



Plant <b>CAUSTIC SODA</b>	Client <b>Punjab Alkali</b>	Contract Code <b>PACL</b>	Document Number <b>0215-PRC-00-EC-0008</b>	Contract No. <b>66-0215</b>	
	<b>Technical Specification for Cell Safety Valves</b>				
				Rev	<b>00</b>

<p><b>TKIS - India / Vendor</b></p> <p><b>Category Codes (Submission Purpose)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1 For Approval</li> <li><input type="checkbox"/> 2 For Review / Comments</li> <li><input type="checkbox"/> 3 For Information</li> <li><input type="checkbox"/> 4 For Engineering</li> <li><input type="checkbox"/> 5 For Enquiry</li> <li><input type="checkbox"/> 6 For Order Placement</li> <li><input type="checkbox"/> 7 Final &amp; Approved</li> <li><input type="checkbox"/> 8 Released for Construction</li> </ul> <hr/> <p><b>Acceptance Codes (Approval Codes)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1 Approved</li> <li><input type="checkbox"/> 2 Approved for Manufacturing / Fabrication with Comments as marked</li> <li><input type="checkbox"/> 3 Not Approved / Resubmit</li> <li><input type="checkbox"/> 4 Retained for Information / Records</li> <li><input type="checkbox"/> 5 Reviewed</li> <li><input type="checkbox"/> 6 Reviewed as Noted / Resubmit</li> </ul> <p><b>Remarks for AC2 :</b> 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><b>This approval / review does not absolve the supplier from the full responsibility for design and fabrication.</b></p> <p>Date : ___/___/____ Name : _____</p>	<p><b>TKIS - India / Owner / Client</b></p> <p><b>Category Codes (Submission Purpose)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1 For Approval</li> <li><input type="checkbox"/> 2 For Review / Comments</li> <li><input type="checkbox"/> 3 For Information</li> <li><input checked="" type="checkbox"/> 4 For Engineering</li> <li><input type="checkbox"/> 5 For Enquiry</li> <li><input type="checkbox"/> 6 For Order Placement</li> <li><input type="checkbox"/> 7 Final &amp; Approved</li> <li><input type="checkbox"/> 8 Released for Construction</li> </ul> <hr/> <p><b>Acceptance Codes (Approval Codes)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1 Approved</li> <li><input type="checkbox"/> 2 Approved for Manufacturing / Fabrication with Comments as marked</li> <li><input type="checkbox"/> 3 Not Approved / Resubmit</li> <li><input type="checkbox"/> 4 Retained for Information / Records</li> <li><input type="checkbox"/> 5 Reviewed</li> <li><input type="checkbox"/> 6 Reviewed as Noted / Resubmit</li> </ul> <p>Date : ___/___/____ Name : _____</p>
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00	IFI	Issued for enquiry	23.10.18	RJP	23.10.18	PKM	23.10.18	PKM	-	
Rev.	Status	Description	Date	Prepared	Date	Checked	Date	Approved	AC	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="flex: 1;"> <p style="font-size: 2em; margin: 0;">Barcode</p> </div> <div style="flex: 0.1; font-size: 0.8em; border-left: 1px solid black; padding-left: 5px;">           Category Code: -5         </div> </div>										
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B 66-0215-10744460 EC 000 00 IA 24.10.2018



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GENERAL INFORMATION

TON	
Item	PSV-1101AN-FN & PSV-1102AN-FN
Rev.	00
DOC ID	0215-PRC-00-EC-0008

TECHNICAL SPECIFICATION FOR CELL SAFETY VALVES

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1. GENERAL INFORMATION

Designation : SAFETY VALVE

Plant location : Naya Nangal, Punjab

Item No. : PSV-1101AN-FN & PSV-1102AN-FN

Manufacturer : \*

Quotation No. : \*

Date : \*

LOI No. : \*

Date : \*

PO No. : \*

Date : \*

**NOTE:**  
Vendor to fill in those fields marked "\*"



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**TECHNICAL SPECIFICATION FOR CELL SAFETY VALVES**

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**2. GENERAL INSTRUCTIONS**

**A. SCOPE**

Design, Engineering, fabrication, Painting, inspection, Testing, approval from statutory authorities and supply of safety valves and one spare set of gaskets as per the technical specification.

