

THE FUTURE OF  
HIGH PERFORMANCE SEALING  
HAS ARRIVED

# FISHBONE™



*Centering Ring Construction  
each side covered with Graphite, PTFE or Mica*

**ENVIRONMENTAL FISHBONE™ GASKETS**



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**EGC**  
Environmental  
Gasket  
Company

## ● A brief history of Metal Gaskets

*In 1912, over 100 years ago*

### ● **Spiral Wound Gaskets** - A great invention for its time

#### Advantages

- ※ Combines strength from metal strips with sealing capability from a non-metallic material
- ※ Self-energized by fluid pressure

#### Disadvantages

- ※ The “un-wind” problem
- ※ Compressed at 45 degree angle toward the flange metal strips damage the surface



*In 1976, over 36 years ago*

### ● **Camprofile Gaskets** - A good improvement in gasket strength

#### Advantages

- ※ Strong, will not un-wind and will not crush
- ※ Interchangeable with spiral-wound gaskets

#### Disadvantages

- ※ Less elastic compared to spiral wound gaskets resulting in poor recovery
- ※ Sharp teeth bite into flange surfaces
- ※ Not self-energized by fluid pressure



*NOW*

### ● **Fishbone™ Gaskets**

- ※ Balances strength with flexibility
- ※ Interchangeable with existing gasket standards
- ※ Does not damage flanges
- ※ Uncrushable and does not unwind
- ※ And more...



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## ● The Fishbone™ Gasket Design & Advantages

### Design

- Helical concentric bevelled ribs, each side covered with Graphite, PTFE or Mica
- Unitary design with or without a centering ring
- Rounded, non-sharp contact surface
- Patented Stop-Step design

### Advantages

- Internally self-energized and by fluid pressure for better sealing performance
- Interchangeable with all spiral wound gaskets and Camprofile gaskets
- Will not damage flange like Camprofile gaskets and spiral wound gaskets
- Prevents over-compression of sealing element or gasket crushing

### Change This



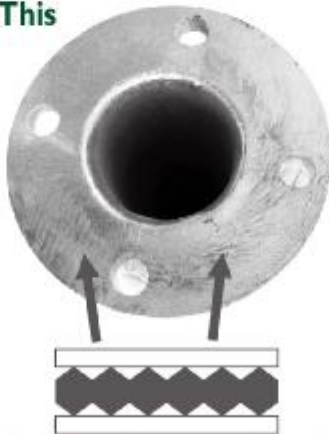
Unwound Spiral Wound Gaskets

### To This



Fishbone™ Gasket

### Change This



Camprofile Teeth Damaging Flange Face

### To This



Fishbone™ Gasket



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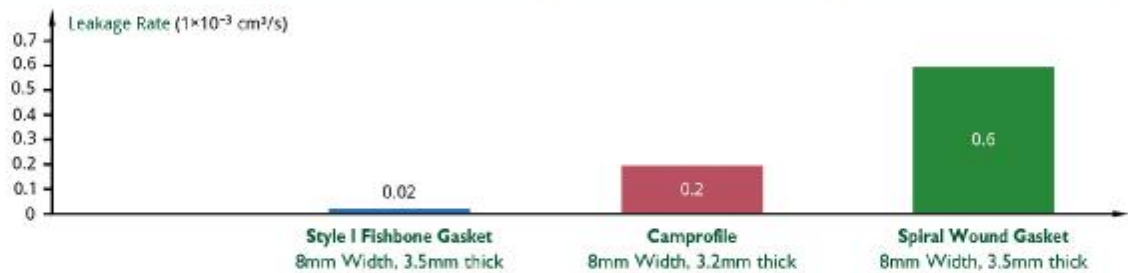
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## ● Test Results

### Leakage Test - ENVIRONMENTAL Fishbone™ Gasket vs. Spiral Wound vs. Camprofile

- Test Parameters (ASTM F37) Gasket Stress 30 MPa / 4351 psi | Nitrogen Pressure 4 MPa / 580 psi  
Test Report#: MF-130933 & MF-130935

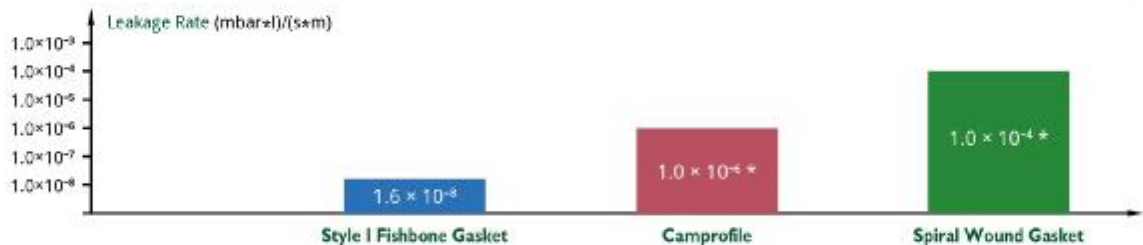
Test Item	Style I Fishbone Gasket 8mm Width, 3.5mm thick	Camprofile 8mm Width, 3.2mm thick	Spiral Wound Gasket 8mm Width, 3.5mm thick
Leakage Rate ( $1 \times 10^{-3}$ cm <sup>3</sup> /s)	0.02	0.2	0.6



### TA-LUFT Test - ENVIRONMENTAL Fishbone™ Gasket vs. Spiral Wound vs. Camprofile

- Test Parameters - VDI Guideline 2440 & VDI Guideline 2200

Test Item	Style I Fishbone Gasket	Camprofile	Spiral Wound Gasket
Leakage Rate (mbar·l)/(s·m)	$1.6 \times 10^{-8}$	$1.0 \times 10^{-4}$ *	$1.0 \times 10^{-4}$ *



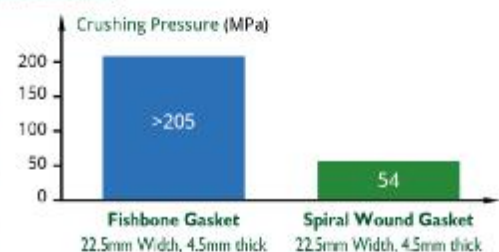
\*Average values from accredited international laboratory

The fishbone Gasket is considered to be of high grade performance according to TA-Luft.

### Crush Resistance Test - ENVIRONMENTAL Fishbone™ vs. Spiral Wound

- Test Parameters Pressure 205 MPa / 29732 psi  
Test Report#: MF-130936

Test Item	Fishbone Gasket 22.5mm Width, 4.5mm thick	Spiral Wound Gasket 22.5mm Width, 4.5mm thick
Crushing Pressure (MPa)	>205	54



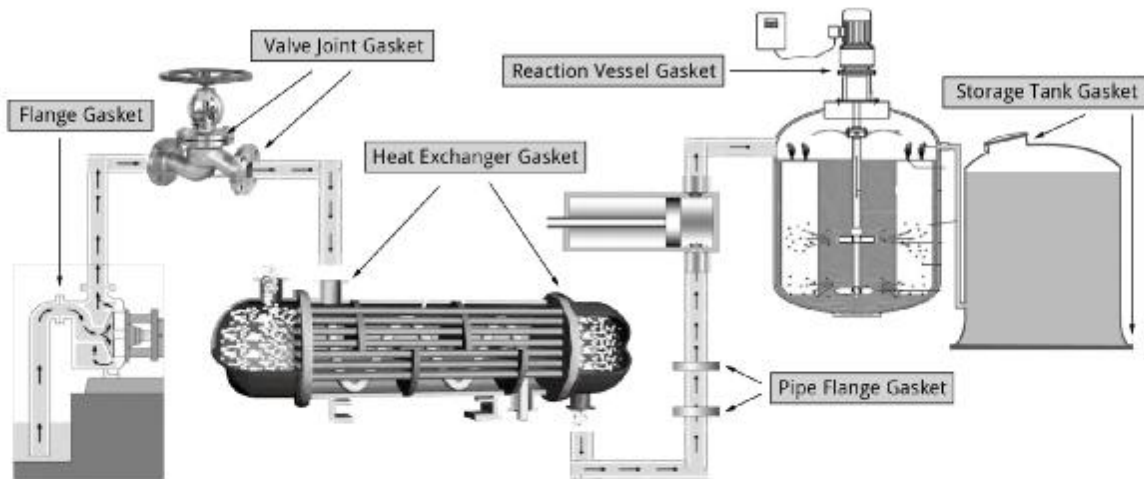
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## ● Applications

- Critical Flange Applications
- Steam Sealing
- Direct Replacement of All Spiral Wound Gaskets and Camprofile Gaskets
- Low Emissions Sealing
- Fire Safe Requirements
- High Pressure Flanges
- Piping and Equipment



## ● Technical Specifications

### Standard Materials

- Metal Materials  
304, 316L
- Non-metallic Sealing Materials  
Flexible Graphite, PTFE, Expanded PTFE, Mica

※ Other Materials on request

### Temperature Range

Facing Material	Minimum °C	Maximum °C	Minimum °F	Maximum °F
Flexible Graphite	-212	450	-350	850
PTFE	-240	260	-400	500
ePTFE	-240	260	-400	500
Mica	-212	1000	-350	1850

For sealing width > 9 mm(3/8"), it will be manufactured in TYPE II ;  
for sealing width < 9mm(3/8"), it will be manufactured in TYPE I.



### Features

1. Patented helical concentric bevelled ribs, each side covered with Graphite, PTFE or Mica
2. Patented Stop-Step design
3. Self-energized by fluid pressure
4. Unitary design with or without a centering ring



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## ● How to Order

### ● Standard Sizes

#### Imperial

NPS (in): 1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4",  
5", 6", 8", 10", 12", 14", 16", 18", 20", 24"

CLASS (lbs): 150, 300, 400, 600, 900, 1500, 2500

#### Metric

DN (mm): 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150,  
175, 200, 250, 300, 350, 400, 450, 500, 600

PN (MPa): 1, 1.6, 2.5, 4, 6.3, 10, 16, 25, 32, 40

### ● Special Size

#### Imperial

NPS (in): 1/2" ~ 60"

CLASS (lbs): 150 ~ 2500

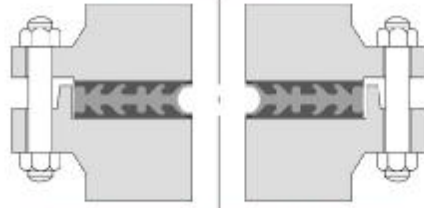
#### Metric

DN (mm): 10 ~ 2000

PN (MPa): 1.6 ~ 40

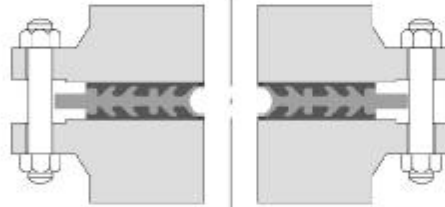
### Interchangeable

#### *Basic Construction*



Replaces Spiral Wound Style R, Style RIR  
& Camprofile Basic Type

#### *Centering Ring Construction*



Replaces Spiral Wound Style CG, Style CGI  
& Camprofile Reinforced Type



**ENVIRONMENTAL GASKET COMPANY LIMITED**

309 Hanzhongmen Avenue, Nanjing, China, 210036

Tel: +86 25 5278 8148 Fax: +86 25 5278 8149

www.environmentalgasket.com

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