

Note No. #3

HPCL VIZAG RLNG FC

Attachment:1900141682-UPBF.pdf

Un-Priced Price Bid Format

Item: GASKETS

Enquiry No:

Sl No	PR No	Material Code	Material Description	PR Qty (No.s)/ sq.m	Technical Specification	Price Weightage Factor	Bidder Confirmation (Quoted)
1	1900141682/10	PY9752118011	MSW GASKET (GRAPH) 0.5" CL600 B16.5 RF	80	PY52118	0.00709	
2	1900141682/20	PY9752079016	MSW GASKET (GRAPH) 0.5" CL300 B16.5 RF	30	PY52079	0.00359	
3	1900141682/30	PY9752078125	MSW GASKET (GRAPH) 10" CL150 B16.5 RF	30	PY52078	0.07731	
4	1900141682/40	PY9752078117	MSW GASKET (GRAPH) 8" CL150 B16.5 RF	30	PY52078	0.05609	
5	1900141682/50	PY9752079113	MSW GASKET (GRAPH) 8" CL300 B16.5 RF	30	PY52079	0.03770	
6	1900141682/60	PY9752118089	MSW GASKET (GRAPH) 6" CL600 B16.5 RF	60	PY52118	0.10562	
7	1900141682/70	PY9752079105	MSW GASKET (GRAPH) 6" CL300 B16.5 RF	90	PY52079	0.15303	
8	1900141682/80	PY9752079083	MSW GASKET (GRAPH) 4" CL300 B16.5 RF	40	PY52079	0.05392	
9	1900141682/90	PY9752118070	MSW GASKET (GRAPH) 4" CL600 B16.5 RF	60	PY52118	0.04049	
10	1900141682/100	PY9752078087	MSW GASKET (GRAPH) 4" CL150 B16.5 RF	60	PY52078	0.06794	
11	1900141682/110	PY9752079075	MSW GASKET (GRAPH) 3" CL300 B16.5 RF	30	PY52079	0.01508	
12	1900141682/120	PY9752078079	MSW GASKET (GRAPH) 3" CL150 B16.5 RF	70	PY52078	0.06252	
13	1900141682/130	PY9752118054	MSW GASKET (GRAPH) 2" CL600 B16.5 RF	60	PY52118	0.02066	
14	1900141682/140	PY9752079059	MSW GASKET (GRAPH) 2" CL300 B16.5 RF	50	PY52079	0.01358	
15	1900141682/150	PY9752078052	MSW GASKET (GRAPH) 2" CL150 B16.5 RF	120	PY52078	0.03772	
16	1900141682/160	PY9752118046	MSW GASKET (GRAPH) 1.5" CL600 B16.5 RF	40	PY52118	0.00485	
17	1900141682/170	PY9752079040	MSW GASKET (GRAPH) 1.5" CL300 B16.5 RF	120	PY52079	0.03236	
18	1900141682/180	PY9752118038	MSW GASKET (GRAPH) 1" CL600 B16.5 RF	80	PY52118	0.01103	
19	1900141682/190	PY9752079032	MSW GASKET (GRAPH) 1" CL300 B16.5 RF	130	PY52079	0.01561	
20	1900141682/200	PY9752118020	MSW GASKET (GRAPH) 0.75" CL600 B16.5 RF	130	PY52118	0.01536	
21	1900141682/210	PY9752079024	MSW GASKET (GRAPH) 0.75" CL300 B16.5 RF	150	PY52079	0.01772	
22	1900141682/220	PY9752146015	NAB SHEET (NRR) BS7531 GR.X	40	PY52146	0.15073	
<b>Total</b>						<b>1.00000</b>	

**NOTES:**

- 1) Vendor to Quote Lumpsum Price for the Total Package.
- 2) Line Item Rates of the individual items shall be derived by multiplying the "Price Weightage Factor" with the Lumpsum Price quoted.  
Unit Rates of the Individual items shall be further derived by dividing the Line item rates with the Quantities.  
Unit Rates of the Individual items thus arrived, shall be binding on the bidder, in case of any repeat order as per BHEL policies.
- 3) Observations / Objections, if any, of the Bidder, to the "Price Weightage Factor" shall be brought to the notice of BHEL, during Pre-Bid Stage.

