

# Lionpak<sup>®</sup>

## 2300

100% GFO<sup>®</sup> yarn packing  
Previously known as Fluograf<sup>®</sup>

**Lionpak<sup>®</sup> 2300 is a highly versatile product that adds a new dimension to compression packing reliability and performance.**

Made totally from WL Gore & Associates' highly developed GFO<sup>®</sup> yarn - combining the benefits of ePTFE, graphite and high temperature lubricants - this cross-plaited packing offers the ideal balance between density, resilience, strength and durability.

#### Prime features

- Extended service life - by up to 400% in harsh environments.
- Well proven with aggressive media.
- High thermal conductivity for cool running.
- Low coefficient of friction and minimal shaft wear.
- Very good start-up and emergency running characteristics.
- Non-hardening.

#### Typical applications

Valves and pumps handling aggressive chemical media in the petrochemical, pulp and paper, power generation and metallurgical sectors - as well as cold potable water, and steam at up to 260°C (500°F).

#### Chemical properties

Compatible with media in the range pH 0-14 including steam, but excluding strong oxidising agents such as aqua regia, fuming nitric acid, oleum, and molten alkali metals.

#### How supplied

All popular square sections from 3 mm to 25 mm (1/8" to 1") in boxes containing 8 m (26' 3"), or in coil form by the metre/foot or kilogram/pound. Also supplied as split preformed rings and sets.

#### Notes:

- \* Refer to James Walker for duties up to 28 m/s (5512 fpm)
- \*\* More severe duties can be sealed with specially designed arrangements.

GFO<sup>®</sup> is a registered trademark of WL Gore & Associates.



#### VALVE STEM DUTIES

**Maximum Operating Temperature:**

+260°C (+500°F)

**Minimum Operating Temperature:**

-100°C (-148°F)

**Maximum System Pressure:**

8 MPa/80 bar (1160 psi)



#### CENTRIFUGAL PUMPS AND ROTARY EQUIPMENT

**Maximum Operating Temperature:**

+260°C (+500°F)

**Minimum Operating Temperature:**

-100°C (-148°F)

**Maximum Shaft Speed:**

22 m/s (4331 fpm)\*

**Maximum System Pressure:**

1 MPa/10 bar (145 psi)



#### RECIPROCATING PUMPS AND RAMS

**Maximum Operating Temperature:**

+260°C (+500°F)

**Minimum Operating Temperature:**

-100°C (-148°F)

**Maximum Rod Speed:**

1.0 m/s (197 fpm)

**Maximum System Pressure:**

8 MPa/80 bar (1160 psi)\*\*

#### APPROVALS



WRAS approved for use with cold potable water up to 23°C (73°F)

# James Walker Distributor

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**Health warning:** If PTFE products are heated to elevated temperatures, fumes will be produced which may give unpleasant effects, if inhaled. Whilst some fumes are emitted below 300°C (572°F) from PTFE, the effect at these temperatures is negligible. Care should be taken to avoid contaminating tobacco with particles of PTFE or PTFE dispersion, which may remain on hands or clothing. Safety Data Sheets (SDS) are available on request.

Information given in this publication is given in good faith and represents the results of specific individual tests carried out by James Walker or third parties in accordance with the methodologies described in this publication, performed in a laboratory. No representation or warranty is given in relation to such information. Values and/or operating limits given in this publication are not an indication that these values and/or operating limits can be applied simultaneously. While such results may comprise useful additional information and are industry standard tests, they are no substitute for conducting (or procuring from James Walker) your own tests and engineering analysis and satisfying yourself as to the suitability of the product you select. Please also note that a product tested in accordance with the published methodology may not perform to such values in application and/or under different test conditions or methodologies for a variety of reasons, including but not limited to the environment in which it is used/tested or which passes through it or otherwise affects the product, or due to the handling, storage or installation, or due to the effect of housing or other parts. Our personnel will be happy to discuss any historical examples we have of a product having been previously used in a particular application.

To ensure you are working with the very latest product specifications, please consult the relevant section of the James Walker website: [www.jameswalker.biz](http://www.jameswalker.biz).

