



Plant CAUSTIC SODA	Client Punjab Alkali	Contract Code PACL	Document Number 0215-PRC-05-EC-0003	Contract No. 66-0215	
	Technical Specification for Filter Media for Anthracite Filters				
	Rev	00	Page	1	of

<p>tkIS India / Vendor</p> <p>Category Codes (Submission Purpose)</p> <table style="width: 100%;"> <tr><td><input type="checkbox"/></td><td>1</td><td>For Approval</td></tr> <tr><td><input type="checkbox"/></td><td>2</td><td>For Review / Comments</td></tr> <tr><td><input type="checkbox"/></td><td>3</td><td>For Information</td></tr> <tr><td><input type="checkbox"/></td><td>4</td><td>For Engineering</td></tr> <tr><td><input type="checkbox"/></td><td>5</td><td>For Enquiry</td></tr> <tr><td><input type="checkbox"/></td><td>6</td><td>For Order Placement</td></tr> <tr><td><input type="checkbox"/></td><td>7</td><td>Final & Approved</td></tr> <tr><td><input type="checkbox"/></td><td>8</td><td>Released for Construction</td></tr> </table> <hr/> <p>Acceptance Codes (Approval Codes)</p> <table style="width: 100%;"> <tr><td><input type="checkbox"/></td><td>1</td><td>Approved</td></tr> <tr><td><input type="checkbox"/></td><td>2</td><td>Approved for Manufacturing / Fabrication with Comments as marked</td></tr> <tr><td><input type="checkbox"/></td><td>3</td><td>Not Approved / Resubmit</td></tr> <tr><td><input type="checkbox"/></td><td>4</td><td>Retained for Information / Records</td></tr> <tr><td><input type="checkbox"/></td><td>5</td><td>Reviewed</td></tr> <tr><td><input type="checkbox"/></td><td>6</td><td>Reviewed as Noted / Resubmit</td></tr> </table> <p>Remarks for AC2 : This marked-up drawings is hereby approved for fabrication / manufacturing and shall be re-submitted after revision. This drawing should be revised only to the extent of tkIS India / Owner / Client comments. Any other changes made by you will not be considered unless clearly highlighted in covering letter asking for approval.</p> <p>This approval / review does not absolve the supplier from the full responsibility for design and fabrication.</p> <p>Date : ___/___/___ Name : _____</p>	<input type="checkbox"/>	1	For Approval	<input type="checkbox"/>	2	For Review / Comments	<input type="checkbox"/>	3	For Information	<input type="checkbox"/>	4	For Engineering	<input type="checkbox"/>	5	For Enquiry	<input type="checkbox"/>	6	For Order Placement	<input type="checkbox"/>	7	Final & Approved	<input type="checkbox"/>	8	Released for Construction	<input type="checkbox"/>	1	Approved	<input type="checkbox"/>	2	Approved for Manufacturing / Fabrication with Comments as marked	<input type="checkbox"/>	3	Not Approved / Resubmit	<input type="checkbox"/>	4	Retained for Information / Records	<input type="checkbox"/>	5	Reviewed	<input type="checkbox"/>	6	Reviewed as Noted / Resubmit	<p>tkIS India / Owner / Client</p> <p>Category Codes (Submission Purpose)</p> <table style="width: 100%;"> <tr><td><input type="checkbox"/></td><td>1</td><td>For Approval</td></tr> <tr><td><input type="checkbox"/></td><td>2</td><td>For Review / Comments</td></tr> <tr><td><input type="checkbox"/></td><td>3</td><td>For Information</td></tr> <tr><td><input type="checkbox"/></td><td>4</td><td>For Engineering</td></tr> <tr><td><input checked="" type="checkbox"/></td><td>5</td><td>For Enquiry</td></tr> <tr><td><input type="checkbox"/></td><td>6</td><td>For Order Placement</td></tr> <tr><td><input type="checkbox"/></td><td>7</td><td>Final & Approved</td></tr> <tr><td><input type="checkbox"/></td><td>8</td><td>Released for Construction</td></tr> </table> <hr/> <p>Acceptance Codes (Approval Codes)</p> <table style="width: 100%;"> <tr><td><input type="checkbox"/></td><td>1</td><td>Approved</td></tr> <tr><td><input type="checkbox"/></td><td>2</td><td>Approved for Manufacturing / Fabrication with Comments as marked</td></tr> <tr><td><input type="checkbox"/></td><td>3</td><td>Not Approved / Resubmit</td></tr> <tr><td><input type="checkbox"/></td><td>4</td><td>Retained for Information / Records</td></tr> <tr><td><input type="checkbox"/></td><td>5</td><td>Reviewed</td></tr> <tr><td><input type="checkbox"/></td><td>6</td><td>Reviewed as Noted / Resubmit</td></tr> </table> <p>Date : ___/___/___ Name : _____</p>	<input type="checkbox"/>	1	For Approval	<input type="checkbox"/>	2	For Review / Comments	<input type="checkbox"/>	3	For Information	<input type="checkbox"/>	4	For Engineering	<input checked="" type="checkbox"/>	5	For Enquiry	<input type="checkbox"/>	6	For Order Placement	<input type="checkbox"/>	7	Final & Approved	<input type="checkbox"/>	8	Released for Construction	<input type="checkbox"/>	1	Approved	<input type="checkbox"/>	2	Approved for Manufacturing / Fabrication with Comments as marked	<input type="checkbox"/>	3	Not Approved / Resubmit	<input type="checkbox"/>	4	Retained for Information / Records	<input type="checkbox"/>	5	Reviewed	<input type="checkbox"/>	6	Reviewed as Noted / Resubmit
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Rev.	Status	Description	Date	Prepared	Date	Checked	Date	Approved	AC
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Plant

