Metaflex®

Spiral-wound gasket

High temperature / high pressure semi-metallic gasket for piping and vessel applications

The Metaflex® spiral-wound gasket consists of a sealing element combining thin metallic wraps pre-formed into a chevron or 'v' profile that provides resilience and recovery under high pressure operating conditions. A soft filler material is then introduced between these wraps, which seals the internal pressure across a wide range of media applications.

Features and benefits

- API 6FB fire certified (Flexible graphite)
- Available in a range of materials capable of withstanding temperatures from cryogenic and below to in excess of 1000°C
- Designed to seal high pressures up to 250 Bar (25 MPa)
- Available with BAM approval for oxygen service
- Maintains high tightness / low leakage under thermal transient conditions
- Resists corrosion in aggressive media environments

Standard filler materials

Flexible Graphite
- 98% oxidation inhibited
- 99% ultra pure Nuclear

PTFE
- Expanded
- Sintered

Phlogopite (Mica)

Application guidelines

- Piping flange gaskets, heat exchangers, boilers, reactors, vessels and OEM equipment
- Compatible with HP steam, hydrocarbons and a wide range of chemicals within HPI & CPI industries
- High pressures (up to 250 Bar)
- Suitable for standard ASME, EN, JIS, DIN flanges
- Non-standard dimensions Ø10 mm up to Ø3500 mm
- Non-circular manholes, handholes, tubecaps and plugs for boilers and vessels

Available winding and ring materials

- 304
- 304L
- 316
- 316L
- 310
- 321
- 347
- Inconel®
- Incoloy®
- B2 & C276
- Monel®
- 17-7 PH
- Alloy 20
- Duplex®

Note

The operational life span of graphite at high temperatures might be limited due to media or environmental influences, for continuous exposure in oxidising environments above +450°C consult with James Walker's technical team.

* 3rd party tested and validated by James Walker for use in hydrogen service

Type C

Suitable for tongue and groove, spigot and recess or flat face to recess. Typical applications include pump casings, valve bonnets and OEM.

Type SG

External ring to locate the gasket within the flanges and act as a compression stop for use on raised-face piping applications.

Type C/IR

Identical to Type C but with an inner ring compression stop to aid sealing on high pressure applications and improve ease of handling during installation.

Type SG/IR

External and internal rings locate the gasket centrally on the flange and add stability to the bore to improve recovery, reduce corrosion attack and shield from aggressive media.

James Walker

TEMPERATURE

Flexible Graphite
Maximum Temperature:
+550°C (+1002°F) *see notes*
Minimum Temperature:
Cryogenic and below

PTFE
Maximum Temperature:
+260°C (+500°F)
Minimum Temperature:
Cryogenic and below

MICA
Maximum Temperature:
+1000°C (+1832°F)
Minimum Temperature:
Ambient

PRESSURE

Maximum Pressure:
25 MPa/250 bar (3626 psi)
Minimum Pressure:
Full vacuum

APPROVALS

TA Luft (complies with the tightness criteria of 10^{-4} mbar.l/m.s of VDI guideline 2200 and 2440)

API 6FB fire safe approved (Flexible Graphite)

BAM for O_2 service (consult with James Walker)

MESC SPE 85/203

MESC SPE 85/300

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EN13555 performance data for use with EN1591-1

Maximum allowable Gasket Stress Q_{smax} (MPa)							
Temperature °C							
P, Bar	25	100	200	300	400	-	-
Q_{smax} (MPa)	240	240	240	240	240	-	-

Minimum allowable Gasket Stress in Assembly $Q_{min\ (L)}$ (MPa)							
Tightness Classification							
P, Bar	L_{10}	L_1	$L_{0.1}$	$L_{0.01}$	$L_{0.001}$	$L_{0.0001}$	$L_{0.00001}$
40	5	6	13	35	72	105	-

Minimum allowable Gasket Stress in Operation $Q_{smin\ (L)}$ (MPa)								
Tightness Classification								
P = 40 Bar	Q_A	L_{10}	L_1	$L_{0.1}$	$L_{0.01}$	$L_{0.001}$	$L_{0.0001}$	$L_{0.00001}$
	10	5	5	-	-	-	-	-
	20	5	5	8	-	-	-	-
	40	5	5	6	22	-	-	-
	60	5	5	5	16	-	-	-
	80	5	5	5	15	54	-	-
	100	5	5	5	14	34	-	-
	160	5	5	5	10	30	100	-

James Walker Worldwide

Australia
T: +61 2 9721 9500
E: sales.jwau@jameswalker.biz

Belgium
T: +32 3 820 79 00
E: sales.be@jameswalker.biz

Brazil
T: +55 11 4392 7360
E: sales.br@jameswalker.biz

China
T: +86 21 6876 9351
E: sales.cn@jameswalker.biz

France
T: +33 437 49 74 80
E: sales.fr@jameswalker.biz

Germany
T: +49 4038 60810
E: sales.de@jameswalker.biz

India
T: +91 224 0808080
E: sales.in@jameswalker.biz

Ireland
T: +353 214 323626
E: sales.ie@jameswalker.biz

Italy
T: +39 2 2578308
E: sales.it@jameswalker.biz

Middle East
T: +971 481 78888
E: sales.jwme@jameswalker.biz

Netherlands
T: +31 186 633111
E: sales.nl@jameswalker.biz

New Zealand
T: +64 9 272 1599
E: sales.nz@jameswalker.biz

Norway
T: +47 22 75 75 00
E: sales.no@jameswalker.biz

Singapore
T: +65 6715 6300
E: sales.sg@jameswalker.biz

South Africa
T: +27 31 304 0770
E: sales.za@jameswalker.biz

Spain & Portugal
T: +34 94 447 00 99
E: sales.es@jameswalker.biz

UK
T: +44 1270 536000
E: sales.uk@jameswalker.biz

USA
T: +1 708 754 4020
E: sales.jwna.us@jameswalker.biz

James Walker Sealing Products & Services Ltd

Registered Office: Lion House, Oriental Road,
Woking, Surrey GU22 8AP, United Kingdom.

Reg no: 00264191 England

James Walker

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