**B. INSPECTION AND TESTING**

Following tests shall be performed at supplier's workshop & witnessed by tkUCEG as per API / DIN as applicable.

- a. Set pressure test
- b. Seat leakage test
- c. Back pressure test
- d. Hydro test of body at 1.5 times of set pressure for a duration of at least 30 minutes.
- e. Visual and dimensional check
- f. Material test certificate for body, disc, seat, bellow and spring should be submitted by supplier.

**C. PAINTING**

Painting shall be done as per Manufacturer's standard.

**D. GUARANTEES**

Vendor to guarantee the following :

- a) Material of construction
- b) Workmanship
- c) Performance (set pressure, leakage and rated capacity)

**E. DOCUMENTATION**

Vendor should confirm to submit the documents as per summary of engineering and final documents



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GENERAL INFORMATION

**TECHNICAL SPECIFICATION FOR CELL SAFETY VALVES**

TON	
Item	PSV-1101AN-FN & PSV-1102AN-FN
Rev.	00
DOC ID	0215-PRC-00-EC-0008

S.N	Rev		Units		
<b>1.0</b>		<b>GENERAL</b>			
1.1		Item no.			SV-1101AN-FN
1.2		Manufacturer			*
1.3		Manufacturer Model no.			*
1.4		Quantity (Operating / Standby)			6 / 0
1.5		P & I Diagram No.			11-14
1.6		Location (Line no. / Eqpt no.)			Anolyte Header
1.7		Code / Standards			DIN
1.8		Statutory Reqt. CCE/IBR/SMPV/Not reqd.			Not Required
1.9		Basis for sizing			Pressure Relief
<b>2.0</b>		<b>FLUID PROPERTIES</b>			
2.1		Fluid		MOIST CHLORINE GAS	NaCl 25%
2.2		Gas / Vapour / Liquid		GAS / VAPOUR	LIQUID
2.3		Density	kg/m <sup>3</sup>	1.91	1175
2.4		Compressibility Factor		0.99	-
2.5		Mol. Weight	kg/kmol	46.92	21.70
2.6		Specific Heat Ratio (Cp/Cv)		1.34	-
2.7		Viscosity at Flowing Temperature	mPa s	0.0156	0.765
<b>3.0</b>		<b>PROCESS PARAMETERS</b>			
3.1		Capacity	kg/hr	3,150	21361
3.2		Allowable Pressure (Max.)	kg/cm <sup>2</sup> (a)	1.380	1.380
3.3		Operating Pressure	kg/cm <sup>2</sup> (a)	1.300	1.300
3.4		Allowable Accumulation	%	10	10
3.5		Set Pressure	kg/cm <sup>2</sup> (a)	1.345	1.345
3.6		Opening Pressure	kg/cm <sup>2</sup> (a)	*	*
3.7		Reseat Pressure	kg/cm <sup>2</sup> (a)	*	*
3.8		Back Pressure, Constant	kg/cm <sup>2</sup> (a)	0.985	0.985
3.9		Back Pressure, Variable	kg/cm <sup>2</sup> (a)	-	-
3.10		Back Pressure, Total	kg/cm <sup>2</sup> (a)	0.985	0.985
3.11		Hydrotest Pressure	kg/cm <sup>2</sup> (a)	Note 1	Note 1
3.12		Cold Diff. Test Pressure	kg/cm <sup>2</sup> (a)	*	*
3.13		Operating Temperature	°C	88.0	88.0
3.14		Temperature at Blow Off Cond.	°C	88.0	88.0
3.15		Temperature Correction Factor	%	0	0
3.16		Design Temperature	°C	95.0	95.0
3.17		Design Pressure	kg/cm <sup>2</sup> (a)	1.45	1.45
<b>4.0</b>		<b>VALVE SPECIFICATION</b>			
4.1		Type (conventional /bellow /pilot)			FULL LIFT / BELOW
4.2		Spring/Weight loaded			SPRING
4.3		Orifice Letter / Class			*
4.4		Orifice area (cal.)	mm <sup>2</sup>		*
4.5		Orifice area (selected)	mm <sup>2</sup>		*
4.6		Lifting lever (yes / no)			YES
4.7		Weight	kg		*
4.8		Cap (closed / open)			CLOSED
4.9		Locking Device for Valve Cap (yes / no)			YES
4.10		Testing medium			Air
<b>5.0</b>		<b>MATERIAL OF CONSTRUCTION</b>			
5.1		Body			CS/PTFE
5.2		Bonnet			CS/PTFE
5.3		Bellows			PTFE
5.4		Disc			PTFE-CARBON COMPOUND
5.5		Disc seat			PTFE-CARBON COMPOUND
5.6		Spring/Guide			1.1200, SPRING WIRE C
5.7		Gasket			PTFE
<b>6.0</b>		<b>END CONNECTIONS</b>			
6.1		Flange connection (DIN / ANSI)			ANSI B16.5
6.2		Flange facing (inlet / outlet)			RF / RF
6.3		Nom. Pressure (inlet / outlet)	lbs		150 / 150
6.4		Nom. size (inlet / outlet)	mm / mm		* / *
6.5		Flange type (socket welded/butt welded/screwed)			*
<b>7.0</b>		<b>INSPECTION BY</b>			tkUCEG
		REMARKS / NOTES :			
		1. HYDROTEST PRESSURE WILL BE 1.5 TIMES OF DESIGN PRESSURE.			
		2. ALL DATA MARKED AS '*' TO BE FURNISHED BY VENDOR			