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#### **James Walker Sealing Products & Services Ltd**

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Reg no: 00264191 England

# Quick reference chart

Product	Valve	Rotary		Reciprocating		Static
	Pressure MPa (psi)	Shaft Speed m/s (fpm)	Pressure MPa (psi)	Rod Speed m/s (fpm)	Pressure MPa (psi)	Pressure MPa (psi)
<b>PTFE-based</b>						
Lionpak® 2100	25 (3626)	4 (787)	1 (145)	0.5 (98)	5 (725)	n/a
Lionpak® 2101	25 (3626)	4 (787)	1 (145)	0.5 (98)	5 (725)	n/a
Lionpak® 2102	25 (3626)	5 (984)	2 (290)	0.5 (98)	15 (2175)	n/a
Lionpak® 2200	15 (2175)	10 (1969)	2.5 (363)	1 (197)	10 (1450)	n/a
Lionpak® 2201	15 (2175)	10 (1969)	2.5 (363)	1 (197)	10 (1450)	n/a
Lionpak® 2202	15 (2175)	12 (2362)	2.5 (363)	1 (197)	15 (2175)	n/a
Lionpak® 2300	8 (1160)	22 (4331)	1 (145)	1 (197)	8 (1160)	n/a
Lionpak® 2302	8 (1160)	22 (4331)	1 (145)	1 (197)	8 (1160)	n/a
Lionpak® 2303	12 (1740)	17.5 (3445)	2 (290)	2 (394)	8 (1160)	n/a
Lionpak® 2500	25 (3626)	20 (3937)	2 (290)	2 (394)	10 (1450)	n/a
Lionpak® 2501	25 (3626)	20 (3937)	2 (290)	2 (394)	10 (1450)	n/a
Lionpak® 2502	25 (3626)	20 (3937)	2 (290)	2 (394)	20 (2900) <sup>‡</sup>	n/a
Lionpak® 2503	25 (3626)	20 (3937)	2 (290)	2 (394)	10 (1450)	n/a
Lionpak® 2504	25 (3626)	20 (3937)	2 (290)	2 (394)	10 (1450)	n/a
Lionpak® 2505	30 (4351)	n/a	n/a	n/a	n/a	n/a
Lionpak® 2506	25 (3626)	22 (4331)	2 (290)	2 (394)	10 (1450)	n/a
<b>Aramid-based</b>						
Lionpak® 3200	15 (2175)	20 (3937)	2.5 (363)	1.5 (295)	15 (2175)	n/a
Lionpak® 3301	15 (2175)	20 (3937)	2.5 (363)	1.5 (295)	15 (2175)	n/a
Lionpak® 3302	15 (2175)	20 (3937)	2.5 (363)	1.5 (295)	10 (1450)	n/a
<b>Graphite/Carbon-based</b>						
Lionpak® 5100	25 (3626)	25 (4921)	2.5 (363)	n/a	n/a	n/a
Lionpak® 5101	10 (1450)	20 (3937)	3.5 (508)	n/a	n/a	n/a
Lionpak® 5200	30 (4351)	n/a	n/a	n/a	n/a	n/a
Lionpak® 5201	30 (4351)	n/a	n/a	n/a	n/a	n/a
Lionpak® 5202	30 (4351)	n/a	n/a	n/a	n/a	n/a
Lionpak® 5300	15 (2175)	n/a	n/a	n/a	n/a	n/a
Lionpak® 5301	20 (2900)	20 (3937)	2 (290)	2 (394)	15 (2175) <sup>‡</sup>	n/a
Lionpak® 5302	25 (3626)	20 (3937)	2 (290)	2 (394)	10 (1450)	n/a
Lionpak® 5303	20 (2900)	20 (3937)	2 (290)	2 (394)	15 (2175) <sup>‡</sup>	n/a
Lionpak® 5304	20 (2900)	20 (3937)	2 (290)	2 (394)	15 (2175) <sup>‡</sup>	n/a
Lionpak® 5501	25 (3626)	Consult	Consult	n/a	n/a	n/a
Lionpak® 5503	25 (3626)	Consult	Consult	n/a	n/a	n/a
Lionpak® 5504	25 (3626)	Consult	Consult	n/a	n/a	n/a
Lionpak® 5505	25 (3626)	n/a	n/a	n/a	n/a	n/a

