



شرکت ملی گاز ایران

مدیریت پژوهش و فناوری

امور تدوین استانداردها

IGS

مشخصات فنی خرید

واشر حلقوی ( کلاس ۱۵۰ - ۳۰۰ - ۶۰۰ )

Spiral Wound Gasket (Class Rating 150,300,600)



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## ابلاغ مصوبه هیأت مدیره

مدیر محترم پژوهش و فناوری

باسلام،

به استحضار می‌رساند در جلسه ۱۶۰۱ مورخ ۱۳۹۳/۶/۲۳ هیأت مدیره، نامه شماره گ/۹/۰۰۰/۰۰۰/۲۱/۸۵۰ مورخ ۱۳۹۳/۶/۱۷ مدیر پژوهش و فناوری و رئیس شورای استاندارد در مورد تصویب نهایی استاندارد تحت عنوان واشر حلقوی (کلاس ۱۵۰-۳۰۰-۶۰۰) به شماره استاندارد IGS-M-PL-035(0) مطرح و مورد تصویب قرار گرفت.

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## **FOREWORD**

This standard is intended to be mainly used by NIGC and contractors, and has been prepared based on interpretation of recognized standards, technical documents, knowledge, backgrounds and experiences in natural gas industry at national and international levels.

Iranian Gas Standards (IGS) are prepared, reviewed and amended by technical standard committees within NIGC Standardization division and submitted to the NIGC's "STANDARDS COUNCIL" for approval.

IGS Standards are subject to revision, amendment or withdrawal, if required. Thus the latest edition of IGS shall be checked/inquired by NIGC employees and contractors.

This standard must not be modified or altered by NIGC employees or its contractors. Any deviation from normative references and / or well-known manufacturer's specifications must be reported to Standardization division.

The technical standard committee welcomes comments and feedbacks about this standard, and may revise this document accordingly based on the received feedbacks.

## **GENERAL DEFINITIONS:**

Throughout this standard the following definitions, where applicable, should be followed:

- 1- "STANDARDIZATION DIV." is organized to deal with all aspects of industry standards in NIGC. Therefore, all enquiries for clarification or amendments are requested to be directed to mentioned division.
- 2- "COMPANY": refers to National Iranian Gas Company (NIGC).
- 3- "SUPPLIER": refers to a firm who will supply the service, equipment or material to NIGC whether as the prime producer or manufacturer or a trading firm.
- 4- "SHALL ": is used where a provision is mandatory.
- 5- "SHOULD": is used where a provision is advised only.
- 6- "MAY": is used where a provision is completely discretionary.

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## 1. SCOPE

This technical specification covers minimum requirements of N.I.G.C. for purchase of spiral-wound gaskets, class 150, 300 and 600, suitable for use with raised face serrated finish flange described in reference flange standards ASME B16.5 or ASME B16.47, in non-sour natural gas piping and pipeline systems. Manufacturing, materials, dimensions, tolerances, testing and marking according to ASME B16.20 except as supplemented or amended by this specification.

## 2. REFERENCES

Throughout this standard specification, the following standards are referred to. The edition of these standards that are in effect at the time of issuing of this standard specification. The applicability of changes in standards that occur after the date of this standard specification shall be mutually agreed upon by the purchaser and supplier and/or manufacturer.

**ASME B16.5 (2009)** "Pipe Flanges and Flanged Fittings – NPS 1/2" through 24"

**ASME B16.47 (2006)** "Large Diameter Steel Flanges"

**ASME B16.20 (2007)** "Metallic Gasket for Pipe Flanges-Ring Joint, Spiral Wound and Jacketed"

**BS EN 10204 (2004)** "Metallic Products – Types of Inspection Documents"

## 3. DEFINITIONS

### **DFT (Dry Film Thickness)**

The thickness of a coating remaining on the surface when the coating has hardened.

### **Type Test**

Testing performed on typical samples to prove that material, design, manufacturing and etc is capable of conforming to the requirements given in the relevant standard. Type test certificate is valid until the material, designation or production methods remain unchanged.

## 4. TECHNICAL REQUIREMENTS

### 4.1 Materials

The materials shall be specified in the purchase order suitable for service "fluid, design pressure & temperature". If it does not specified, the manufacturer shall comply with 4.1.1 to 4.1.4.

#### **4.1.1 Metal winding material**

The material used for the metal winding in the sealing element shall be at least stainless steel grade 304, performed V-shaped.

#### **4.1.2 Filler material**

The filler material shall be non-asbestos according to Table 19 of ASME B16.20 with at least graphite.

#### **4.1.3 Outer centering/guide ring**

The centering ring shall be at least made of carbon steel that is painted with epoxy, minimum DFT of 50 microns or metal plated to inhibit atmospheric corrosion. The degree of clearance between the sealing element and the centering ring shall be such that the sealing element will not fall out of the ring during normal handling.

#### **4.1.4 Inner ring**

If specified in purchase order, the inner ring shall be at least made of stainless steel grade 304.

