

**BHARAT HEAVY ELECTRICALS LIMITED**

(A Government of India Undertaking)
HEAVY PLATES AND VESSELS PLANT
PURCHASE DEPARTMENT
VISAKHAPATNAM - 530012
ANDHRA PRADESH(INDIA)

Page
1/2
Contact Ph No :0891-6681285
Fax :0891-6681700
Email :pmarandi@bhelviz.co.in
web : www.bhelviz.co.in

Enquiry No (Coll-No)	Enquiry Date	Due Date for Quotation
H201700005	21.02.2017	13.03.2017
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order. Bid should be submitted in two parts. 1.Techno-commercial bid (Part-I) and 2.Price bid(Part-II) in a separate sealed cover and both covers must be placed in a third cover and sealed. Our Enquiry No., Enq. date & Enq. Due date must be written on all three covers.		

Item	Description	Unit	Quantity	Delivery Quantity	Delivery Date
10	6TK. CF GSKT 1MX1M UPTO 500°C 190060110000	NO	3.000	3.00	15.04.17
20	6TK. CF GSKT 1MX2M UPTO 1425°C 190060100000	NO	10.000	10.00	15.04.17
30	RTJ GASKET 6"NB 1500# SS347 (CERT) 190061050000 RTJ Gasket 6"NB,#1500(OCTAGONAL, 140 BHN MAX) SS347 TDC:A609-103-78-41-SP-0003	NO	70.000	70.00	15.04.17
40	RTJ GASKET 3"-NB 1500# SS347 (CERT) 190061060000 RTJ Gasket 3"NB,#1500(OCTAGONAL, 140 BHN MAX) SS347 TDC:A609-103-78-41-SP-0003	NO	70.000	70.00	15.04.17
50	RTJ GASKET 1.5"-NB 1500# SS347 (CERT) 190061070000 RTJ Gasket 1.5"NB,#1500(OCTAGONAL, 140 BHN MAX) SS347 TDC:A609-103-78-41-SP-0003	NO	55.000	55.00	15.04.17

The offers should reach us on or before 14:00 hrs on the due date of opening of the tender. The offers will be opened after 15:00 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

21.02.17



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HEAVY PLATES AND VESSELS PLANT
PURCHASE DEPARTMENT
VISAKHAPATNAM - 530012
ANDHRA PRADESH(INDIA)

Page
2/2
Contact Ph No :0891-6681285
Fax :0891-6681700
Email :pmarandi@bhelviz.co.in
web : www.bhelviz.co.in

H201700005 / 21.02.2017

MIS9999

60	CF Tape Gasket 6THK(Suit to1200C-1450C) 190057890000	KG	250.000	250.00	15.04.17
70	CF Woven Cloth gasket 6THK(1200C-1450C) 190057910000	KG	100.000	100.00	15.04.17
80	TEFLON SHEETS 6TKX100X200 LONG 190190200000 INSPECTION : BHEL	NO	110.000	110.00	15.04.17

General Note:

Enclosures:

- Annexure-1: MSME Certificate.
- Annexure-2: NIT General Terms & Conditions.
- Annexure-3: Commercial Terms & Conditions.
- Annexure-4: Technical Delivery Conditions.
- Annexure-5: Price Schedule

The offers should reach us on or before 14:00 hrs on the due date of opening of the tender. The offers will be opened after 15.00 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

21.02.17

NIT General Terms & Conditions

CATEGORY OF ENQUIRY: Two-Bid System
Our Enq. No. : H201700005

Sub : Gasket,Teflonsheet
Date : 21.02.2017

Sub: Supply of Gasket,Teflon sheet

We intend to procure **Gasket,Teflon sheet** for which Sealed Quotations are invited in Two-bid system i.e., Price Bid and Technical Bid along with un-priced bid (in duplicate). Sealed Quotations shall be submitted strictly in compliance with all Commercial Terms & Conditions (CTC) attached herewith. No deviations are permitted. Purchase Order will be placed after clearance from EIL, So vendors are requested to submit earlier purchase order copies placed for similar Items to other organisations including BHEL and EIL.

The sealed Quotation shall be submitted superscribing our enquiry reference no. and category of enquiry so as to reach us on or before 14:00 Hrs of **13.03.2017**. The Quotation received after the due date is liable to be rejected. In case any supplier is not in a position to submit the Quotation strictly as per Commercial Terms & Conditions (CTC) may submit REGRET letter.