GENERAL INFORMATION

**TECHNICAL SPECIFICATION FOR CELL SAFETY VALVES**

TON	
Item	PSV-1101AN-FN & PSV-1102AN-FN
Rev.	00
DOC ID	0215-PRC-00-EC-0008

S.N	Rev	Units		
<b>1.0</b>		<b>GENERAL</b>		
1.1		Item no.	SV-1102AN-FN	
1.2		Manufacturer	*	
1.3		Manufacturer Model no.	*	
1.4		Quantity (Operating / Standby)	6 / 0	
1.5		P & I Diagram No.	11-14	
1.6		Location (Line no. / Eqpt no.)	Catholyte Header	
1.7		Code / Standards	DIN	
1.8		Statutory Reqt. CCE/IBR/SMPV/Not reqd.	Not Required	
1.9		Basis for sizing	Pressure Relief	
<b>2.0</b>		<b>FLUID PROPERTIES</b>		
2.1		Fluid	MOIST HYDROGEN GAS	NaOH 32%
2.2		Gas / Vapour / Liquid	GAS / VAPOUR	LIQUID
2.3		Density	kg/m <sup>3</sup>	0.26
2.4		Compressibility Factor		1.00
2.5		Mol. Weight	kg/kmol	5.88
2.6		Specific Heat Ratio (Cp/Cv)		1.38
2.7		Viscosity at Flowing Temperature	mPa s	0.0124
<b>3.0</b>		<b>PROCESS PARAMETERS</b>		
3.1		Capacity	kg/hr	360
3.2		Allowable Pressure (Max.)	kg/cm <sup>2</sup> (a)	1.400
3.3		Operating Pressure	kg/cm <sup>2</sup> (a)	1.320
3.4		Allowable Accumulation	%	10
3.5		Set Pressure	kg/cm <sup>2</sup> (a)	1.360
3.6		Opening Pressure	kg/cm <sup>2</sup> (a)	*
3.7		Reseat Pressure	kg/cm <sup>2</sup> (a)	*
3.8		Back Pressure, Constant	kg/cm <sup>2</sup> (a)	1.000
3.9		Back Pressure, Variable	kg/cm <sup>2</sup> (a)	-
3.10		Back Pressure, Total	kg/cm <sup>2</sup> (a)	1.000
3.11		Hydrotest Pressure	kg/cm <sup>2</sup> (a)	Note 1
3.12		Cold Diff. Test Pressure	kg/cm <sup>2</sup> (a)	*
3.13		Operating Temperature	°C	88.0
3.14		Temperature at Blow Off Cond.	°C	88.0
3.15		Temperature Correction Factor	%	0
3.16		Design Temperature	°C	95.0
3.17		Design Pressure	kg/cm <sup>2</sup> (a)	1.45
<b>4.0</b>		<b>VALVE SPECIFICATION</b>		
4.1		Type (conventional /bellow /pilot)	FULL LIFT / BELOW	
4.2		Spring/Weight loaded	SPRING	
4.3		Orifice Letter / Class	*	
4.4		Orifice area (cal.)	mm <sup>2</sup>	*
4.5		Orifice area (selected)	mm <sup>2</sup>	*
4.6		Lifting lever (yes / no)	YES	
4.7		Weight	kg	*
4.8		Cap (closed / open)	CLOSED	
4.9		Locking Device for Valve Cap (yes / no)	YES	
4.10		Testing medium	Air	
<b>5.0</b>		<b>MATERIAL OF CONSTRUCTION</b>		
5.1		Body	CS/PTFE	
5.2		Bonnet	CS/PTFE	
5.3		Bellows	PTFE	
5.4		Disc	PTFE-CARBON COMPOUND	
5.5		Disc seat	PTFE-CARBON COMPOUND	
5.6		Spring/Guide	1.1200, SPRING WIRE C	
5.7		Gasket	PTFE	
<b>6.0</b>		<b>END CONNECTIONS</b>		
6.1		Flange connection (DIN / ANSI)	ANSI B16.5	
6.2		Flange facing (inlet / outlet)	RF / RF	
6.3		Nom. Pressure (inlet / outlet)	lbs	150 / 150
6.4		Nom. size (inlet / outlet)	mm / mm	* / *
6.5		Flange type (socket welded/butt welded/screwed)	*	
<b>7.0</b>		<b>INSPECTION BY</b>		
		tkUCEG		
		REMARKS / NOTES :		
		1. HYDROTEST PRESSURE WILL BE 1.5 TIMES OF MAX. ALLOWABLE PRESSURE.		
		2. ALL DATA MARKED AS '**' TO BE FURNISHED BY VENDOR		