Note No. #3

**HPCL VIZAG RLNG FC**  
**Un-Priced Price Bid Format**

Attachment:1900141682-UPBF.pdf

Item: GASKETS

Enquiry No:

Sl No	PR No	Material Code	Material Description	PR Qty (No.s)/ sq.m	Technical Specification	Price Weightage Factor	Bidder Confirmation (Quoted)
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No Observations / Objections shall be entertained after the Techno-Commercial Bid is opened.

- 4) Bidder to indicate "Quoted" in the column "Bidder's Confirmation" as a confirmation of their bid to the respective item.
- 5) **The Bid Evaluation is on Overall L1 Basis. Each and Every item of the Package shall be quoted by the bidder.**  
 Partial offers will not be considered for evaluation and the same are liable for rejection.
- 6) The Total Lump price quoted shall be **INCLUSIVE** of GST, Packing & Forwarding and Testing Charges.
- 7) The Total Lump price quoted shall be **EXCLUSIVE** of **FREIGHT**, Third party inspection (TPI) & Insurance Charges.

Note No. #3

Attachment: 1900141682-PQC FOR GASKETS.pdf  
HPCL VIZAG RLNG FC**Pre-Qualification Criteria (Technical)**

Item : Gasket  
PR No : 1900141682

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**Only manufacturers of Gaskets** (documentary evidence to be provided), qualified as per the Pre-qualification criteria laid down below, **are allowed to bid**. Authorised Dealers, Agents, Stockists and Traders are not allowed to bid.

**The bid evaluation shall be on Overall L1 basis.** Bidder has to quote for all the items. Partial offers will not be considered for evaluation.

**Qualification Criteria of the Bidder:**

**The Bidders shall meet the Pre-Qualification Criteria (listed below).** *Non-compliance to any of the criteria listed below will lead to disqualification of bidder for the subject tender.*

1. The bidder should be an established Manufacturer of **Gaskets** and should have successfully completed Manufacture, Testing and Supply of **Gaskets**, according to the design/manufacturing standard **ASME B16.21 and ASME B16.20**.
2. The Bidder should have successfully completed supply of
  - a. **Gasket Sheet according to the design/manufacturing standard ASME B 16.21 and according to material standard BS 7531, in the size range of thickness 2 mm and above, of cumulative size not less than 30 Sq.m** through a single Purchase Order or multiple Purchase Orders in the last 5 years ending on original due date of this tender, with at least one order executed after 01.01.2019.
  - (AND)
  - b. **Gaskets according to the design/manufacturing standard ASME B 16.20 and according to material standard for Metal Winding: SS AISI-316, External Centering Ring: CS, Inner Ring: SS AISI-316, Filler Material: Flexible Graphite and PTFE, CL150, CL300 and CL600 in the size range of 0.5" and above, of cumulative quantity not less than 1050 nos** through a single Purchase Order or multiple Purchase Orders in the last 5 years ending on original due date of this tender, with at least one order executed after 01.01.2019.
3. Detailed BOQ of the **Gaskets** supplied, satisfying the criteria laid down above, shall be provided in the format enclosed as Annexure-1, with details like Project & Customer, Description, Quantity & Weight of Items supplied, PO details etc. as a minimum for assessing pre-qualification. **PO Copies, Inspection Reports and Dispatch documents shall be enclosed for the references provided.**
4. The bidder should not have been under suspension for business or blacklisted by any of the BHEL units.

Note No. #3

Attachment:1900141682\_PQC Annexure-1.pdf

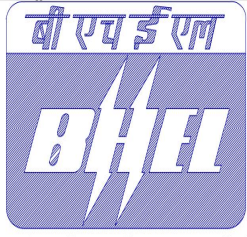
**Annexure-1****Supply References for the Last 5 Years (dispatch date) from the Original due date of this tender**

Enquiry Item No &amp; Description: (To be filled by Bidder)

Sl No	Project Name along with name of Customer	Description Item(s) supplied	Quantity [or] Weight (in Kgs)	Purchase Order No & Date (Copy to be enclosed)	Delivery Date as per Order	Value of Order	Inspection Reports / Dispatch Documents (Copy to be enclosed)	Remarks

