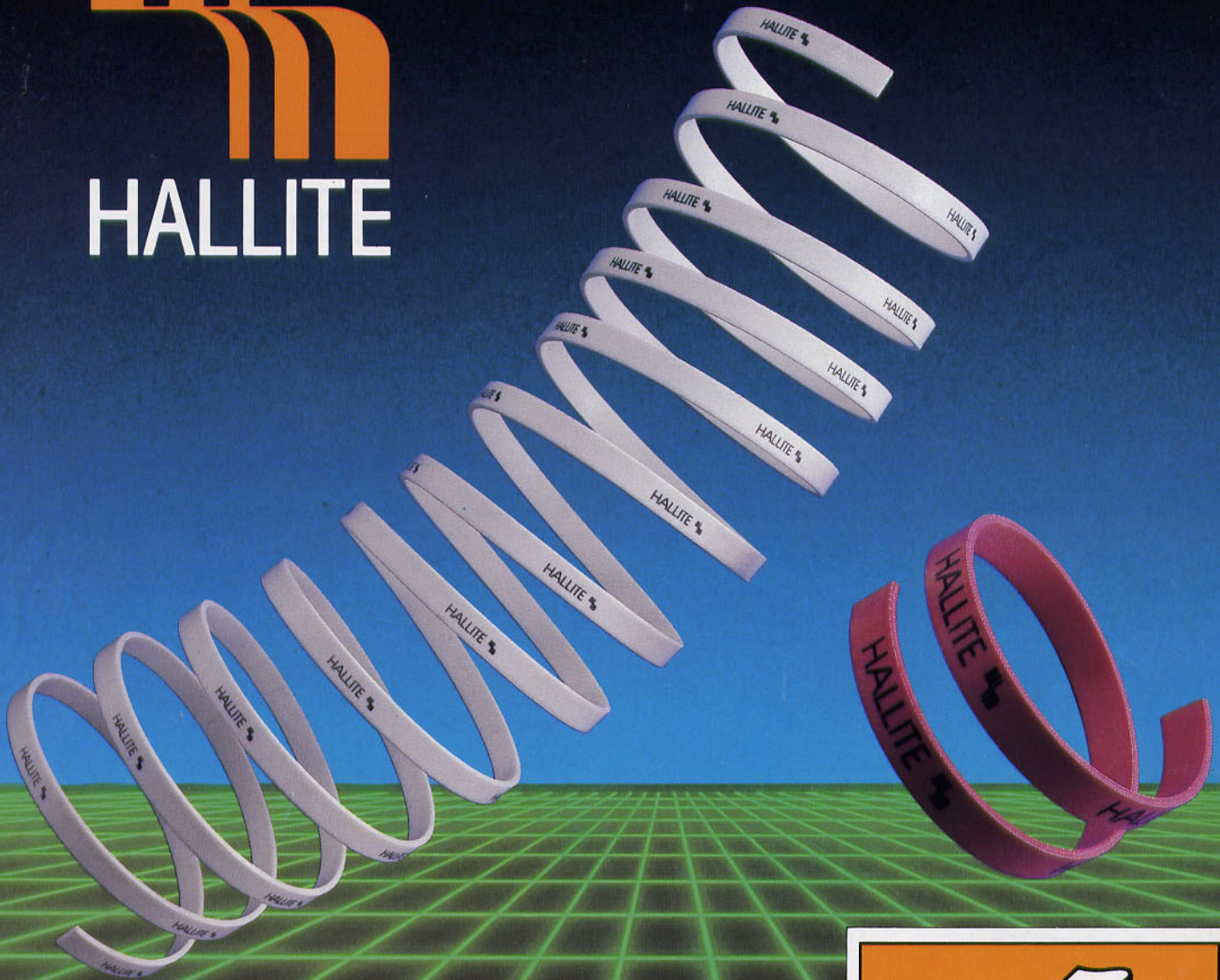
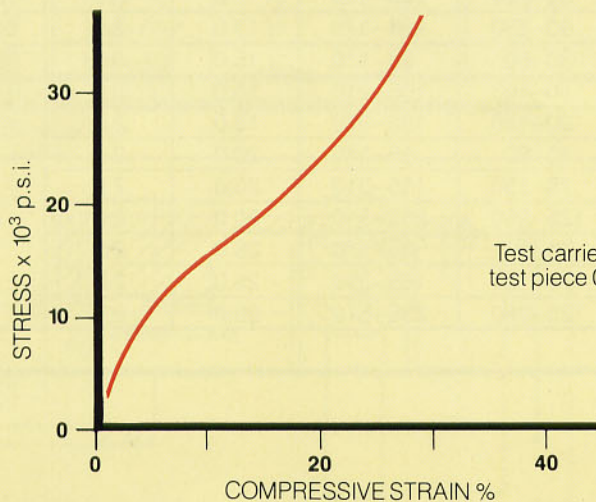