Key	
1	+450°C (+930°F) oxidising conditions, +550°C (+1202°F) steam, +850°C (+1562°F) non-oxidising
2	+450°C (+842°F) oxidising conditions, +550°C (+1022°F) steam
3	+500°C (+930°F) oxidising conditions, +650°C (+1202°F) steam, +1000°C (+1832°F) non-oxidising
4	+1000°C (+1832°F) constant, +1100°C (+2012°F) intermittent
5	+450°C (+930°F) oxidising conditions, +650°C (+1202°F) steam, +1000°C (+1832°F) non-oxidising

Temperatures		pH	Media									
Min °C (°F)	Max °C (°F)	pH Range	Steam	Gases	Process Water	Potable Water	Strong Acids	Caustic Alkalis	Oils	Solvents	Oxygen	Food
<b>PTFE-based</b>												
-100 (-148)	+250 (+482)	0-14	✓	✓	✓	✓	✓	✓	✓	✓	X	X
-100 (-148)	+250 (+482)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+280 (+536)	0-14	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
-100 (-148)	+250 (+482)	0-14	X	✓	✓	X	✓	✓	✓	✓	X	X
-100 (-148)	+250 (+482)	0-14	X	✓	✓	X	✓	✓	✓	✓	X	X
-100 (-148)	+280 (+536)	0-14	X	✓	✓	✓	✓	✓	✓	✓	X	✓
-100 (-148)	+260 (+500)	0-14	✓	✓	✓	✓	✓	✓	✓	✓	X	X
-100 (-148)	+250 (+482)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-100 (-148)	+260 (+500)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-50 (-58)	+260 (+500)	2-13	✓	✓	✓	✓	X	X	✓	✓	X	X
-50 (-58)	+250 (+482)	1-13	✓	✓	✓	X	X	X	✓	✓	X	X
-50 (-58)	+250 (+482)	1-13	✓	✓	✓	X	X	X	✓	✓	X	X
-50 (-58)	+250 (+482)	1-13	✓	✓	✓	X	X	X	✓	✓	X	X
-100 (-148)	+250 (+482)	3-14	X	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+260 (+500)	0-14	X	✓	✓	X	✓	✓	✓	✓	X	X
-100 (-148)	+260 (+500)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
<b>Aramid-based</b>												
-50 (-58)	+250 (+482)	2-13	✓	✓	✓	✓	X	X	✓	✓	X	X
-50 (-58)	+250 (+482)	1-13	✓	✓	✓	X	X	X	✓	✓	X	X
-50 (-58)	+285 (+545)	0-13	✓	✓	✓	X	X	X	✓	✓	X	X
<b>Graphite/Carbon-based</b>												
-200 (-328)	+450 (+842) <sup>1</sup>	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+450 (+842) <sup>2</sup>	1-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+450 (+842) <sup>5</sup>	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+450 (+842) <sup>2</sup>	1-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+450 (+842) <sup>2</sup>	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-50 (-58)	+550 (+1022)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-50 (-58)	+450 (+842)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-50 (-58)	+450 (+842)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-50 (-58)	+350 (+662)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-100 (-148)	+260 (+500)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+500 (+932) <sup>3</sup>	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+500 (+932) <sup>3</sup>	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+500 (+932) <sup>3</sup>	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X
-200 (-328)	+350 (+662)	0-14	✓	✓	✓	X	✓	✓	✓	✓	X	X

Key	
‡	May be suitable for higher pressures on certain reciprocating duties: please consult James Walker
Consult	Dependent on application; consult James Walker
n/a	Not applicable
✓	Suitable for application
X	Not suitable for application

Operating limits quoted in this publication are not an indication that these values can be applied simultaneously, particularly when operating near to the extreme limits. Please contact James Walker if you need further guidance on the suitability of any product for your specific application.

This brochure is supported by further detailed product data sheets and product fitting instructions which are available to download from the James Walker website at [www.jameswalker.biz](http://www.jameswalker.biz)