



*Flexitallic*® ZG

*Flexpro*®

**GOODYEAR**  
RUBBER PRODUCTS INC.

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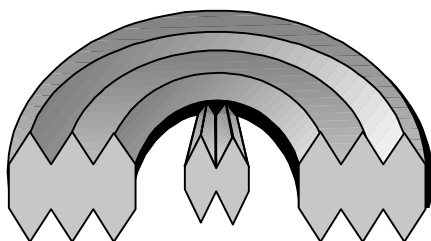
# Flexpro

## For Enhanced Joint Integrity

Although relatively new to the U.S. market, the Flexpro gasket has been providing an extremely tight, reliable seal in a wide range of applications throughout Europe since its development in Germany over 70 years ago. Flexitallic is pleased to introduce the Kammprofile gasket design.

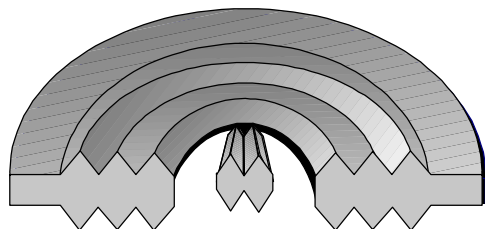
The Flexpro gasket is comprised of a concentrically serrated solid metal core with a soft, conformable sealing material bonded to each face. The soft facing material provides low stress gasket seating, while the serrated geometry of the metal core enhances sealing performance by inducing stress concentrations on the sealing surfaces. The serrations minimize lateral movement of the facing material, while the metal core provides rigidity and blowout resistance.

The Flexpro gasket exhibits excellent compressibility and recovery characteristics, maintaining joint tightness under pressure and temperature fluctuations, temperature differential across the flange face, flange rotation, bolt stress relaxation, and creep. Suitable from vacuum to extremely high pressure.



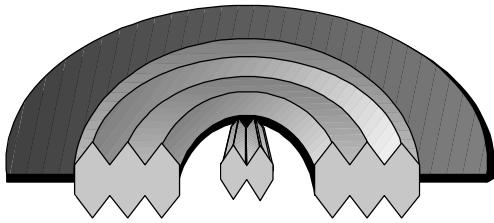
### Style PN

Normally used in male/female, tongue & groove, and other recessed flange configurations.



### Style ZG

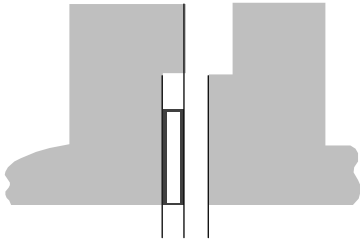
Provided with an integral outer locating ring for proper gasket positioning within the flange bolt circle or in a recess.



## Style ZA

Similar to the Style ZG except with a loose fitting, independent, thinner locating ring. The loose fitting ring allows for expansion and contraction without excessive stress being induced in the solid metal core. Depending on centering ring material and thickness, may be more economical than Style ZG.

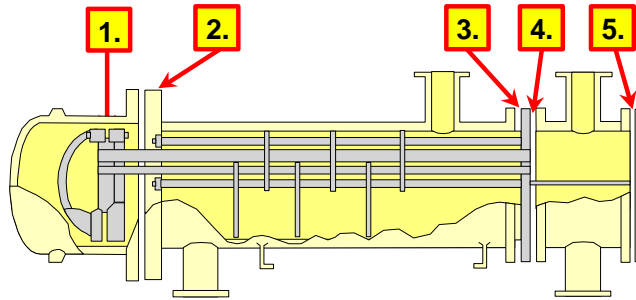
## IDEAL FOR HEAT EXCHANGER FLANGES



Although suitable for use on standard ASME flanges in a wide range of difficult applications, the Flexpro gasket is proving to be especially suitable as a reliable, cost effective alternative to jacketed gaskets that are commonly used in heat exchanger applications. Use of the Flexpro gasket will ensure a reliable seal, from initial hydrotest through difficult operating conditions. Flexpro gaskets are suitable for use on TEMA flanges, and when required, pass partition ribs can be supplied in any configuration. The Flexpro gasket provides a high integrity, low seating stress seal, and is ideal for heat exchanger applications with limited bolt load or lighter weight flanges.