Plant  
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GENERAL INFORMATION

**TECHNICAL SPECIFICATION FOR CELL SAFETY VALVES**

TON	
Item	PSV-1101AN-FN & PSV-1102AN-FN
Rev.	00
DOC ID	0215-PRC-00-EC-0008

S.N	Rev						
1		<b>The following engineering and final documents shall be furnished by the manufacturers :</b>					
2		<b>Version and delivery date shall be specified</b>					
3		<b>1.0 FOR ENGINEERING &amp; APPROVAL</b>		<b>Quantity</b>			
4		Pos.	Documents	Reproducible	Copy	Version	Delivery Dt
5		1	Assembly drawing - Arrangement drawing & QAP		1 Soft	II	A, B
6		2					
7		3					
8		4	Engineering data and specifications (tkIS-India DATA SHEETS FILLED)		1 Soft	II	A
9		5					
10		6					
11		7					
12		8					
13		9	Product catalogue		1 Soft	II	A
14		10					
15		11	Documents bearing tkIS-India/Client's notes shall be resubmitted	As indicated above			C
16		12					
17		13					
18		<b>2.0 SPARE PARTS</b>					
19		1	Quotation for two years operation & commissioning spares		1 Soft	II	A
20		2					
21							
22		<b>3.0 FINAL DOCUMENTS</b>					
23		1	Final documents as listed under 1.0		4 Hard + 2 Soft	II	G
24		2	Instructions for operation and maintenance		4 Hard + 2 Soft	II	
25		3					
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39		17					
40		18					
41		19					
42		<b>4.0 INSPECTION</b>					
43		1	Shop inspection certificate		6 Hard + 2 Soft	II	E
44		2	Material test certificate to DIN 50 049/3.1A-3.1C		6 Hard + 2 Soft	II	E
45		3	Inspection reports issued by statutory authorities		6 Hard + 2 Soft	II	F
46		4					
47		5					
48		<b>5.0 Explanation of figures listed in column version</b> Notes pertaining to column "delivery date"					
49		I	Lettering or wording in German	A	To be submitted with quotation		
50				B	15 days after order placements		
51		II	Lettering or wording in English	C	Two weeks after return of documents		
52				D	One month after order placement, thereafter monthly		
53		III	Lettering or wording in German and English	E	Not later than date of final inspection		
54				F	One month after final inspection ; to be submitted with shipping		
55		IV	Lettering or wording in German		documents if the equipment has to be shipped		
56				G	After final release, but not later than 4 weeks prior to final inspection		
57		<b>6.0 REMARKS :</b>					
58		1	Final documentation shall be submitted in 6 sets along with one 2 sets on DVD				
59		2	Final documentation shall be submitted in proper dossiers and in a compiled form.				
60							