Note No. #2

Attachment: GASKETS \_SMQP.pdf

 <b>PROJECT ENGINEERING &amp; SYSTEM DIVISION</b>		<b>STANDARD MANUFACTURING QUALITY PLAN</b>						QP. NO.: PESD/QA/ GASKET/01/18-19						
		<b>PRODUCT: GASKET</b>						<b>BHEL SPEC: AS PER P.O</b>		REV NO: 00		DATE: 22-02-2019		
										PAGE 1 OF 2				
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY				REMARKS
									D	P	W	V		
<b>1.0</b>	<b>RAW MATERIALS &amp; BOUGHT OUT ITEMS</b>													
	Raw Material	Material Identification	Major	TC Review	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	MTC	√	2	1	1		
<b>2.0</b>	<b>FINAL INSPECTION &amp; TESTING</b>													
		Visual, Dimension, Marking	Major	Visual	100%				IR	√	2	1	1	10% shall be witnessed by "1"
		Chemical & Mechanical properties	Major	TC Review	One per lot/batch				MTC	√	2	1	1	
		Compressibility, Recovery	Major	Testing	Random				TC	√	2	1	-	
		Residual Stress, Gas permeability & Resistance to fluid test	Major	Testing	Random				TC	√	2	2	1	Applicable for NAB gasket
		BOM check	Major	Visual	100%				IR	√	2	1	-	
<b>4.0</b>	<b>PRESERVATION &amp; PACKING</b>													
	Gasket	Packing, Marking	Major	Visual	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	2	1		

LEGEND: P: PERFORM, W: WITNESS, V: TEST CERTIFICATE REVIEW. INDICATE 1 FOR BHEL / BHEL NOMINATED INSPECTION AGENCY & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. \* FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.

PREPARED BY

BHEL QA SIGNATURE &amp; STAMP

APPROVED BY

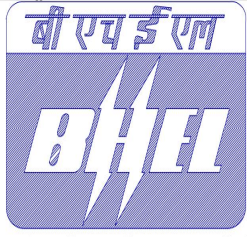
BHEL QA SIGNATURE &amp; STAMP

APPROVED BY

CUSTOMER'S SIGNATURE & STAMP  
(IF APPLICABLE)

Note No. #2

Attachment: GASKETS \_SMQP.pdf



 <b>PROJECT ENGINEERING &amp; SYSTEM DIVISION</b>		<b>STANDARD MANUFACTURING QUALITY PLAN</b>						QP. NO.: PESD/QA/ GASKET/01/18-19			
		<b>PRODUCT: GASKET</b>						<b>BHEL SPEC: AS PER P.O</b>		REV NO: 00	DATE: 22-02-2019
										PAGE 2 OF 2	
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V	REMARKS


Notes:-

1. This MQP should be read along with specification, approved drawings & approved datasheet. (Latest revisions to be considered as per PO).
2. Drawing/datasheet shall prevail over quality plan for contradiction if any.
3. Any project/customer specific requirements, which shall be notified, have to be fulfilled by the vendor at the time of execution of order.
4. Seaworthy packing shall be **witnessed** BHEL/BHEL nominated inspection agency for overseas project.
5. End Customer/Consultant inspection if any shall be intimated during quality plan approval.
6. **NACE requirement:** For items coming under **NACE category**, all tests, reports, MTC and certificates shall be submitted as per **NACE MR0103** requirements.

Abbreviations:-

MTC -	Material Test certificate	WPS -	Welding Procedure Specification
IBR -	Indian Boiler Regulations	PQR -	Procedure Qualification Record
DFT -	Dry Film Thickness	WPQ -	Welder Performance Qualification
TC -	Test Certificate	NDE -	Non Destructive Examination
IS -	Indian Standards	UTS -	Ultimate Tensile Strength
Appd.		YS -	Yield Strength
Dwg. -	Approved Drawing	EL. -	Elongation
PMI -	Positive Material Identification	OD -	Outer Diameter
G.I -	Galvanized Iron	ID -	Internal Diameter

<b>LEGEND:</b> P: PERFORM, W: WITNESS, V: TEST CERTIFICATE REVIEW. INDICATE 1 FOR BHEL / BHEL NOMINATED INSPECTION AGENCY & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D'; TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED  BHEL QA SIGNATURE & STAMP	APPROVED BY  BHEL QA SIGNATURE & STAMP	APPROVED BY  CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)
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Note No. #1	Form No:	 PE&SD	Attachment: 1000141682-PR+SPECS.pdf <b>BHARAT HEAVY ELECTRICALS LIMITED</b> <b>PROJECT ENGINEERING &amp; SYSTEMS DIVISION</b>		<b>PY 52 078</b>		
<b>TECHNICAL SPECIFICATION</b>				Rev. No. 00			
<b>METALLIC SPIRAL WOUND (GRAPHITE FILLER) GASKETS FOR CLASS 150 B16.5 FLANGED CONNECTIONS</b>				Page 1 of 1			

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**1.0 GENERAL**

1.1 This standard specifies requirements related to Designation, Material, Sizes, Dimensions and other information required for ordering purposes of Metallic Spiral Wound (MSW) Gaskets with Graphite Filler for Raised Face/Flat Face Flanged connections of Class 150 as per B16.5.