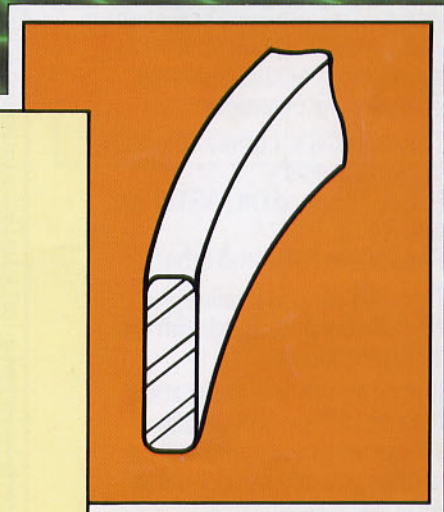
HALLITE 506



BEARING STRESS VS STRAIN FOR HALLITE 506



Test carried out on
test piece 0.1" thick



HALLITE 506 BEARING STRIP

Type 506 bearing strip provides the designer with an economical way to overcome a bearing problem and reduce costs.

Type 506 strip can be used in any reciprocating, oscillating or rotary moving application.

It is produced by a unique Hallite patented process, using a woven fabric reinforced polyester-P. T. F. E. resin material. This manufacturing method results in a dimensionally accurate rectangular section strip from which a bearing is cut.

A standard range of cross section sizes is available and each cross section has a range of diameters to give you the opportunity to select the most suitable size for your needs. The common radial thickness allows any combination of widths to be used when groove L_1 needs to be larger than standard sizes.

* For reciprocating applications use the compressive stress at yield for your design calculations. For rotary shafts use the limiting P.V. values. It is suggested a 2:1 factor of safety is applied.

Producing a bearing from Type 506 is an easy task. You calculate, cut to length and fit to the groove.

If required we will be pleased to supply ready made bearings to your design. Independent tests have shown the typical properties of bearings made from Type 506 strip are a suitable alternative for other, usually more expensive bearings, used in hydraulic cylinders.

The material is compatible with the following media –
H.F. A., Mineral Oil, ASTM No. 1 and No. 3
Phosphate Ester and others.

Type 506 strip is available in lengths suitably packaged with the cutting instructions.

METRIC

OPERATING CONDITIONS

Temperature Range	-40° + 120°C
Limiting P.V. Values Lubricated*	
Speed m/sec	Pressure MN/m ²
0.1	10.0
1.0	6.0
5.0	0.8

TYPICAL PHYSICAL PROPERTIES

Specific Gravity	1.27
Compression Stress (Temp 23°C)*	
At Failure	450 MN/m ²
At Yield	115 MN/m ²
Compression Stress at Yield (Temp 80°C)	58 MN/m ²
Coefficient of Thermal Conductivity	0.27 W/mK
Coefficient of Thermal Expansion	
Length	9 x 10 ⁻⁵ Per °C
Thickness	13 x 10 ⁻⁵ Per °C
Coefficient of Dynamic Friction (on steel surface 0.2 Ra μm)	Dry 0.5 Lubricated 0.06

Tolerances	L_1	S
	-0.1 To -0.6	-0.02 To -0.1

INSTALLATION DETAILS

ROD	
$\varnothing d_1$	f9
$\varnothing D_2 = \varnothing d_1 + 2S$	Up to $\varnothing 80$ H10 Above $\varnothing 80$ H9
$\varnothing D_3 = \varnothing d_1 + G$	G min/max
L_1	+0.2-0