- 1 Description of Material : As per Enquiry.
- 2 TDC : For item Nos. 30, 40, 50 materials are to be supplied as per TDC No.A609-103-78-41-SP003 and other related documents mentioned therein.
- 3 Inspection : By BHEL/ BHEL Authorised Inspection Agency.
- 4 Offer Validity : Offer shall be valid for a period of 2 Months from the Date of opening of Technical Bids
- 5 Delivery : As mentioned in Commercial Terms & Conditions
- 6 Payment Terms : Payment will be made after 45 days from the date of receipt and acceptance of materials at BHEL.
(offers from Indigenous suppliers with Payment terms as LC/Advance payment/against Proforma Invoice are liable for rejection)
- 7 Loading Criteria for Payment : Base rate of SBI (as applicable on the date of techno commercial bid opening) + 6% shall be considered for loading for the period of relaxation sought by bidder.

8 Price Evaluation :

Price shall be considered on Landed Cost basis (Total cost to BHEL). Landed cost shall be worked out on price quoted including Qty. Tolerance, Freight, Excise Duty and sales tax after taking out CENVAT and VAT benefit, as applicable. The comparative statement shall be worked out on overall Landed cost basis for the item wise.

- a) The comparative statement of the price prepared on the reference date shall remain firm throughout the execution period. Any change in duty & tax structure during execution of the contract will not be considered for re-ranking of vendors.
- b) The Lowest price received against BHEL enquiry need not be commercially lowest price (L1). BHEL reserves the right to NEGOTIATE the same.
- c) BHEL reserves the right/option to REFLOAT the enquiry if L1 price is not the lowest acceptable price to BHEL.

9 Details of submitting the offer :

Offers shall be submitted in Two Parts.

Part-I : Technical & Un-Priced Bid with Commercial terms and conditions

Part-II : Priced Bid

Above Two bids shall be kept in two separate sealed Covers superscribing the detail of the Type of offer kept inside (Technical / Priced Bid). The two sealed covers should be kept in another cover superscribed with the enquiry reference and details of contents ("Technical and Priced Bids") and the same shall be sent by Post/Courier addressed to The Sr. Manager (MM), HPVP, BHEL, Visakhapatnam- 530012(A.P), India. (or)

The cover containing both the bids as indicated above, may be personally dropped in the enquiry Box placed at Reception counter, Administration building, HPVP, BHEL, Visakhapatnam- 530 012.

In any case, the offers should be submitted on or before the due date. Late offers shall not be entertained.

Any revised offer(s) sent by vendor on their own after the tender opening will be treated as "Unsolicited Offer" and such offers will not be considered.

Offers sent by E-mail or by Fax are Not Acceptable. If you are not interested to quote, Regret letter by Mail shall be sent without fail.

BHEL reserves the right to cancel the Enquiry / Tender at any stage without assigning any reasons thereof. Also BHEL reserves the right to reject or accept one or any offer without assigning any reason.

NIT General Terms & Conditions

CATEGORY OF ENQUIRY: Two-Bid System

Sub : Gasket,Teflonsheet

Our Enq. No. : H201700005

Date : 21.02.2017

10 Bid Opening:

Technical & Un-Priced Bids shall be opened in public on the due date provided sufficient Bidder's offers are received. Priced bids of qualified bidders shall be opened in Public with prior intimation regarding Date and Time of bid opening.

11 Special Provision for Micro and Small Enterprises (MSE): Applicable for INDIAN Manufacturers only:

i) As per the public procurement policy notified by the Central Government, Micro & Small Enterprises (MSE) participating in the enquiry quoting Price within Price band of L1 + 15% will be allowed to supply a portion of requirement subject to acceptance of L1 price in a situation where L1 price is from someone other than a Micro & Small enterprise and such Micro and Small Enterprise shall be allowed to supply upto 20% of Quantity. In case of more than one such MSE, the supply shall be shared proportionately.

ii) Special provision for Micro and Small Enterprises owned by SC or ST:

Out of 20% enquired quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs.

iii) MSE Suppliers can avail the intended benefits only if they submit along with offer, the attested copies of either EM-II certificate having deemed validity (Five Years from the date of issue of acknowledgement in EM-II) OR valid NSIC certificate OR EM-II certificate along with attested copy of a CA certificate (Format enclosed as per Annexure-C where deemed validity of EM-II certificate of Five Years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be date of bid opening (Part-I in case of two part bid). Non submission of such documents will lead to consideration of their bid at Par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the enquiry is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer.

12 Documents submitted with the offer shall be signed and stamped in each page by authorised representative of the bidder.

13 Discrepancy in "Words" & "Figures":

- a If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
- b If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- c If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (a) and (b) above.
- d If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date up to which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

14 BHEL Fraud Prevention Policy :

The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

15 APVAT Input Tax credit :

The details of tax invoice raised against BHEL-HPVP should be uploaded in Andhra Pradesh commercial tax department online portal by the supplier on or before the due date mentioned in Rule 23(1) of APVAT Rules 2005.

The supplier should ensure correctness of BHEL-HPVP TIN(37418632431) while uploading the invoice details in APCT online portal.

The burden of tax/penalty/disallowance of Input tax credit due to uploading of wrong details relating to BHEL-HPVP invoices (eg. TIN /

16 Linking up of old issues :

In case if you have any outstanding problems with earlier supplies, you should not linkup against this enquiry or PO at later stages.

17 No overdue interest will be payable by BHEL to either supplier or his bankers.

18 Commercial Terms and Conditions :

Vendor shall submit Categorical Confirmation on Commercial Terms and Conditions enclosed to the Enquiry. The offers of those Vendors who do not comply with all the Clauses of Commercial Terms and Conditions (CTC) in total are likely to be Rejected.

COMMERCIAL TERMS AND CONDITIONS (For Indigenous Suppliers)
(To be filled in full and to be submitted along with offer)

ANNEXURE-A

SL. NO.	DESCRIPTION	BHEL'S REQUIREMENT	SUPPLIER'S COMMENTS
1	PAYMENT	Payment term is 100% payment after 45 days from the date of receipt and acceptance of materials at our stores. Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of techno commercial bid opening) + 6% shall be considered for loading for the period of relaxation sought by bidder") Note: Offers with Payment against Proforma Invoice/Advance payment/LC are liable to be rejected.	
2	DELIVERY PERIOD	Required Delivery period is within 4 weeks from the date of Purchase Order.	
3	DELIVERY BASIS	FOR - BHEL HPVP VISAKHAPATNAM STORES.	
4	FREIGHT CHARGES	INCLUDED (if extra indicate in %)	_____ % on Basic rate / Included
5	TRANSIT INSURANCE	INCLUDED (if extra indicate in %)	_____ % / Included
6	PACKING & FORWARDING	INCLUDED (if extra indicate in %)	_____ % on Basic rate / Included
7	EXCISE DUTY	To be indicated by supplier. (MODVAT copy to be provided along with supply)	_____ %
8	SALES TAX (VAT / CST)	To be indicated by supplier (Form "C" will be provided by BHEL)	_____ %
9	TESTING CHARGES (as per TDC)	Included. (if extra indicate in %)	_____ % on Basic rate / Included
10	INSPECTION CHARGES	INCLUDED (if extra indicate in %)	_____ % on Basic rate / Included
11	OFFER VALIDITY	60 days from the date of Technical bid opening.	
12	TEST CERTIFICATE	MTC Required as per Material Specification and TDC	
13	PART QUANTITY/ PART ORDER	BHEL, HPVP reserves the right to Reduce/Increase the quantities mentioned in the enquiry. Vendor shall agree to accept Item wise order/ Part Quantity of each item/ Part Order.	
14	L.D.CLAUSE	Liquidated Damages shall be at the rate of 0.5% of the total order value per week of delay or part thereof subject to maximum of 10% of the total order value. Any deviation from the above LD clause, loading shall be applied to the extent of relaxation sought to which it is not agreed by the bidder at offered basic value.	