1.2 The MSW Gaskets shall conform to the requirements of latest version of **ASME Standard B16.20 (Metallic Gaskets for Pipe Flanges)** and comply with the following additional requirements.

1.3 This specification is applicable to MSW Gaskets of Sizes NPS ½" to NPS 24".

**2.0 MATERIAL:**

2.1 Metal Winding : Stainless Steel AISI-316

2.2 External Centering Ring : Carbon Steel

2.3 Inner Ring : Stainless Steel AISI-316

2.4 Filler Material : Flexible Graphite

**3.0 DIMENSIONS, TOLERANCES AND OTHER REQUIREMENTS:**  
Shall be as per ASME B16.20 (Latest edition).

**4.0 SIZE AND FACE:**  
Gasket Size (NPS in inches) and Face (RF-Raised Face/FF-Flat Face) shall be as per BHEL Enquiry/Order.

**5.0 DESIGNATION:**  
Metallic Spiral Wound Gasket with Graphite Filler for a 10" Class 150 Raised Face Flanged Connection shall be designated as:  
*MSW GASKET (GRAPH) 10" CL150 B16.5 RF.*

**6.0 TEST CERTIFICATES:**  
Three copies of test certificates consisting of mechanical properties and chemical composition of the metals shall be furnished.

**7.0 MARKING AND PACKING:**



7.1 The gasket centering ring shall be stamped with the following details:

- BHEL Standard No. PY 52 078
- Standard Marking as per clause 3.4 of ASME B16.20
- Manufacturer's Name or Trade Mark.
- Gasket identification number specified by BHEL in the order.




7.2 The gasket shall be enclosed in a moisture resistant wrapping and packed in such a manner as to prevent damage in transit or during storage.

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**RECORD OF REVISIONS:**


Rev	Date	Revision Detail	Revised by	Approved by
00	25.06.2015	FIRST ISSUE	 SRIKANTH G	 S B RAO

Refer Doc	<b>LAYOUTS &amp; PIPING ENGINEERING</b>	PREPARED	CHECKED	APPROVED	DATE
		 CH MANOJ	 SRIKANTH G	 S B RAO	25.06.15



Note No. #1

Form No:	 PE&SD	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> <b>PROJECT ENGINEERING &amp; SYSTEMS DIVISION</b>		Attachment: 1000141682-PR+SPECs.pdf <b>PY 52 079</b>	
		<b>TECHNICAL SPECIFICATION</b>		Rev. No. 00	
		<b>METALLIC SPIRAL WOUND (GRAPHITE FILLER) GASKETS FOR CLASS 300 B16.5 FLANGED CONNECTIONS</b>		Page 1 of 1	

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**1.0 GENERAL**

1.1 This standard specifies requirements related to Designation, Material, Sizes, Dimensions and other information required for ordering purposes of Metallic Spiral Wound (MSW) Gaskets with Graphite Filler for Raised Face/Flat Face Flanged connections of Class 300 as per B16.5.

1.2 The MSW Gaskets shall conform to the requirements of latest version of ASME Standard B16.20 "METALLIC GASKETS FOR PIPE FLANGES" and comply with the following additional requirements.

1.3 This specification is applicable to MSW Gaskets of Sizes NPS ½" to NPS 24".

**2.0 MATERIAL:**

2.1 Metal Winding : Stainless Steel AISI-316

2.2 External Centering Ring : Carbon Steel

2.3 Inner Ring : Stainless Steel AISI-316

2.4 Filler Material : Flexible Graphite

**3.0 DIMENSIONS, TOLERANCES AND OTHER REQUIREMENTS:**  
Shall be as per ASME B16.20 (Latest edition).

**4.0 SIZE AND FACE:**  
Gasket Size (NPS in inches) and Face (RF-Raised Face/FF-Flat Face) shall be as per BHEL Enquiry/Order.

