STYRENE PARK OFFSITE

Document Title:

Equipment Data Sheet-Active Carbon Filter

There is no process comment

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
Rev.	**Issued Date**	**DESCRIPTION**	**PREPARED**	**CHECKED**	**APPROVED**

Page	Revisions						
	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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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	
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/m3	1.19	
17	Styrene Inlet concentration		3.5 g/Nm3	
18	Styrene Outlet concentration		< 50 mg/Nm3	
19	Max pressure drop	bar	0.07	2
20	Insulation		No	

Mechanical Data				
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

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	☑ Nameplate	
20	☑ Lifting Lug	
21	☑ Earth Lug	
22	☑ Ladder and Platform	
23	☑ Internals (Inlet distributer, bed supports)	
24	☑ Davit for manhole	

Notes

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