

# Material and Profile Overview



**SEALS**



We are proud to introduce 3D Seals – an initiative committed to working on three dimensions – innovation, solution and execution – to be a one-stop source for industrial seals.

## Introduction

With our unmatched proficiency in technology, design and manufacturing processes, 3D Seals offers standard seals as well as engineered sealing solutions.

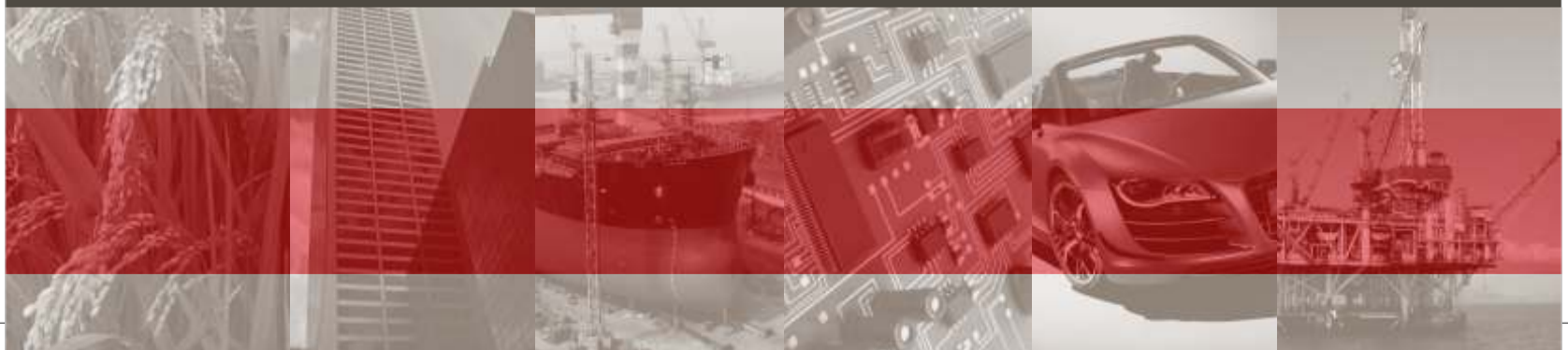
Working in close partnership with you, we brainstorm to innovate the best possible solution to your requirements, and then execute it from prototype to production, while also providing the much-lacking in the industry, after-sales support.

3D Seals' commitment to quality is backed by an assurance that comes from our experience and expertise.

From standard moulded seals to CNC turned seals, to seal kits and accessories, we provide a range of sealing solutions to optimize your productivity and keep your operations running efficiently.

## Industries we serve

- Agricultural Industry
- Automotive Industry
- Cement, Lime, Ceramic & Refractory Industry
- Chemical Industry
- Construction Industry
- Electronic Industry
- Food And Pharmaceutical Industry
- General Mechanical Engineering
- Mining Industry
- Non-ferrous Industry
- Oil & Gas Industry
- Plastic & Rubber Processing Industry
- Power Supply Industry
- Pulp & Paper Industry
- Shipbuilding Industry
- Steel Industry
- Textile Industry
- Water Supply & Water Treatment Industry
- Wood & Wood Processing Industry



Material Data Properties	Standard	Unit	POLYURETHANES								
			PU Thermoplastic polyurethane elastomer	HPU hydrolysis-resistant polyurethane	GPU polyurethane for giant seals and big cross sections	LTPU low-temperature polyurethane	SPU self-lubricated polyurethane	XPU hard polyurethane	XPHU hard hydrolysis resistant polyurethane	XSPU hard self-lubricated polyurethane	
Colour			green	red	red	blue	gray	dark green	red	gray/black	
Hardness	53505	Shore A	95±2	95±2	95±2	95±2	95±2				
	53505	Shore D	48±3	48±3	47±3	48±3	48±3	57±3	60±3	57±3	
Density	53479	g/cm <sup>3</sup>	1,20	1,20	1,20	1,17	1,24	1,21	1,22	1,26	
100% Modulus	53504	N/mm	≥12	≥13	≥11	≥12	17	≥18	≥20	24	
Tensile Strength / Yield Stress	53504/ 53455	N/mm	≥40	≥50	≥45	≥50	50	≥50	≥50	45	
Elongation At Break	53504/ 53455	%	≥430	≥330	≥280	≥450	380	≥400	≥350	350	
Modulus Of Elasticity - Tensile Strength	53457	N/mm									
Compression Set 70°C/24h 20% Def		%	≤30	≤27	≤30	≤27	25	24	26	24	
100°C/24h 20% Def		%	≤35	≤33	≤40	≤33	30	29	30	30	
100°C /22h	53517	%									
175°C /24h	53517	%									
Rebound Resilience	52512	%	42	29	43	50					
Tear Strength	53515	N/mm	≤100	≤100	≤40	≤80	120	≤140	170	160	
Abrasion	53516	mm <sup>3</sup>	18	17	25	15	17	18	20	20	
Minimum Service Temperature		0C	-30	-20	-30	-50	-20	-30	-20	-20	
Maximum Service Temperature		0C	+110	+110	+110	+110	+110	+110	+110	+110	

## What 3D Seals stands for

- Bespoke and standard sealing solutions
- Extensive knowledge and expertise in seal manufacturing and distribution
- In-depth analysis of each individual requirement for an application-engineering oriented solution to your specific needs
- Partnership throughout the design, development, testing and implementation phases
- Just-in-time manufacturing and supply of CNC turned seals up to 2500 mm in diameter
- Provision of complete seal kits and repair kits
- Provision of accessories to reduce:
  - Assembly and dismantling time
  - Chances of damage during assembly and dismantling
  - Chances of error during measurement
- Ongoing R&D efforts to meet the needs of the global market with product innovations

RUBBERELASTOMERS						THERMOPLASTICS						
HNBR hydrogenated acrylonitrile-butadiene	NBR acrylonitrile-butadiene-rubber	FKM VITON® / fluoro-rubber	S-mart EPDM ethylene propylene rubber	TFE/P - ALFAS tetrafluorethylene propylene rubber	MVQ silicone rubber	POM polyacetal	PTFE virgin polytetrafluorethylene - virgin PTFE	PTFE glass PTFE + 15% Glass Fibre + 5% MoS	PTFE bronze PTFE + 40% Bronze	PTFE carbon PTFE + 25% Carbon	PA polyamide	PAEK polyaryletherketone
black	black	brown	black	black	reddish brown	black	white	gray	brown	black	black	cream
85±5	85±5	83±5	85±5	83±5	85±5							
						82	82	60	64	65	77	86
1,22	1,31	2,30	1,22	1,60	1,52	1,41	2,17	2,25	2,25	2,10	1,15	1,32
≥10	≥11	≥5	≥9	8	≥5							
≥18	≥16	≥8	≥12	13	≥7	62	27	18	22	15	65	97
≥180	≥130	≥200	≥110	200	≥130	40	300	200	280	180	120	≥50
						2600					1800	3600
≤22	≤22		≤15									
		≤20		29	≥15							
29	28	7	38		44							
20	21	15	21	19								
90	90	150	120	110								
-25	-30	-20	-50	-10	-60	-50	-200	-200	-200	-200	-40	
+150	+100	+200	+150	+200	+200	+100	+260	+260	+260	+260	+100	260



## Sealing Materials

Our sealing technology involves the use of macromolecular substances that withstand the challenges of high temperature, pressure and sliding speeds. Macromolecular substances are high molecular weight organic compounds consisting of many smaller structural units (very large number of atoms) linked together. They can be created in two ways:

**Natural:** by modifying high-molecular natural materials, such as rubber.

**Synthetic:** by depositing low-molecular elements, or monomers, through various chemical reactions. Two groups of macromolecular (polymer) substances are primarily used in sealing technology – elastomers and thermoplastics.