PISTON	
$\varnothing D_1$	H11
$\varnothing d_2 = \varnothing D_1 - 2S$	f9
$\varnothing d_3 = \varnothing D_1 - G$	G min/max
L_1	+0.2-0

Part No	\varnothing Range		L_1	S	G Max	G Min
	d_1	D_1				
8502000	25-30	35-70	5.6	2.5	AS REQUIRED BY THE SEAL EXTRUSION GAP For applications not using a seal G Max can be 1.6mm	0.7
8502020	25-50	55-110	5.6	2.5		0.7
8502040	50-100	105-210	5.6	2.5		0.7
8502100	25-40	45-90	9.7	2.5		0.7
8502120	35-70	75-150	9.7	2.5		0.7
8502140	70-150	155-310	9.7	2.5		0.7
8502200	30-50	55-110	13.0	2.5		0.7
8502220	50-100	105-210	13.0	2.5		0.7
8502230	90-180	185-370	13.0	2.5		0.8
8502300	30-50	55-110	15.0	2.5		0.7
8502330	50-100	105-210	15.0	2.5		0.7
8502350	90-180	185-370	15.0	2.5		0.8
8502400	45-80	85-170	20.0	2.5		0.8
8502410	75-150	155-310	20.0	2.5		0.8
8502430	125-250	255-510	20.0	2.5		0.8
8502500	45-80	85-170	25.0	2.5		0.8
8502520	70-150	155-310	25.0	2.5	0.8	
8502530	125-250	255-510	25.0	2.5	0.8	

INCH

OPERATING CONDITIONS

Temperature Range	-40° + 250°F
Limiting P.V. Values Lubricated*	
Speed Ft/sec	Pressure p.s.i.
0.3	1500
3.0	900
16.0	120

TYPICAL PHYSICAL PROPERTIES

Specific Gravity	1.27
Compression Stress (Temp 73°F)*	
At Failure	65,000 p.s.i.
At Yield	16,500 p.s.i.
Compression Stress at Yield (Temp 176°F)	8,500 p.s.i.
Coefficient of Thermal Conductivity	0.16 Btu/hft°F
Coefficient of Thermal Expansion	
Length	5×10^{-5} Per °F
Thickness	7.3×10^{-5} Per °F
Coefficient of Dynamic Friction	
(on steel surface 8 CLA μ in)	Dry 0.5 Lubricated 0.06

Tolerances	L₁	S
	-0.005 To -0.015	-0.001 To -0.004

INSTALLATION DETAILS

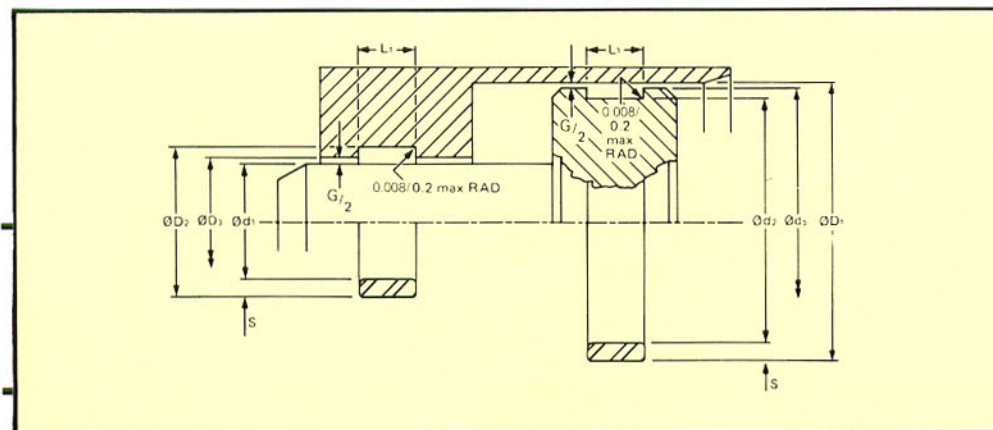
ROD	
$\text{Ø}d_1$	f9
$\text{Ø}d_2 = \text{Ø}d_1 + 2S$	Up to 3"H10 Above 3"H9
$\text{Ø}d_3 = \text{Ø}d_1 + G$	G min/max
L_1	+0.008-0