**5.0 DESIGNATION:**  
Metallic Spiral Wound Gasket with Graphite Filler for a 10" Class 300 Raised Face Flanged Connection shall be designated as:  
*MSW GASKET (GRAPH) 10" CL300 B16.5 RF.*

**6.0 TEST CERTIFICATES:**  
Three copies of test certificates consisting of mechanical properties and chemical composition of the metals shall be furnished.

**7.0 MARKING AND PACKING:**



7.1 The gasket centering ring shall be stamped with the following details:

- BHEL Standard No. PY 52 079
- Standard Marking as per clause 3.4 of ASME B16.20
- Manufacturer's Name or Trade Mark.
- Gasket identification number specified by BHEL in the order.



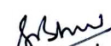
7.2 The gasket shall be enclosed in a moisture resistant wrapping and packed in such a manner as to prevent damage in transit or during storage.

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**RECORD OF REVISIONS:**


Rev	Date	Revision Detail	Revised by	Approved by
00	25.06.2015	FIRST ISSUE	 SRIKANTH G	 S B RAO

Refer Doc		<b>LAYOUTS &amp; PIPING ENGINEERING</b>  <b>PROJECT ENGINEERING &amp; SYSTEMS DIVISION</b>	PREPARED  CH MANOJ	CHECKED  SRIKANTH G	APPROVED  S B RAO	DATE 25.06.15



Note No. #1

Form No:	 PE&SD	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> <b>PROJECT ENGINEERING &amp; SYSTEMS DIVISION</b>	Attachment: 1900141682-PR+SPECs.pdf <b>PY 52 118</b>	
		<b>TECHNICAL SPECIFICATION</b>		Rev. No. 01
		<b>METALLIC SPIRAL WOUND (GRAPHITE FILLER) GASKETS FOR CLASS 600 B16.5 FLANGED CONNECTIONS</b>		Page 1 of 1

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## 1.0 GENERAL

- 1.1 This standard specifies requirements related to Designation, Material, Sizes, Dimensions and other information required for ordering purposes of Metallic Spiral Wound (MSW) Gaskets with Graphite Filler for Raised Face/Flat Face Flanged connections of Class 600 as per B16.5.
- 1.2 The MSW Gaskets shall conform to the requirements of latest version of ASME Standard B16.20 "METALLIC GASKETS FOR PIPE FLANGES" and comply with the following additional requirements.
- 1.3 This specification is applicable to MSW Gaskets of Sizes NPS ½" to NPS 24".

## 2.0 MATERIAL:

- 2.1 Metal Winding : Stainless Steel AISI-316
- 2.2 External Centering Ring : Carbon Steel
- 2.3 Inner Ring : Stainless Steel AISI-316
- 2.4 Filler Material : Flexible Graphite

## 3.0 DIMENSIONS, TOLERANCES AND OTHER REQUIREMENTS:

Shall be as per ASME B16.20 (Latest edition).

## 4.0 SIZE AND FACE:

Gasket Size (NPS in inches) and Face (RF-Raised Face/FF-Flat Face) shall be as per BHEL Enquiry/Order.

## 5.0 DESIGNATION:

Metallic Spiral Wound Gasket with Graphite Filler for a 10" Class 600 Raised Face Flanged Connection shall be designated as:  
*MSW GASKET (GRAPH) 10" CL600 B16.5 RF.*

## 6.0 TEST CERTIFICATES:





Three copies of test certificates consisting of mechanical properties and chemical composition of the metals shall be furnished.




## 7.0 MARKING AND PACKING:

- 7.1 The gasket centering ring shall be stamped with the following details:
  - a) BHEL Standard No. PY 52 118
  - b) Standard Marking as per clause 3.4 of ASME B16.20
  - c) Manufacturer's Name or Trade Mark.
  - d) Gasket identification number specified by BHEL in the order.
- 7.2 The gasket shall be enclosed in a moisture resistant wrapping and packed in such a manner as to prevent damage in transit or during storage.


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## RECORD OF REVISIONS:

Rev	Date	Revision Detail	Revised by	Approved by
00	25.06.2015	FIRST ISSUE	 SRIKANTH G	 S B RAO
01	11.12.2020	COMPLETE SEPECIFICATION REVIEWED AND NO REVISION ENVISAGED	 IMRAN	 SRIKANTH G

Refer Doc	LAYOUTS & PIPING ENGINEERING	PREPARED	CHECKED	APPROVED	DATE
	PROJECT ENGINEERING & SYSTEMS DIVISION	 CH MANOJ	 SRIKANTH G	 S B RAO	01.08.15

Note No. #1

d. #1	Form No:	 PE&SD	Attachment 1900141682-PR+SPECS.pdf	
			PY 52 146	
			BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION	
			TECHNICAL SPECIFICATION	
			NON METALLIC GASKETS SHEET FOR PIPE FLANGE CONNECTIONS	
			Rev. No. 01	
			Page 1 of 2	

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**1.0 GENERAL**

- 1.1 This standard specifies requirements related to Designation, Material, Sizes, Dimensions and other information required for ordering purposes of Non Metallic Gaskets for Flat Face Flanged connections.
- 1.2 The Gaskets sheet shall conform to the requirements of latest version of **ASME Standard B16.21 (Non Metallic Gaskets for Pipe Flanges)** and comply with the following additional requirements.

**2.0 MATERIAL:**

The material shall consist of fibres and inorganic fillers bonded with a suitable elastomer or blend of elastomers, and shall be manufactured in the form of sheets. The fibres shall be uniformly dispersed throughout the jointing.  
Material shall be BS 7531 grade X or Equivalent.

**3.0 DIMENSIONS, TOLERANCES AND OTHER REQUIREMENTS:**

- 3.1 Dimensions: The Gasket sheet shall be supplied as per the sq mts indicated in the purchase order considering the following points :
  - a) Width of the gasket shall be 1500 mm.
  - b) Length of the gasket shall be based on the required sq mts
- 3.2 Thickness: Thickness of Sheet shall be 2.0mm
- 3.3 Tolerances: As per BS 7531
- 3.4 Inspection and Testing : As per BS 7531

**4.0 SIZE AND FACE:**

Gasket Sheet Size (in mm) shall be as per BHEL Enquiry/Order.

**5.0 DESIGNATION:**

Non Metallic Gasket Sheet as per BS 7531 Grade X for Flat Face Flange connections.  
Shall be designated as "**NAB Sheet BS 7531 Grade X**".




**6.0 TEST CERTIFICATES:**

Three copies of test certificates consisting of mechanical properties and chemical composition of the metals shall be furnished.


**7.0 MARKING AND PACKING:**

- 7.1 The gasket centering ring shall be stamped with the following details:
  - a) BHEL Standard No. PY 52 146
  - b) Standard Marking as per clause 3.4 of ASME B16.21
  - c) Manufacturer's Name or Trade Mark.
  - d) Gasket identification number specified by BHEL in the order.
- 7.2 The gasket sheet shall be enclosed in a moisture resistant wrapping and packed in such a manner as to prevent damage in transit or during storage.





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Refer Doc	<b>LAYOUTS &amp; PIPING ENGINEERING</b>	PREPARED	CHECKED	APPROVED	DATE
		 CH MANOJ	 SRIKANTH G	 S B RAO	14.12.15

Note No. #1

Form No:	 PE&SD	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> <b>PROJECT ENGINEERING &amp; SYSTEMS DIVISION</b>	Attachment: 1900141682-PR+SPECS.pdf <b>PY 52 146</b>	
		<b>TECHNICAL SPECIFICATION</b>		Rev. No. 01
		<b>MSW (PTFE FILLER) GASKETS</b> <b>FOR CLASS 150 B16.5 FLANGED CONNECTIONS</b>		Page 2 of 2

**RECORD OF REVISIONS:**

Rev	Date	Revision Detail	Revised by	Approved by
00	14.12.2015	FIRST ISSUE	 SRIKANTH G	 S B RAO
01	11.04.16	Revised Dimensional Requirement	 SVNR	 SRIKANTH G

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It must not be used directly or indirectly in any way detrimental to the interest of the company.

Note No. #3

इंजीनियर्स  
इंडिया लिमिटेड  
(भारत सरकार का उपक्रम)ENGINEERS  
INDIA LIMITED  
(A Govt. of India Undertaking)Attachment TECHNICAL NOTES FOR GASKETS.pdf  
TECHNICAL NOTES FOR  
GASKETSSTANDARD SPECIFICATION No.  
6-44-0056 Rev. 4

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# 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. Ismael  
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)

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## 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