## Quality takes precedence

- We are committed to providing products and services that meet or exceed customer expectations.
- Towards this, we strive for:
  - Stringent quality control systems
  - Continual quality improvement for our products and services
  - Continual upgrading of our processes and operations in an eco-friendly environment
  - Updating skills and competences of our human resources to keep pace with technological advancements
- Reduction of operational losses

## What sets us apart

- Use of top-quality sealing materials
- Designs for a variety of applications and industries
- Engineered to specifications using CNC technology
- Delivery at short turnarounds
- Customised inventory programmes
- After-sales and maintenance support



## Piston Seals

K01-P	K01-R	K02-P	K02-PD	K02-R	K02-RD	K03-P	K03-F
							
K03-S	K04-P	K04-PD	K05-P	K05-R	K05-S	K06-P	K06-R
							
K06-S	K07-P	K08-D	K08-E	K08-P	K08-DS	K08-SD	K08-ES
							
K09-A	K09-B	K09-C	K09-D	K09-E	K09-F	K1012-T	K1012-M
							
K1012-S	K1315-T	K16-A	K16-B	K16-S	K17-P	K17-R	K19-F
							
K20-R	K21-P	K22-P	K22-R	K23-A	K23-B	K23-C	K23-D
							
K24-P	K32-P	K35-P	K60-F	K61-F	K62-R	K63-R	K64-R
							
K65-R	K66-R	K67-P	K68-R				
							

# Rod Seals



S01-P	S01-R	S01-S	S02-P	S02-PD	S02-R	S02-RD	S02-S
S03-P	S03-F	S03-S	S04-P	S04-PD	S05-P	S05-R	S05-S
S06-P	S06-R	S06-S	S07-P	S08-P	S08-T	S08-R	S08-S
S09-E	S09-D	S09-P	S09-ES	S09-DS	S1012-M	S1012-T	S1012-S
S1315-T	S16-A	S16-B	S16-S	S17-P	S17-R	S17-S	S18-P
S18-R	S19-F	S20-R	S21-P	S22-P	S22-R	S24-P	S2527-F
S2931-F	S32-P	S35-P	S60-S	S61-R	S62-R	S63-P	S64-R

3D Seals > Hydraulics & Pneumatics >

## Wiper










A01-A	A01-B	A02-A	A02-B	A03-A	A03-S	A04-A	A04-B
							
A05-A	A05-B	A05-I	A06-A	A07-A	A08-A	A08-B	A09-A
							
A10-A	A11-A	A11-I	A11-S	A11-F	A12-A	A12-B	A13-A
							
A25-F	A26-F	A27-F	A27-S	A60-A	A61-A	A62-A	A63-A
							

3D Seals > Hydraulics & Pneumatics >

## Guide Rings



F01	F02	F03	F04	F05	F06	F07	F08
							



3D Seals > Hydraulics & Pneumatics >

## Back-up Rings



ST08



ST09



ST10



ST11



ST12



ST13



3D Seals >

## Static



R13



R14



R15-P



R16-R



R20-P



R35-A



3D Seals > Rotary Seals >

## Rotary Shaft Seals Standard



R60-S



R61-S



R62-S



R63-S



R64-S



R65-S



R66-S



R67-S



R68-S



R69-S



R70-S



R71-S



R72-S



R73-S



3D Seals > Rotary Seals >



## V-Rings

VA-P



VA-R



VS-P



VS-R



VT-R



VX-R



3D Seals > Rotary Seals >



## Rotary Shaft Seals Machined

R01-P



R01-R



R01-A



R01-F



R02-P



R02-R



R03-P



R03-R



R04-A



R05-A



## Custom PTFE Seals

R09-F



R09-FS



R10-F



R10-FS



R11-F



R12-F



R19-F







**SEALS**

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