PISTON	
$\text{Ø}D_1$	H11
$\text{Ø}d_2 = \text{Ø}D_1 - 2S$	f9
$\text{Ø}d_3 = \text{Ø}D_1 - G$	G min/max
L_1	+0.008-0

Part No	Ø Range		L ₁	S	G Max	G Min
	d ₁	D ₁				
8502099	1 1/4" - 1 7/8"	2 1/8" - 4 1/4"	3/8"	1/8"	AS REQUIRED BY THE SEAL EXTRUSION GAP For applications not using a seal G Max can be 0.080"	0.031
8502089	1 1/4" - 1 3/4"	2" - 4"	1/2"	1/8"		0.031
8502090	1 3/4" - 3 1/2"	3 3/4" - 6 1/4"	1/2"	1/8"		0.031
8502091	3 1/2" - 6"	6 1/4" - 10"	1/2"	1/8"		0.031
8502092	2" - 3 1/2"	3 3/4" - 6 1/4"	5/8"	1/8"		0.031
8502093	3 1/2" - 6"	6 1/4" - 10"	5/8"	1/8"		0.031
8502094	2" - 3 1/2"	3 3/4" - 6 1/4"	3/4"	1/8"		0.031
8502095	3 1/2" - 6"	6 1/4" - 10"	3/4"	1/8"		0.031
8502096	2" - 3 1/2"	3 3/4" - 6 1/4"	1"	1/8"		0.031
8502097	3 1/2" - 6"	6 1/4" - 10"	1"	1/8"		0.031

Other sections are available in both metric and inch dimensions.

Full installation details available on request

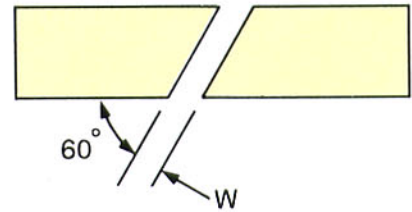


SURFACE ROUGHNESS

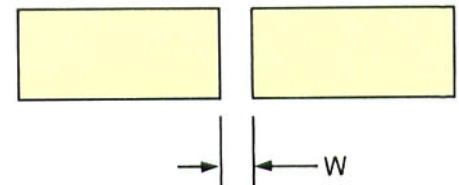
	Ra μ m	Rt μ m	CLA μ in
Dynamic Sealing Face $\text{Ø}d_1, \text{Ø}D_1$	0.4	4 max	16
Static Housing Faces $\text{Ø}D_2, L_1, \text{Ø}d_2$	3.2 max	16 max	125 max

CUTTING INSTRUCTIONS

RECIPROCATING APPLICATIONS



ROTARY OR OSCILLATING APPLICATIONS



METRIC

$\text{Ø}d_1/D_1$	W
Up to 50	3-1.5
Up to 120	5-3.5
Up to 250	9-7.25
Up to 550	17-15.0

INCH

$\text{Ø}d_1/D_1$	W
Up to 2"	0.12-0.06
Up to 5"	0.19-0.14
Up to 10"	0.35-0.29
Up to 22"	0.67-0.59





Series 600

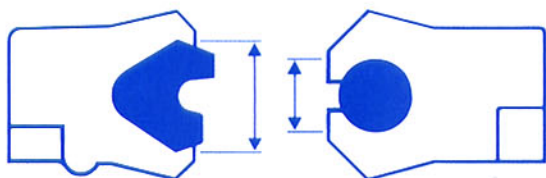
Hythane® Hydraulic Seals

To meet the ever increasing demand of today's hydraulic user for consistent dry rod sealing in all applications, Hallite Seals International have designed a whole new family of seals.

Each range is produced in new Hythane® 181 Urethane; this material has been developed by Hallite to give superior performance and long service life.

