



Toase-eh 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. : EI027-ENR-VD-ME-DSH-001

Rev.: R2

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# STYRENE PARK OFFSITE

**Document Title:**

**Equipment Data Sheet-Active Carbon Filter**

R2	13/04/2024	Issued for Comment	M.Tavakoli	E.Malek	H.Keshmiri
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
<b>Rev.</b>	<b>Issued Date</b>	<b>DESCRIPTION</b>	<b>PREPARED</b>	<b>CHECKED</b>	<b>APPROVED</b>



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	R0	R1	R2	R3	R4	R5	R6
1	X	X	X				
2	X	X	X				
3	X	X	X				
4	X	X	X				
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<b>General</b>					
1	Items	QTY	Active Carbon Filter	2	
2	Tags	PK0002-A/B			
3	Service	VOC abatement from styrene storage tank effluent			
<b>Process Data</b>					
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		
<b>Process Data</b>					
Item	Description	Unit	Value	Rev.	
9	Type of Fluid		Air+Styrene (3.5 g/Nm <sup>3</sup> )		
10	Flow Rate (Operating/Design)	Nm <sup>3</sup> /hr	1080 / 1188 (Note 1)		
11	Working Temperature	°C	31		
12	Working Pressure (norm / max operating / max in case of upset)	barg	Atm / 0.07 / 0.1		
13	Design Temperature	°C	85		
14	Design Pressure	barg	-0.1 ~ 0.2		
15	Viscosity	cP	0.02		
16	Density	Kg/m <sup>3</sup>	1.19		
17	Styrene Inlet concentration		3.5 g/Nm <sup>3</sup>		
18	Styrene Outlet concentration		< 50 mg/Nm <sup>3</sup>		
19	Max pressure drop	bar	0.07	2	
20	Insulation		No		
<b>Mechanical Data</b>					
Item	Description	Unit	Value	Rev.	
21	Shell Inside Diameter	mm	2100		
22	Shell Length (T.L. / T.L.)	mm	5300		
23	Thickness (SHELL / HEAD)	mm	8 / 5.5 (Min. A.F.)		
24	Corrosion allowance	mm	3.0		
25	Radiography (SHELL / HEAD)		Spot / Spot	2	
26	Joint Efficiency (SHELL / HEAD)	%	85 / 85	2	
27	MDMT (Required / Calculated)	°C	-5 / -37		
28	MAWP	barg	2.792		
29	Hydrostatic Test Pressure	barg	3.63 (Hor.)		
30	PWHT	-	No		
31	Impact test	-	No		
32	Activated Carbon Bed Height	m	4.5		
33	Painting		Acco. To Painting Spec.		
34	Fabricated Weight	Kg	4811	2	
35	Operating Weight	Kg	12968	2	
36	Shop Test Weight	Kg	25929	2	
37	Ladder and Platform Weight	Kg	1118	2	



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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.
12	N1 Gas inlet	1	6"	S.O.	150	R.F.	80 / -	
13	N2 PG	1	1"	THRD.	6000	-	- / -	
14	N3 Vent	1	2"	S.O.	150	R.F.	160 / -	
15	N4 Gas outlet	1	6"	S.O.	150	R.F.	STD / -	
16	N5 Utility Connection	1	2"	S.O.	150	R.F.	160 / -	
17	N6 Drain	1	3"	S.O.	150	R.F.	80 / -	
18	MW	2	24"	S.O.	150	R.F.	- / 8	

**Accessories**

Item	Description	Rev.
19	<input checked="" type="checkbox"/> Nameplate	
20	<input checked="" type="checkbox"/> Lifting Lug	
21	<input checked="" type="checkbox"/> Earth Lug	
22	<input checked="" type="checkbox"/> Ladder and Platform	
23	<input checked="" type="checkbox"/> Internals (Inlet distributor, bed supports)	
24	<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.