



Toase-eh Park Sanati Gohar Ofoh Petrochemical Co.

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



Document Title: Equipment Data Sheet-Active Carbon Filter

Document No. : EI027-ENR-VD-ME-DSH-001

Rev.: R1

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STYRENE PARK OFFSITE

Document Title:

Equipment Data Sheet-Active Carbon Filter

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R1	07/04/2024	Issued for Comment	M.Tavakoli	E.Malek	H.Keshmiri
R0	20/02/2024	Issued for Comment	M.Tavakoli	E.Malek	H.Keshmiri



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Page	Revisions							Page	Revisions						
	R0	R1	R2	R3	R4	R5	R6		R0	R1	R2	R3	R4	R5	R6
1	X	X						41							
2	X	X						42							
3	X	X						43							
4	X	X						44							
5								45							
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General

1	Items	QTY	Active Carbon Filter	2
2	Tags		PK0002-A/B	
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		Air+Styrene (3.5 g/Nm3)	
10	Flow Rate (Operating/Design)	Nm3/hr	1080 / 1188 (Note 1)	
11	Working Temperature	°C	31	1
12	Working Pressure (norm / max operating / max in case of upset)	barg	Atm / 0.07 / 0.1	1
13	Design Temperature	°C	85	
14	Design Pressure	barg	-0.1 ~ 0.2	
15	Viscosity	cP	0.02	1
16	Density	Kg/m3	1.19	1
17	Styrene Inlet concentration		3.5 g/Nm3	
18	Styrene Outlet concentration		< 50 mg/Nm3	
19	Max pressure drop	bar	0.02	1
19	Insulation		No	

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 / 5.5 (Min. A.F.)	1
23	Corrosion allowance	mm	3.0	
24	Radiography (SHELL / HEAD)	%	85 / 85	
25	MDMT (Required / Calculated)	°C	-5 / -37	1
26	MAWP	barg	2.792	1
27	Hydrostatic Test Pressure	barg	3.629 (Hor.)	1
28	PWHT	-	No	
29	Impact test	-	No	
30	Activated Carbon Bed Height	m	4.5	
31	Painting		Acco. To Painting Spec.	
32	Fabricated Weight	Kg	4880	1
33	Operating Weight	Kg	13190	1
34	Shop Weight	Kg	26000	1
35	Ladder and Platform Weight	Kg	8290	1



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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 and Pipe	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	S.S.304 / C.S.	
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	Media Type	Bed	
13	Media 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	

Nozzels

Item	Description	QTY	Size	Type	Rating	Face	SCH / THK (mm)	Rev.
18	N1 Gas inlet	1	6"	S.O.	150	R.F.	80 / -	1
18	N2 PG	1	1"	THRD.	6000	-	- / -	1
19	N3 Vent	1	2"	S.O.	150	R.F.	160 / -	1
20	N4 Gas outlet	1	6"	S.O.	150	R.F.	STD / -	1
21	N5 Utility Connection	1	2"	S.O.	150	R.F.	160 / -	1
22	N6 Drain	1	3"	S.O.	150	R.F.	80 / -	1
23	MW	2	24"	S.O.	150	R.F.	- / 8	1

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 distributer, bed supports)	
29	<input checked="" type="checkbox"/> Davit for manhole	

Notes

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