



Certificate no.:  
**TAP0000341**

# TYPE APPROVAL CERTIFICATE

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## This is to certify:

that the **Gaskets and Sealings**

with type designation(s)  
**JWE 6656, JWE 66(L)56**

issued to

**Joong Won Engineering Co., Ltd.**  
**Busan, Korea, Republic of**

is found to comply with

**ASME B16.20-2023, Metallic Gaskets for Pipe Flanges**

**API 607**

**API Specification 6FB – Fire Test for End Connectors 1998, with modifications**

**ISO 19921:2005 Ships and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Test methods**

## Application:

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**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.**

Issued at **Hamburg** on **2026-01-08**

This Certificate is valid until **2031-01-07**.

for **DNV**

DNV local unit: **Busan, CMC Korea**

Approval Engineer: **Thilo Pabst**

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This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

## PRODUCT DESCRIPTION

Asbestos free Spiral Wound Gasket JWE6656, JWE66(L)56, with Inner & Outer/centering Ring, made from stainless steel (SS) and a filler from flexible Graphite (FG).  
Designed acc. ASME B16.20 and intended for pipe flanges acc. ASME.

### Material:

| Spiral Wound Gasket Type        | Standard      | JWE6656       | JWE66(L)56    |
|---------------------------------|---------------|---------------|---------------|
| Inner Ring                      | ASTM A240M-24 | 316           | 316L          |
| Outer (locating/centering) Ring |               |               |               |
| Metal Strip/Winding             |               |               |               |
| Filler <sup>1</sup>             | DIN 3535-6    | Graphite (FG) | Graphite (FG) |

Note1: SIGRAFLEX grade C: Carbon content ≥ 98%, density 1.0 g/cm<sup>3</sup>

### Properties:

| Technical data           | unit      | Standard                                 | JWE6656 <sup>1</sup>                        | JWE66(L)56 <sup>1</sup> |
|--------------------------|-----------|------------------------------------------|---------------------------------------------|-------------------------|
| Nominal diameter         | Inch (DN) | ASME B16.20-2023                         | NPS ½" to 60" <sup>2</sup> (DN15 to DN1500) |                         |
| Ring thickness           | mm / Inch |                                          | 2.97 to 3.33 mm / 0.017" to 0.131"          |                         |
| Pressure Rating          | LB        | ASME B16.5                               | CL150, CL300                                |                         |
| Temperature Range        | °C        | ./. .                                    | -196°C to 500°C                             |                         |
| Leakage rate (ambient T) | ./. .     | Maker Standard based on ASME B16.20-2023 | passed <sup>3</sup>                         |                         |
| Leakage rate (-196°C)    | ./. .     |                                          | passed <sup>3</sup>                         |                         |

Note1: values partly depending on size and temperature

Note2: covered all sizes between NPS ½" and 60" acc ASME B16.20-2023

Note3: test specimen : JWE66(L)56-316L/FG/316L

## APPLICATION

This is a Non-Class Type Approval Certificate (TA-NONCL - for products where a Type Approval is not mandatory) on basis of test according to international standards.

The above listed types of Spiral Wound Gasket may be used under consideration of the mechanical and technical characteristics as well as physical and chemical properties for the following applications:

- On board of ships and other structures classed by DNV as follows:  
Ship's piping systems as specified in DNV Rules Pt.4, Ch.6 Piping systems, pressurized items and machinery containing including cryogenic applications.  
e.g. the following fluids: non-flammable gases, oil, fuel oil, water, LNG, LPG

The selection of the gaskets for the corresponding application and appropriate installation has to be in accordance with the instructions of the manufacturer.

Piping/Gaskets shall be hydrostatically tested: 1.5 times of the system design pressure (DNV Pt.4 Ch.6 – Piping)

Piping of all cargo handling systems shall be electrically bonded. (DNV Pt.5 Ch.5 – Oil Tanker and Pt.5 Ch. 7 – Liquefied Gas Tanker).

### Limitation / Exclusions

- Pipelines on chemical and gas tankers carrying flammable gases (except LNG, LPG), noxious media, propylene oxide and mixtures of ethylene and propylene oxide.

## TYPE APPROVAL DOCUMENTATION

### TESTS CARRIED OUT

Documentation of tests performed are the basis for this Type Approval as referenced in the list above and DNV Ref.-Nos. 262.1-044062

### MARKING OF PRODUCT

For traceability to this Type Approval products shall bear legible and durable marked as following:

#### Product printing:

- Manufacturer's registered trademark: *JWE*
- Applicable Standard: *ASME B16.20*
- Nominal Pressure (CL...): *150LB or 300LB*
- Flange Size / kind: *2B (2" B Flange)*
- Materials (inner ring\_metal strip/filler\_outer ring)

#### Additional identification information:

- The color of the filler graphite = dark grey

#### Description label:

① ② ③ ④ ⑤  
\* 6 6 5 6 - 316 - 316  
\* 6 6(L) 5 6 - 316L - 316L

- ① : Filler ( 6 : Graphite(FG) )
- ② : Metal Strip/Winding ( 6 : ASTM A240M-316 / 6(L) : ASTM A240M-316L )
- ③ : Spiral Wound Gasket Type ( 6 : Inner Ring & Outer Ring Type )
- ④ : Inner Ring Material ( 316 : ASTM A240M-316 / 316L : ASTM A240M-316L )
- ⑤ : Outer Ring Material ( 316 : ASTM A240M-316 / 316L : ASTM A240M-316L )

Sample: product picture



Sample: label

| CUSTOMER              | DNV LABEL SAMPLE      | Q'TY        |
|-----------------------|-----------------------|-------------|
| PRODUCT NO            | JWE 66(L)56-316L-316L | 1           |
| LOT NO                | 251223-004 [#2]       |             |
| MATERIALS             | 316L-316L/FG-316L     |             |
| SIZE                  | ASME 150LB 2" 4.5T    |             |
| ETC.                  |                       |             |
| JOONG-WON ENGINEERING |                       |             |
| Inspector             | Q.C                   | Result PASS |

| CUSTOMER              | DNV LABEL SAMPLE   | Q'TY        |
|-----------------------|--------------------|-------------|
| PRODUCT NO            | JWE 6656-316-316   | 1           |
| LOT NO                | 251223-004 [#1]    |             |
| MATERIALS             | 316-316/FG-316     |             |
| SIZE                  | ASME 150LB 2" 4.5T |             |
| ETC.                  |                    |             |
| JOONG-WON ENGINEERING |                    |             |
| Inspector             | Q.C                | Result PASS |

### PERIODICAL ASSESSMENT

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with (refer to the Class Programme DNV-CP-0338, Sec. 4).

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE