENBR
TEKNOLOJI



Rev.: R0

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STYRENE PARK OFFSITE

Document Title:

Equipment Data Sheet-Active Carbon Filter

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R0	20/02/2024	Issued for Comment	M.Tavakoli	E.Malek	H.Keshmiri



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	R0	R1	R2	R3	R4	R5	R6
1	X						
2	X						
3	X						
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General

1	Items	QTY	Active Carbon Filter	2
2	Tags		PK0001-F1 , PK0002-F1	
3	Service		VOC abatement from styrene storage tank effluent	

Process Data

Item	Description	Unit	Value	Rev.
4	Max. Ambient Design Temperature.	°C	85	
5	Expected Extreme Temperature	°C	52	
6	Min. Ambient Temperature	°C	5	
7	Max. Relative Humidity	%	80	
8	Min. Relative Humidity	%	65	

Process Data

Item	Description	Unit	Value	Rev.
9	Type of Fluid		Styrene (3.5 g/Nm ³)	
10	Flow Rate (Nor/Max)	Nm ³ /hr	1080 / 1188 (Note 1)	
11	Working Temperature (Min/Max)	°C	5 / 52	
12	Working Pressure	barg	max 0.07	
13	Design Temperature	°C	85	
14	Design Pressure		-0.1 ~ 0.2	
15	Viscosity (Min./Max)		0.018 / 0.020	
16	Density (Min./Max)		1.107 / 1.295	
17	Styrene Inlet concentration		3.5 g/Nm ³	
18	Styrene Outlet concentration		< 50 mg/Nm ³	
19	Dirty / Clean pressure drop		0.03 / 0.02	
19	Insulation		No	

Operating/
Design
Noted

To be revised according to
the project PFD
Noted

Normal,max operating and max at
upset condition shall be reported
Noted

To be revised based on the "Process Duty
Specification For Activated Carbon
Package" document
this pressure design has been determined
according to this process is intermittent and
the change of temperature in different times
and seasons

To be revised
based on the
project PFD
According to
physical properties
the density of air is
1.19 kg/m³ in this
condition

Mechanical Data

Item	Description	Unit	Value	Rev.
20	Shell Inside Diameter	mm	2100	
21	Shell Length (T.L. / T.L.)	mm	5300	
22	Thickness (SHELL / HEAD)	mm	8 / 4.8 Min. A.F.	
23	Corrosion allowance	mm	3.0	
24	Radiography (SHELL / HEAD)		85 / 85	
25	MDMT (Required)	°C	-5	
26	Hydrostatic Test Pressure	barg	Hold	
27	PWHT	-	No	
28	Impact test	-	No	
31	Activated Carbon Bed Height	m	4.5	
32	Painting		Acco. To Painting Spec.	
33	Empty Weight	Kg	~ 4800	
34	Operating Weight	Kg	~ 12350	

This item shall be specified
Noted



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Material

Item	Description	Value	Rev.
1	Shell & Head	SA 516 Gr.70	
2	Fittings	SA 234 GR.WPB	
3	Reinforcing Pad	SA 516 Gr.70	
4	Leg	SA 36	
5	Nozzle Neck	SA 106 Gr. B	
6	Forgings (including Flanges, etc)	SA 105	
7	Gasket	Spiral Wound (S.S.304/ Graphite)	
8	Media	Activated Carbon	
9	Removable / Welded Internals	SS304 / CS	
10	Stud Bolt & Nut (External)	SA 193 Gr.B7 & SA 194 Gr.2H	
11	Stud Bolt & Nut (Internal)	SA 193 Gr.B8 & SA 194 Gr.8	

Media

Item	Description	Value	Rev.
12	Type	Bed	
13	Material	Activated Carbon (Note 2)	
14	Shape Type / Dimension	Extrude / 5 mm dia.	
15	Media bulk density	450 kg/m3	
16	Bed Volume	15.6 m3	
17	Media Replacing Time	One year	

This item has discrepancy with the P&ID Material for Media



Nozzels

Item	Description	QTY	Size	Type	Rating	Face	SCH	Rev.
18	Vent	1	2"	S.O.	150	R.F.	Hold	
19	Drain	1	3"	S.O.	150	R.F.	Hold	
20	Gas inlet	1	6"	S.O.	150	R.F.	Hold	
21	Gas outlet	1	6"	S.O.	150	R.F.	Hold	
22	Utility Connection	1	2"	S.O.	150	R.F.	Hold	
23	MW	2	24"	S.O.	150	R.F.	Hold	

24"



Accessories

Item	Description	Rev.
24	<input checked="" type="checkbox"/> Nameplate	
25	<input checked="" type="checkbox"/> Lifting Lug	
26	<input checked="" type="checkbox"/> Earth Lug	
27	<input checked="" type="checkbox"/> Ladder and Platform	
28	<input checked="" type="checkbox"/> Internals (Inlet distributor, bed supports)	
29	<input checked="" type="checkbox"/> Davit for manhole	

Kindly check the comment for this item on the P&ID Noted

Notes

- 1- Feed stream is intermittent at loading time of upstream styrene storage tank.
- 2- Non-regenerable Carbon Active.