Shell Side

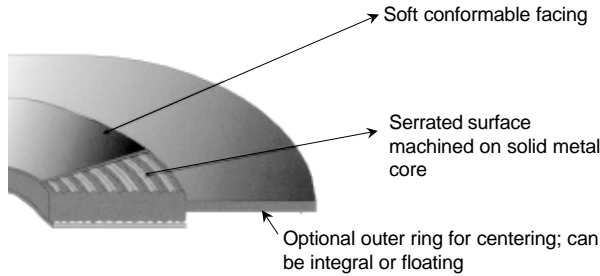
Tube Side



### Gasket Locations

- |                       |                             |
|-----------------------|-----------------------------|
| 1. Floating Head      | 4. Tubesheet to channel box |
| 2. Shell cover        | 5. Channel box cover        |
| 3. Shell to tubesheet |                             |

# COMPOSITE CONSTRUCTION WITH A SERRATED CORE



## STANDARD CORE MATERIALS

| Core Material   | Max. Temperature ° F | Max Temperature ° C |
|-----------------|----------------------|---------------------|
| Stainless Steel | 1000 - 1600          | (535 - 870)         |
| Carbon Steel    | 800                  | 425                 |
| Brass           | 500                  | 260                 |
| Copper          | 600                  | 315                 |
| Aluminum        | 800                  | 425                 |
| Monel           | 1500                 | 815                 |
| Nickel          | 1400                 | 760                 |
| Inconel         | 2000                 | 1100                |

Standard core thickness is .125" (nominal); other thicknesses and materials are readily available to suit specific applications.

## STANDARD FACING MATERIALS

### Seating Stress at Room Temp

| Facing Material              | Max. Temp °F | Max. Temp °C   | Min          | Max          |                |
|------------------------------|--------------|----------------|--------------|--------------|----------------|
| Flexicarb Flexible Graphite* | 850          | (450)          | 2500         | 72500 psi    | (17 - 500 Mpa) |
| Non-asbestos Sheet           | 350 - 750    | (175 - 400)    | 3300         | 72500 psi    | (23 - 500 Mpa) |
| PTFE                         | 500          | (260)          | 2500         | 72500 psi    | (17 - 500 Mpa) |
| Soft Metals                  | Per Material | (Per Material) | Per Material | Per Material | Per Material   |

\*Flexible graphite can be used at temperatures from cryogenics to 850°F (450°C) in an oxidizing atmosphere; and up to 6000°F (3300°C) in a reducing or neutral atmosphere.

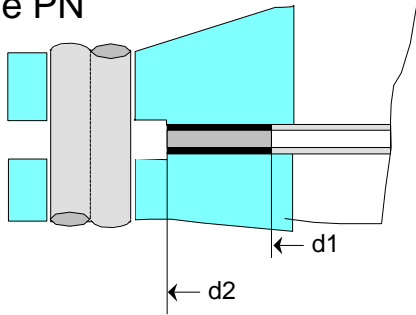
Standard facing thickness is .020"; other thicknesses and materials are readily available to suit specific applications.

## FLANGE SURFACE FINISH REQUIREMENTS

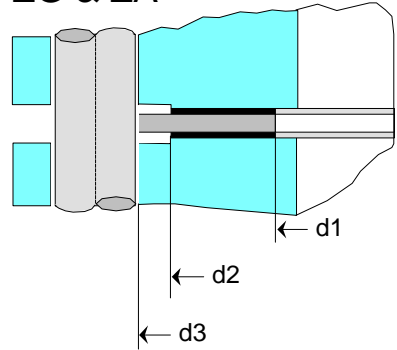
The ideal flange finish for use with Flexitallic Kammprofile gaskets is 125 - 250μ-inch Ra.