**Note:** For  $NPS \leq 10$ , the inner and centering ring shall be furnished in one piece and without any weld seam. For  $12 \leq NPS \leq 40$ , the inner and centering ring shall be one piece, only one weld seam and for  $NPS \geq 42$  maximum two weld seam.

### **5. REPORTS AND CERTIFICATES AND DOCUMENTS**

The manufacturer/supplier shall furnish the purchaser with the followings according to BS EN 10204 Type 3.1:

- a- Technical catalog
- b- ASME B16.20 certificate
- c- Certified reports giving chemical analysis and physical properties of materials
- d- Hydrostatic type testing certificates.(as per Appendix B)
- e- Filled, signed and stamped data sheets stating in Appendix A

### **6. PACKAGING AND SHIPMENT**

The gaskets shall be enclosed in moisture resistant wrappings and packed in such a way as to prevent damage in transit or during storage. Small diameter gaskets ( $NPS \leq 8$ ) shall be grouped in cardboard boxes and large-diameter gaskets ( $NPS \geq 10$ ) shall be individually fixed between fiber boards.

### **7. MARKING**

All packages shall be marked as per ASME B16.20.  
This mark shall be displayed on at least two sides of each package.

## **8. PURCHASE ORDER INFORMATION**

For each item, the following information shall be specified in the purchase order:

- a-** Order No.
- b-** Manufacturing standard (ANSI/ASME B16.20)
- c-** Flange standard, class, size, type and series
- d-** Service condition (media max operating pressure and temperature)
- e-** Strip winding material
- f-** Filler material
- g-** Outer Centering/guide ring material and coating
- h-** Inner ring material (if required)
- i-** Packaging

### APPENDIX A Data Sheet

Elements		N.I.G.C. Requirement	Manufacturer's Comments
<b>General Information</b>			
1	Manufacturer's name		
2	Order No.		
3	Customer		
4	Media		
5	Maximum operating pressure	.....psi	
6	Maximum operating temperature	..... °C	
<b>Specification</b>			
7	Size		
8	Class	<input type="checkbox"/> 150 <input type="checkbox"/> 300 <input type="checkbox"/> 600 <input type="checkbox"/> other ...	
9	Manufacturing standard	<input type="checkbox"/> ASME B16.20	
10	Flange standard	<input type="checkbox"/> ASME B16.5	
		<input type="checkbox"/> ASME B16.47	
		<input type="checkbox"/> Series A	
		<input type="checkbox"/> Raised face <input type="checkbox"/> Serrated finished	
<b>Materials</b>			
11	Centering ring	<input type="checkbox"/> Carbon steel <input type="checkbox"/> Epoxy painted <input type="checkbox"/> DFT= min 50μ <input type="checkbox"/> Other .....	
12	inner ring	Required	<input type="checkbox"/> 304 ss <input type="checkbox"/> other..... <input type="checkbox"/> one pieces (NPS ≤ 10) <input type="checkbox"/> one seam (12 ≤ NPS ≤ 40) <input type="checkbox"/> Two seam 42 ≤ NPS
		Not Required	<input type="checkbox"/> Not required
13	Filler	<input type="checkbox"/> Graphite <input type="checkbox"/> other .....	
14	Metallic Winding	<input type="checkbox"/> 304 ss <input type="checkbox"/> other .....	
<b>Certificate</b>			
15	Manufacturing	<input type="checkbox"/> ASME B16.20	
16	Test reports	<input type="checkbox"/> Physical properties <input type="checkbox"/> Chemical properties	
17	Type tests	<input type="checkbox"/> Hydrostatic type test <input type="checkbox"/> Gasket compression test	
<b>Packaging</b>			
18	All sizes	<input type="checkbox"/> Moisture resistant wrapped	
	NPS≤8"	<input type="checkbox"/> Card board box	
	10 "≤NPS	<input type="checkbox"/> Fixed between fiber boards	
<b>Note:</b>			
<ul style="list-style-type: none"> <li>- The above data sheet shall be filled for each item.</li> <li>- Deviation from IGS-M-PL-035(0) shall be specified by manufacturer/supplier.</li> <li>- This data sheet shall be signed and sealed by manufacturer's authorized person.</li> </ul>			



## APPENDIX B Hydrostatic Type Test

### Introduction

Manufacturer shall submit the hydrostatic type test certificate which carried out in accordance with this Appendix.

### Selection of Samples

In any of size range A through C, half of the largest produced size in each pressure rating class, shall be tested as a typical sample.

**A**= 2 ~ 12 inch

**B**= 16 ~ 36 inch

**C** = 40 ~ 60 inch

If the hydrostatic type test has been carried out on a spiral wound gasket with higher class rating, the other lower classes at the same size range are acceptable.

### Test Duration

The test duration shall be as follows:

Fitting Size	Duration, sec
NPS $\leq$ 2	60
$2 \frac{1}{2} \leq$ NPS $\leq$ 8	120
NPS $\geq$ 10	180

### Acceptance

Typical samples shall be capable of withstanding a hydrostatic pressure of 1.5times the rating without any detrimental effect on sealing properties in service and visible leakage through the pressure boundary.