CAUSTIC SODA

Client

Punjab Alkali



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Technical specifications

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FILTER MEDIA FOR ANTHRACITE FILTERS

Item 05F01FN/GN-Z01

Rev. 00

DOC. NO. 0215-PRC-05-EC-0003

S.N

Rev

1.0 GENERAL

1
2
3 Designation : Filter Media for Anthracite Filters
4

5 Plant location : Naya Nangal, Punjab
6

7 Item No. : 05F01FN/GN-Z01
8

9 Manufacturer : *
10

11 Quotation No. : *
12

13 Date : *
14

15 LOI No. : *
16

17 Date : *
18

19 PO No. : *
20

21 Date : *
22
23

2.0 SERVICE

24
25
26 2.1 Filtration of precipitated and clarified NaCl - brine in anthracite.
27

28 2.2 No. of filters in operation : 2
29

30 2.3 No. of filters in stand by : 0
31

32 2.4 Diameter of filter vessel : 3.0 m
33

34 2.5 Total height of filter vessel : 2.4 m
35
36

3.0 OPERATING CONDITIONS

37
38
39 3.1 Temperature
40

41 3.1.1 Operating : 50 - 70 °C
42

43 3.1.2 Design : 85 °C
44

45 3.2 Pressure
46

47 3.2.1 Operating : 3.5 kg/cm² g
48

49 3.2.2 Design : 7.0 kg/cm² g
50

51 3.3 Density : 1184 kg / m³
52

53 3.4 Flow rate : 31 m³/h per filter
54

55 3.5 pH : 10 -11
56

57 3.6 Viscosity : 0.85 cP @ 60°C
58

Note:

59 Data marked ' * ' to be filled and/or confirmed by vendor
60
61



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4.0 COMPOSITION OF INLET BRINE

3.1 FLUID : NaCl brine with the following inlet composition:

		Unit	Value
3.1.1	NaCl	gpl	300 - 310
3.1.2	NaClO ₃	gpl	< 10
3.1.3	Na ₂ SO ₄	gpl	< 12 (Normal 6-10)
3.1.4	NaOH	mgpl	≈ 200
3.1.5	Na ₂ CO ₃	mgpl	≈ 400
3.1.6	Active Cl ₂	ppm w/w	20 (normally NIL)
3.1.7	Suspended solids	ppm	≤ 100, normally ≤ 50
3.1.8	CaCO ₃	ppm	≤ 10
3.1.9	Mg(OH) ₂	ppm	≤ 40
3.1.10	Others (Flocculating Agents)	ppm	max. ≤ 3

5.0 SPECIFICATION OF OUTLET BRINE

5.1 DISSOLVED COMPONENTS: Same as Inlet

5.2	Suspended Solids	ppm	≤ 5
5.3	Maximum Pressure Drop	kg/cm ²	1.0
5.4	Normal Pressure Drop	kg/cm ²	*

6.0 FILTER MEDIA

6.1	Material	:	Anthracite	
6.2	True density	:	*	gm / cc
6.3	Bulk Density	:	*	gm / cc
6.4	SiO ₂	:	*	% by wt.
6.5	Al ₂ O ₃	:	*	% by wt.
6.6	Carbon	:	*	% by wt.
6.7	Carbon	:	*	% by wt.
6.8	Porosity	:	*	%
6.9	Ash content @ 800°C	:	*	% by wt.
6.10	Bed expansion @ Backwash Vel. of 20 m ³ /m ² h	:	*	m
6.11	Heavy Metals	:	*	% by wt.

} No leaching out of impurities like SiO₂, Al, etc. at pH 11

Note:

Data marked '*' to be filled and/or confirmed by vendor



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7.0 QUANTITY & SIZE OF FILTER MEDIA

Description	Size (mm)	Bed ht (mm)	Quantity/filter (m ³)	Total vol. reqd. including spares for each the filter (m ³)	Total Quantity for 2 filters (m ³)	Minimum order quantity (m ³)
Anthracite	0.6 - 1.6	600	4.25	5.6	11.28	12.0
Anthracite	1.4 - 2.5	75	0.53	0.70	1.41	2.0
Anthracite	2.0 - 4.0	75	0.53	0.70	1.41	2.0
Anthracite	4.0 - 8.0	75	0.53	0.70	1.41	2.0
Anthracite	12.0 - 22.0	700	3.20	4.25	8.50	9.0
Total		1525	9.04	12.00	24.00	27.0

8.0 SCOPE OF SUPPLY AND SERVICE

- 8.1 Vendor to supply anthracite as per specification in clause 6 and quantity in clause 7 to meet the performance as given in clauses 3, 4 & 5.
- 8.2 Vendor to provide technical details regarding storage, handling, charging, backwashing etc.of the anthracite and supervision of charging & commissioning.
- 8.3 Vendor to indicate delivery period: * weeks from LOI.
- 8.4 Vendor to demonstrate performance test at site for continuous 72 hrs after stabilisation of the plant at full load capacity.

9.0 GUARANTEE

- 9.1 Vendor to guarantee the specification of anthracite as per clause 6 and performance as per clause 5. Further vendor to guarantee that there will be no leaching of SiO₂, Al, Calcium, Magnesium, or any other heavy material at pH 11.

10.0 DOCUMENTATION

- 10.1 Vendor to furnish 4 copies of analysis and report before despatch of material and 4 sets on CDs'.
- 10.2 Each of the bags (packing) of anthracite shall clearly indicate the size of anthracite particles.
- 10.3 Vendor to furnish bed expansion curve with respect to various backwash velocity.

11.0 DISPOSAL

- 11.1 Vendor to suggest suitable method for disposing after the end of filter media life.

Note:

Data marked ' * ' to be filled and/or confirmed by vendor