## Dimensional Data

Style PN



Style ZG & ZA



STYLE PN, ZG & ZA

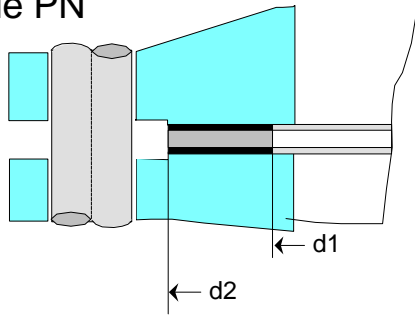
To Suit ASME B16.5 and BS 1560 Flanges Class 150 Up to 2500

Dimensions in inches

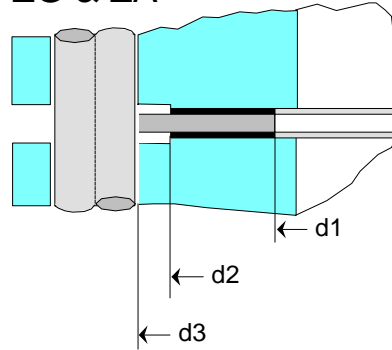
|       |         |        | 150    | 300    | 400    | 600    | 900    | 1500   | 2500   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| NPS   | d1      | d2     | d3     | d3     | d3     | d3     | d3     | d3     | d3     |
| 1/2   | 29/32   | 1-5/16 | 1-7/8  | 2-1/8  | 2-1/8  | 2-1/8  | 2-1/2  | 2-1/2  | 2-3/4  |
| 3/4   | 1-1/8   | 1-9/16 | 2-1/4  | 2-5/8  | 2-5/8  | 2-5/8  | 2-3/4  | 2-3/4  | 3      |
| 1     | 1-7/16  | 1-7/8  | 2-5/8  | 2-7/8  | 2-7/8  | 2-7/8  | 3-1/8  | 3-1/8  | 3-3/8  |
| 1-1/4 | 1-3/4   | 2-3/8  | 3      | 3-1/4  | 3-1/4  | 3-1/4  | 3-1/2  | 3-1/2  | 4-1/8  |
| 1-1/2 | 2-1/16  | 2-3/4  | 3-3/8  | 3-3/4  | 3-3/4  | 3-3/4  | 3-7/8  | 3-7/8  | 4-5/8  |
| 2     | 2-3/4   | 3-1/2  | 4-1/8  | 4-3/8  | 4-3/8  | 4-3/8  | 5-5/8  | 5-5/8  | 5-3/4  |
| 2-1/2 | 3-1/4   | 4      | 4-7/8  | 5-1/8  | 5-1/8  | 5-1/8  | 6-1/2  | 6-1/2  | 6-5/8  |
| 3     | 3-7/8   | 4-7/8  | 5-3/8  | 5-7/8  | 5-7/8  | 5-7/8  | 6-5/8  | 6-7/8  | 7-3/4  |
| 3-1/2 | 4-3/8   | 5-3/8  | 6-3/8  | 6-1/2  | 6-3/8  | 6-3/8  | 7-1/2  | 7-3/8  | -      |
| 4     | 4-7/8   | 6-1/16 | 6-7/8  | 7-1/8  | 7      | 7-5/8  | 8-1/8  | 8-1/4  | 9-1/4  |
| 5     | 5-15/16 | 7-3/16 | 7-3/4  | 8-1/2  | 8-3/8  | 9-1/2  | 9-3/4  | 10     | 11     |
| 6     | 7       | 8-3/8  | 8-3/4  | 9-7/8  | 9-3/4  | 10-1/2 | 11-3/8 | 11-1/8 | 12-1/2 |
| 8     | 9       | 10-1/2 | 11     | 12-1/8 | 12     | 12-5/8 | 14-1/8 | 13-7/8 | 15-1/4 |
| 10    | 11-1/8  | 12-5/8 | 13-3/8 | 14-1/4 | 14-1/8 | 15-3/4 | 17-1/8 | 17-1/8 | 18-3/4 |
| 12    | 13-3/8  | 14-7/8 | 16-1/8 | 16-5/8 | 16-1/2 | 18     | 19-5/8 | 20-1/2 | 21-5/8 |
| 14    | 14-5/8  | 16-1/8 | 17-3/4 | 19-1/8 | 19     | 19-3/8 | 20-1/2 | 22-3/4 | -      |
| 16    | 16-5/8  | 18-3/8 | 20-1/4 | 21-1/4 | 21-1/8 | 22-1/4 | 22-5/8 | 25-1/4 | -      |
| 18    | 18-7/8  | 20-7/8 | 21-5/8 | 23-1/2 | 23-3/8 | 24-1/8 | 25-1/8 | 27-3/4 | -      |
| 20    | 20-7/8  | 22-7/8 | 23-7/8 | 25-3/4 | 25-1/2 | 26-7/8 | 27-1/2 | 29-3/4 | -      |
| 22    | 22-7/8  | 24-7/8 | 26     | 27-3/4 | 27-5/8 | 28-7/8 | -      | -      | -      |
| 24    | 24-7/8  | 26-7/8 | 28-1/4 | 30-1/2 | 30-1/4 | 31-1/8 | 33     | 35-1/2 | -      |