15	ARBITRATION	Notwithstanding anything contained in any document whatsoever, all questions, matters, disputes and claims relating to and arising out of this contract, shall be referred to sole arbitrator, who shall be appointed by Head of the Unit, BHEL, HPVP, Visakhapatnam at his sole discretion. Such appointment of arbitrator shall not take place unless and until a written request for appointment of arbitrator from any of the parties to the contract has been received by Head of the Unit as aforesaid. The arbitrator shall give his reasoned award. It is a term of this contract that no person other than a person appointed by such Head of the Unit as aforesaid, shall act as arbitrator and if for any reason that is not possible, the matter is not to be referred to arbitration at all. The venue of arbitration shall be such place as may be Fixed by the arbitrator at his sole discretion. The award of arbitrator shall be final, conclusive binding on all the parties to the contract.	
16	JURISDICTION	Not out of this contract including that arise out of arbitration and bank guarantees, shall be initiated, filed and tried only in the courts, tribunals and forums, situated at and having territorial jurisdiction over Visakhapatnam even though such jurisdiction also vests in courts, tribunals & forums situated elsewhere in the country.	
17	RISK PURCHASE	The delivery period stated shall be realistic and shall be strictly adhered to. If the deliveries are not maintained and if on the account, this company is forced to buy the materials elsewhere to avoid any loss or damage that the company may sustain thereby the purchaser is entitled to procure the material at the risk and cost of the seller.	
18	REJECTION REPLACEMENT	Rejected material, if any, after receipt of material at our end, shall be replaced by you immediately free of cost and also on freight paid basis.	
19	GUARANTEE CERTIFICATE	Vendor should guarantee the material against all design and manufacturing defects and for performance for a period of 18 months from the date of last dispatch or 12 months from the date of commissioning whichever is earlier. If any defect is noticed during the above period, the same shall be rectified / replaced free of cost on FOR BHEL, HPVP, Visakhapatnam / Destination basis within a reasonable time.	
20	FIRM PRICE	Price should be firm till execution of order.	
21	VENDOR STATUS (MICRO / SMALL)	a) MICRO / SMALL (To be indicated by vendor and latest copy of supporting documents as mentioned in RFQ shall be furnished along with offer)	
		b) whether owned by SC / ST Entrepreneurs (To be indicated by vendor and latest copy of supporting documents shall be furnished along with offer)	
22	QUALITY ASSURANCE PLAN	In the event of order, vendor should submit QAP within 10 days from the date of PO.	

The above format shall be completely filled and deviation if any shall be clearly spelt out. The columns which are not applicable shall be mentioned as "Not Applicable". No column should be left blank. Non filling-up of columns may lead to rejection of your offer and also offers of those who do not confirm compliance of all the terms and conditions are likely to be rejected. If there is any difference (in the points accepted/confirmed) between the offer and this filled-up Commercial Terms & Conditions sheet, the later only shall prevail.

Vendor should categorically indicate confirmation of all the points of Technical Delivery Conditions and Commercial Terms & Conditions with signature and stamp at the bottom of each document and submit the same along with the offers. Offers of those who do not confirm compliance of all the terms and conditions are likely to be rejected.

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....
Category: (Micro/Small); (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the
latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide its
notification No.S.O. 1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and
furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED
Act, 2006:
Rs.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not
applicable) and the date of graduation of such enterprise from its original category is
(dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such
enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published
in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:



(Signature)

Name -

Membership number -

Seal of Chartered Accountant

Price Schedule (to be enclosed in price bid)

REF. NO.: H201700005

DATE: 21/02/2017

SL. NO.	ITEM DESCRIPTION	QTY	UNIT RATE (Rs.)	TOTAL PRICE (Rs.)
	PR No. 100000912/10,20,60,70,80,90,10 & PR No.100001628/10			
10	6TK. CF GSKT 1MX1M UPTO 500°C	3 No		
20	6TK. CF GSKT 1MX2M UPTO1425°C	10 No		
30	RTJ GASKET 6"NB 1500# SS347(CERT) RTJ Gasket 6" NB,#1500 (OCTA GONAL, 140 BHN MAX) SS347	70 No		
40	RTJ GASKET 3"-NB 1500# SS347(CERT) RTJ Gasket 3" NB,#1500 (OCTA GONAL, 140 BHN MAX) SS347	70 No		
50	RTJ GASKET 1.5"-NB 1500# SS347(CERT) RTJ Gasket 1.5" NB,#1500 (OCTA GONAL, 140 BHN MAX) SS347	55 No		
60	CF Tape Gasket 6THK(Suit to1200C-1450C)	250 Kg		
70	CF Woven Cloth gasket 6THK(1200C-1450C)	100 Kg		
80	TEFLON SHEETS 6TKX100X200 LONG	110 No		

SPECIFICATION FOR PROCUREMENT OF PRESSURE PARTS

UNIT : CGO HYDRO-TREATER (103)
PROJECT : AISHWARYA
CLIENT : IOCL HALDIA

0	19.08.2015	ISSUED FOR TENDER	SKS	AV / PG	MK
Rev. No	Date	Purpose	Prepared by	Checked by	Approved by

LIST OF ATTACHMENTS:

Sl. No.	Description	Document No.	Revision.
1.	Standard Specification of Finned Tubes for Fired Heaters	6-17-0005	5
2.	Technical Notes For Pipes	6-44-0051	6
3.	Technical Notes For Valves	6-44-0052(#)	6
4.	Technical Notes For flanges, Spectacle blinds and Drip Rings	6-44-0053	6
5.	Technical Notes for Butt welded, socket welded and screwed fittings	6-44-0054	6
6.	Technical notes for Gaskets (For Pressure Parts)	6-44-0056	4
7.	Technical Notes for Bolts and Nuts (For Pressure Parts)	6-44-0057	4
8.	Standard Specification For Positive Material Identification (PMI) At Supplier's Work	6-81-0001	2
9.	Specification for documentation requirements from suppliers	6-78-0003(#)	0
10.	Piping material specification (PMS)	As applicable (#)	-
11.	Valve material specification (VMS)	As applicable (#)	-
12.	Inspection Procedure at Supplier's Work	A609-5-1842-0001(#)	0

(#) - NOT ENCLOSED WITH TENDER

Sl.No.	EIL Standards to be followed	Items
1	A694-091-78-41-SP-2003 & 6-44-0051 & 6-81-0001	For Bare pipes
2	A694-091-78-41-SP-2003 & 6-17-0005 & 6-44-0051 & 6-81-0001	For Finned pipes (*)
3	A694-091-78-41-SP-2003 & 6-44-0053 & 54 & 6-81-0001	For Flanges, Weldolets
4	A694-091-78-41-SP-2003 & 6-44-0051 & 6-81-0001	For fittings & Con. Reducers
5	A694-091-78-41-SP-2003 & 6-44-0056	For Gaskets
6	A694-091-78-41-SP-2003 & 6-44-0057	For Pr.Parts Bolts & Nuts

(*) - ENCLOSED EIL APPROVED BARE PIPE SUPPLIER'S LIST SHALL BE FOLLOWED

CONTENTS

<u>S.No</u>	<u>DESCRIPTION</u>
1.0	SCOPE
2.0	GENERAL REQUIREMENTS
3.0	INSPECTION AND TESTING
4.0	PACKING
5.0	DOCUMENTATION
6.0	GUARANTEE

1.0 SCOPE

This specification lists technical requirements for pressure parts such as tubes including finned tubes, forged Flanges, Weldolets, Elbowlets, wrought steel butt welding Fittings (Reducers, Elbows and Bends & Tees), Valves, Gaskets and Bolting. These pressure parts are intended for Fired Heaters coil designed as per API 530 and API 560 and accordingly shall comply with the requirements of these codes.

2.0 GENERAL REQUIREMENTS

2.1 All items shall be suitable for design conditions as well as test conditions and shall be supplied in conformity with applicable ASTM material specifications and respective standards listed below:

- | | | |
|----|---|-------------------------|
| a. | Forged Flanges and Flanged fittings - | ANSI B16.5/ ANSI B16.47 |
| b. | Forged Fittings - | ANSI B16.11 |
| c. | Factory made Wrought
Butt-Welding Fittings - | ANSI B16.9 |
| d. | Gaskets - | API 601/ ANSI B 16.20 |
| e. | Studs/Nuts - | ANSI B18.2.1/ 18.2.2 |
| f. | Valves - | ANSI B16.10 |
| g. | Butt Welding Ends - | ASME B 16.25 |

2.2 All fittings and pipes/ tubes, including those used for fining, shall be seamless and shall be procured with beveled ends in conformity with ANSI B16.25, applicable data and material specification.

2.3 All finned tubes shall also comply with the requirement of specification 6-17-0005.

2.4 All items under **Indian Boiler Regulation (IBR)** shall be procured with proper **IBR** certification.

2.5 All fittings shall be suitable for Coil Design data and shall match with connecting coil components.

2.6 In case of components such as WBW Fittings, Weldolets, and Cast Fittings etc. Supplier shall indicate the basis of design to establish allowable pressure rating. If the Design Basis is Burst test, the details of test including test records shall be submitted. For WBW fittings like return bends, elbows etc. following design requirements shall be complied:

- The Report for Design Proof test through Bursting Strength test conducted as per procedures laid down in ANSI 16.9 / MSS SP7 for the fitting shall be submitted to Owner / EIL. The Design Proof test conducted on lower metallurgies / lower UTS shall qualify for higher metallurgies / higher UTS also subject to geometrical requirements as per relevant codes.
- The wall thickness at any point shall not be lower than the specified thickness in job drawings. However, this shall not be lower than the connected pipe thickness. The wall thickness at inner radius and outer radius are as specified in the job drawing. The wall thickness shall be gradually varied from inner radius to outer radius. Special care shall be taken for the procurement of return bends with specified thickness at inner and outer radius. The thicknesses coming at various locations in the bend elbow shall be checked and recorded during inspection.

- 2.7 Valves shall be hand wheel or lever operated. Effort to operate shall not exceed 35 Kgf. Valves shall be procured as per valve material specification available in the tender document and Technical note for Valves.
- 2.8 The bore of Forged Flanges shall match with corresponding Pipe inside Diameter.
- 2.9 In case of reducing WBW fittings, having different wall thickness at each end, the greater one shall be employed throughout and the ends shall be matched to suit respective thickness.
- 2.10 All pipes and tubes shall preferably be procured in single length. Intermediate butt-welded tubes are not permitted unless their lengths exceed that which can be produced at mill. If intermediate welds are necessary for this reason then they shall be done in accordance with ASME B16.25. The length of pipes shall be so selected that their welds should not fall in 500 mm distance from any tube support.
- 2.11 Suitable extra length shall be considered for Tubes/ Pipes to enable Hydrotesting of Coil Sub Assemblies, wherever required.
- 2.12 All the dimensions and dimensional tolerances shall be as per their respective material specification/ standards. But for 180° return bends, tolerance on center-to-center distance shall be ± 2.0 mm.
- 2.13 Cr-Mo steels shall comply with following additional requirements:
- Max. UTS at room temperature shall not exceed 7030 kg/cm²
 - All items shall be supplied in normalized and tempered condition. Tempering temperature shall be specified for each item as per the requirement.

Recommended tempering temperatures for coil and its sub components such as fittings, flanges etc. of various metallurgy are as given below.

Sl. No.	Material Composition	Minimum PWHT Temp., °C	Minimum Tempering Temp., °C	Lower Critical Temp., °C
1	C-0.5Mo	650	675	720
2	1.25cr-0.5Mo	705	745	775
3	2.25Cr-0.5Mo	705	760	805
4	5Cr-0.5Mo	705	760	820
5	9Cr-1Mo	705	760	825
6	9Cr-1Mo (Modified)	760	780	825

- Tempering temperature shall be higher than PWHT temperature but shall not exceed lower critical temperature.
- When pressure parts of dissimilar materials are to be welded, tempering temperature corresponding to the higher metallurgy shall be specified for those parts.

- 2.14 Austenitic Stainless steel items (300 series) shall comply with following additional requirements
- All items shall pass IGC test performed in accordance with practice E of ASTM A262 with magnification of 200x.
 - All items shall be solution annealed.
 - All stabilized steel items (TP 321) shall be given stabilization heat treatment, subsequent to solution annealing, which shall consists of heating the components at 1650°F (±25°F) for 4 Hrs.
 - No Stabilization heat treatment is required after finning if the bare tube is already subjected to Stabilization Heat Treatment.
 - In case of Tubes/ Pipes of Grade SS321 which are subjected to Design metal temperature of 1000°F or Higher, the Carbon content shall be more than or equal to 0.04%.
- 2.15 Hardness of all items shall be as per respective ASTM Specifications. The same may be required to be restricted further to control hardness in weld and heat effected zones to values as specified in Clause 331.1.1 of ANSI B31.3.
- 2.16 Gaskets & Flange face finish
- Gaskets shall be suitable for service and design conditions.
 - All Spiral wound Gaskets shall be procured with Outer Centering Ring.
 - Filler if used for spiral wound gaskets shall not have any colour dye.
 - Ring joint gaskets, wherever used, shall be of Octagonal type only. Hardness of the Gaskets shall be minimum 15 BHN lower than that of flange gasket seating surface and in any case not to exceed the following.

i)	Soft Iron	-	90 BHN
ii)	Low Carbon Steel/ LAS	-	110 BHN
iii)	5 Cr- ½ Mo	-	130 BHN
iv)	Monel	-	130 BHN
v)	Stainless Steel	-	160 BHN
vi)	11- 13 Cr	-	170 BHN
 - All flanges shall be of WN type only unless otherwise noted. Gasket face of all flanges intended for use with spiral wound gaskets shall have smooth finish to 125 AARH. Finishes shall be judged by visual comparison with surface finish roughness standards conforming to ASME B46.1.