Integral Energisation

A new concept in dry rod sealing
(Patent applied for)



Type 621

Conventional

Physical Properties

Hardness	93°SH A
Tensile Strength	43 N/mm ²
Elongation at Break	450%
100% Tensile Modulus	13.5 N/mm ²
300% Tensile Modulus	25 N/mm ²
Tear Strength (Graves)	120 N/mm ²
Abrasion Loss	35 mm ³
Compression Set 22 Hours at 70°C	21%
Compression Set 70 Hours at 100°C	32%

(Above figures are to DIN Standards,
and are typical sample values).

Working temperature range
-40°C to 110°C

Design

The Series 600 family of Urethane seals combine the fully developed established concepts of symmetric and asymmetric U rings, solid compression seal, and a new concept integral energised rod seal. Latest finite element analysis design technique coupled with extensive laboratory and field tests have combined to produce a breakthrough in seal technology. The concept provides up to 60% greater seal lip energisation than conventional seals particularly during cold start and low pressure conditions. This is achieved with no increase in friction compared to conventionally energised seals.

Manufacture

Seal performance is equally dependent on design, material specification and material processing. The latest processing techniques are used by Hallite to ensure high integrity consistent product and performance. Sophisticated material, handling and computer controlled processing techniques allied to new generation tooling are part of Hallite Seals International's drive to provide the best value in high performance cost effective sealing.

Quality

Hallite Seals International are an approved supplier to major authorities throughout the world. The Series 600 products have already achieved approval and use with major original equipment manufacturers. Our quality assurance techniques utilise state of the art control procedures and electro optic metrological instrumentation.

Material

Hallite Seals International new Hythane® 181 Urethane is a specially developed elastomer for hydraulic seals. The compound is designed to give optimum properties particularly wear, elasticity, flexibility and outstanding compression set resistance.

The Blue Hythane® is the best high performance Urethane available for hydraulic sealing applications.

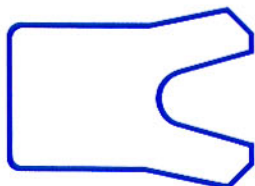
Applications

The new Series 600 seals are designed for use in all hydraulic applications using conventional hydraulic fluids. All Hythane® seals are rated for use continuously at 110°C, intermittent use above this figure depends on many factors. If in doubt please consult our technical department.

Hythane® seals are suitable for low temperature use. We recommend -40°C as a minimum.

Series 600 Hythane® seals provide high specification performance and quality at a realistic cost by featuring:

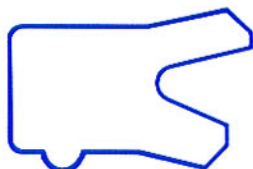
- Hythane® 181 materials
- computer controlled processing technology
- new generation tooling techniques



Type 601

- general purpose seal
- piston and rod applications
- snap in and split housing design
- light/medium duty

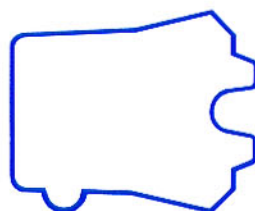
Light/medium duty cylinder designs



Type 605

- high dynamic lip force
- effective under side load conditions
- snap in and split housing designs
- twin lip design giving:
 - lower friction
 - improved sealing
 - primary lip protection
 - increased seal stability

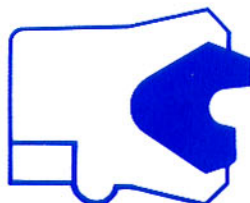
Medium/heavy duty cylinder designs



Type 610

- minimum section seal
- insensitive to pressure fluctuations
- excellent low pressure sealing performance
- high stability when installed
- twin lip design giving:
 - lower friction
 - improved sealing
 - primary lip protection
 - increased seal stability

Compact cylinder designs
Mobile and agricultural equipment
Telescopic cylinder designs



Type 621

- unique integral energisation
- up to 60% more lip energisation without increased friction
- moulded in energiser ensures optimum consistent lip force
- anti-extrusion ring
- twin lip design giving:
 - lower friction
 - improved sealing
 - primary lip protection
 - increased seal stability

Designed for demanding Offhighway, Earthmoving and Mechanical Handling Equipment applications.

- profiled rubber energiser ensures optimum low pressure low temperature sealing
- moulded in energiser ensures positive retention and maximum responsiveness