## Dimensional Data

Style PN



Style ZG & ZA



STYLE PN, ZG & ZA IN ACCORDANCE WITH DIN 2697 PN64 UP TO PN400  
Dimensions in mm

| DN    | d1  | d2  | 64  | 100 | 160 | 250 | 320 | 400 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|
|       | d1  | d2  | d3  | d3  | d3  | d3  | d3  | d3  |
| 10    | 22  | 40  | 56  | 56  | 56  | 67  | 67  | 67  |
| 15    | 25  | 45  | 61  | 61  | 61  | 72  | 72  | 77  |
| 25    | 36  | 68  | 82  | 82  | 82  | 82  | 92  | 103 |
| 40    | 50  | 88  | 102 | 102 | 102 | 108 | 118 | 135 |
| 50    | 62  | 102 | 112 | 118 | 118 | 123 | 133 | 150 |
| 65    | 74  | 122 | 137 | 143 | 143 | 153 | 170 | 192 |
| 80    | 90  | 138 | 147 | 153 | 153 | 170 | 190 | 207 |
| 100   | 115 | 162 | 173 | 180 | 180 | 202 | 229 | 256 |
| 125   | 142 | 188 | 210 | 217 | 217 | 242 | 274 | 301 |
| 150   | 165 | 218 | 247 | 257 | 257 | 284 | 311 | 348 |
| (175) | 190 | 260 | 277 | 287 | 284 | 316 | 358 | -   |
| 200   | 214 | 285 | 309 | 324 | 324 | 358 | 398 | 442 |
| 250   | 264 | 345 | 364 | 391 | 388 | 442 | 488 | -   |
| 300   | 310 | 410 | 424 | 458 | 458 | -   | -   | -   |
| 350   | 340 | 465 | 486 | 512 | -   | -   | -   | -   |
| 400   | 386 | 535 | 543 | -   | -   | -   | -   | -   |





## Flexpro Gaskets

### *Proven Performance in the Field . . .*

#### *Typical Applications*

##### Hydrogen

Design Temperature - 850°F  
Design Pressure - 3,000 psi

##### Heat Transfer Fluid

Design Temperature - 575°F  
Design Pressure - 290 psi

##### Steam

Design Temperature - 750°F  
Design Pressure - 250 psi

##### Natural Gas

Design Temperature - Ambient  
Design Pressure - 600 psi

##### Exhaust Gas

Design Temperatures - 1300°F  
Design Pressure - 20 psi

##### Hydrogen

Design Temperature - 900°F  
Design Pressure - 900 psi

### *Proven Performance in the Field . . .*

- Superior Tightness - Longer life, no need to "hot torque", less maintenance, reduced emissions
- Wide range of Materials - Core and facing materials to suit almost any application
- Reproducible Construction - Assures consistence from lot to lot
- Easy to Handle and Install - Rigid core facilitates easy handling, less damage
- Wide Pressure Range - Suitable from Vacuum to Class 2500 and higher, reduces inventory requirements
- Wide Temperature Range - Suitable from Cryogenics to 200°F (1100°C) depending on core and facing materials
- Low Seating Stress - Ideal for light flanges with limited available bolt load, as well as highly loaded flanges
- High Recovery - Flexicarb flexible graphite facing is ideal for cyclic conditions
- Conformable Surfaces - Soft, conformable surface layers accommodate minor dings, nicks and scratches that are detrimental to other types of gaskets; also less susceptible to inaccurate bolting. Suitable for use on a wide range of surface finishes
- Proven Design - Over 70 years of experience in difficult service throughout the world
- Firesafe - Flexible graphite and solid metal cores are inherently firesafe
- Wide Application - Available for standard and special flanges, in circular and non-circular shapes
- Replaces Jacketed Gaskets - Direct replacement for jacketed gaskets in most applications
- Cost Effective - Longer life, less maintenance, reduced emissions