It is contractor's responsibility to comply with the above finish requirements and to ensure that such flange finishes be protected from damage and corrosion during storage, shipping and installation.
- 2.17 Bolts and Nuts
- Bolting material shall be suitable for service and design conditions.
 - All inch Bolting and threading shall conform to ANSI B1.1 except for Size 1.0" and above where it shall be 8 threads per Inch. Metric bolting and threading

shall conform to ISO R261 except for size M24 and above, where it shall have 3mm Pitch.

- (c) Studs Bolts shall be fully threaded and shall extend beyond the Nut by about 10 mm. Tolerance on length shall be in accordance with the requirement of table F2 of Annexure-F of ASME B16.5.
- (d) All Nuts shall be of Heavy series only and their seating faces shall be machined or spot faced.
- (e) Threads on external bolting shall be lubricated with Graphite grease for working temperature up to 200°C and with Molybdenum Disulphide for higher temperatures.
- (f) In addition to stamping, the specifications and manufacturer's symbol as specified in ASME Material Specifications, on one of the ends the size of the studs shall be clearly punch marked. Similarly the nuts shall have the size punch marked on one of the faces. In case of tapped hole, the size shall be punch marked near the hole without disturbing the gasket seating area.

2.18 Bare tubes for finning of tubes shall be procured from EIL approved vendors.

3.0 INSPECTION & TESTING

- 3.1 All items and their parts shall be subjected to all mandatory tests and supplementary tests (wherever specified) and checks called for in the respective codes/ standards/ specifications.
- 3.2 Inspection of all indigenous and imported items under contractor's scope of supply shall be by approved Third Party Inspection Agency as per list given elsewhere in Bid Package

Contractor/ supplier shall prepare the Inspection and Test Plans for the items and get it approved from TPIA / EIL.

In case coil subassemblies are made outside refinery premises, refer Job spec for inspection procedure to be followed at Supplier's Work.

- 3.3 All bare tubes shall be hydrotested as per ASTM material specification / IBR as applicable. Hydrotest pressure for individual pressure part components to be carried out at the mill shall be ascertained from the designer of the item prior to conducting of the hydrotest. Eddy current testing as an alternative to Hydrotest is not acceptable.
- 3.4 Bevel ends of all items shall undergo 100% MP/DP test.

4.0 PACKING

- 4.1 All items shall be protected from rust, corrosion and mechanical damage during transportation, shipment & storage. Rust preventive shall not be harmful to welding and shall be easily removable with a petroleum solvent.
- 4.2 Ends shall be suitably protected and the protectors shall be secured and tightly attached.
- 4.3 Part No. is to be painted with an alkyd-based paint. Lead based paints or stamping is prohibited. In case of Studded tubes different colours of paint shall be applied at the ends for different Materials and SPP.
- 4.4 All spare components shall be packed separately and marked properly.

- 4.5 Packing for imported items shall be seaworthy in wooden crates/ cases with internal plastic envelopes and shall facilitate easy opening for dockside inspection.

5.0 DOCUMENTATION

5.1 At offer stage

- (a) Manufacturer's complete descriptive catalogue/literature.
- (b) Accreditations/approvals of international agencies for the subject item.

5.2 After placement of order

- (a) As per Requirement of Vendor Data Requirement (VDR).

5.3 Along with Delivery

- (a) Six copies of Manufacturer's Material tests certificates (physical properties, chemical composition, heat treatment etc.) duly certified by inspection authority.
- (b) Test reports for all mandatory as well as supplementary tests wherever specified.
- (c) Certification as per IBR, as applicable.
- (d) Manufacturer's certificate for suitability of the items to withstand the test pressure.

5.4 Any other drawing/document as required.

6.0 GUARANTEE

Vendor shall guarantee that all items supplied shall conform to the stated requirements in all respects. Any item found defective at any stage of project execution or during guarantee period shall be replaced by the supplier at his own cost and without any delay.

गास्केट्स के लिए तकनीकी टिप्पणियाँ

TECHNICAL NOTES FOR GASKETS

4	21.03.13	REVISED & ISSUED AS STANDARD SPECIFICATION	UK	SH	RN	ATD	DM
3	23.07.07	REVISED & ISSUED AS STANDARD SPECIFICATION	RN	ATD	DM	VC	
2	15.06.98	REAFFIRMED & ISSUED AS STANDARD SPECIFICATION	SH	BRB	BN	AS	
1	30.12.92	REVISED & ISSUED AS STANDARD SPECIFICATION	AKG	BPV	GRR	AS	
Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman	Approved by

Abbreviations:

AARH :	Average Arithmetic Root Height
BHN :	Brinell Hardness Number
CS :	Carbon Steel
MR :	Material Requisition
PMI :	Positive Material Identification
RTJ :	Ring Type Joint

Piping Standards Committee

Convenor : Mr. R. Nanda

Members : Mr. Harish Chander
Mr. M. Ismaeel
Mr. Amrendra Kumar
Mr. G. Balaji
Mr. K.J. Harinarayanan (HMTD)
Mr. P P Lahiri / Mr. S. Ghoshal (SMMS)
Mr. G.K. Iyer (Construction)
Mr. K.V.K Naidu (Projects)

CONTENTS

1.0	GENERAL.....	4
2.0	REFERENCES.....	5

1.0 GENERAL

1.1 All gaskets shall conform to the codes/standards and specifications given in the requisition. Supplier shall strictly comply with MR/PR stipulations and no deviations shall be permitted. Post Order Waiver/ Deviation format 5-0000-0180-F1 as mentioned in Cl. 5.18 of Specification for Quality Management System Requirements from Bidders (6-78-0001) is not applicable.

1.2 Process of manufacture, dimensions and tolerances not specified in requisition shall be in accordance with the requirements of the manufacturer's standards.

1.3 Testing

1.3.1 Test reports shall be supplied for all mandatory tests for gaskets as per the standards specified in the requisition.

1.3.2 Chemical composition and hardness of RTJ gaskets shall also be furnished in the form of test reports on samples.

1.3.3 For Spiral wound material following shall be furnished:

a. Manufacturer's test certificate for filler material and spiral material as per the relevant material specifications.

b. Manufacturer's test certificate for raw materials and tests for compressibility/ sealability & recovery as per the relevant material specifications.

1.3.4 PMI shall be performed as per the scope and procedures defined in the Specification for PMI at Supplier's Works (6-81-0001) for ring type joint gaskets.

1.3.5 Refer Specification no 6-81-0008 for 'Inspection & Test Plan for Gaskets'.

1.4 Full face gaskets shall have bolt holes punched out.

1.5 Filler material for spiral wound gaskets shall not have any colour or dye.

1.6 All spiral wound gaskets shall be supplied with Outer ring. Material of the outer ring shall be CS unless otherwise specified in the MR.

1.7 For spiral wound gaskets, material of Inner Compression ring shall be same as Spiral Strip material. In addition to the requirements as per code and as specified in the MR, inner rings shall be provided for the following:

a. Sizes 26" and above.

b. Class 900 and above.

1.8 Hardness of metallic RTJ gaskets shall not exceed the values specified below unless otherwise specified in MR:

Ring Gasket Material	Maximum Hardness (BHN)
Soft Iron	90
Carbon steel	120

5 Cr. ½ Mo	130
Type 304, 316, 321, 347	140
Type 304L, 316L	120

- 1.9** Face finish of metallic RTJ gaskets shall be 32 to 63 AARH.
- 1.10** Gaskets of different types and sizes shall be placed in separate shipping containers and each container clearly marked with the size, rating, material specification and item code.
- 1.11** All items shall be inspected and approved by EIL Inspector or any other agency authorized by EIL.
- 1.12** Any additional requirements specified in the requisition, shall be fully complied with.
- 1.13** Non-metallic ring gaskets as per ASME B16.21 shall match flanges to ASME B16.5 upto 24" (except 22" size) and to ASME B16.47B above 24" unless specified otherwise. For 22" size, the matching flange standard shall be MSS-SP44 unless specified otherwise.
- 1.14** Spiral wound gasket as per ASME B16.20 shall match flanges to ASME B16.5 upto 24" (except 22" size) and to ASME B16.47B above 24" unless specifically mentioned otherwise. For 22" size, the matching flange standard shall be MSS-SP44 unless specified otherwise.
- 1.15** The following abbreviations have been used in the Material Requisition for Spiral Wound Gaskets :
- | | | |
|--------|---|----------------|
| (I) | : | Inner Ring |
| (O) | : | Outer Ring |
| GRAFIL | : | Grafoil Filler |

2.0 REFERENCES

- | | |
|-----------|--|
| 6-81-0001 | Specification for Positive Material Identification (PMI) at Supplier's Works |
| 6-81-0008 | Inspection & Test Plan for Gaskets (#) |
| 6-78-0001 | Specification for Quality Management System Requirements from Bidders (#) |

(#) - NOT ENCLOSED WITH TENDER