

DMH

SOLUTION FOR SEALS



Innovation is our answer

DMH, who has grown to a well reputed global player for sophisticated all-in-one solutions and high quality sealing systems.

Continuous investments in R&D together with a close and constructive cooperation with our partners has led significantly to gain technology and quality leadership.

A top priority goal for the future will remain in creating innovative solutions together with our customers. This commitment includes our engagement to employ our know-how continuously. As a result for these efforts – according to the needs of our customers – attractive products and outstanding service will be the answer to a fluent development at a tearing pace of the market.

Become part of a successful partnership!



www.dmh.at

Semi-finished materials

To fully utilize the benefits of the DMH SYSTEM, it is essential that the right materials are available in the right quantity and quality.

This will be ensured by our global service network as well as by our large semi-finished product store at our headquarter Traboch and enables an uncomplicated supply to our customers within few days.

Meanwhile we produce over 50 materials in our manufacturing of semi-finished products and working on new processes on a daily basis. Like in our entire range of services – the manufacture here, too – is subjected to strict controls by our own laboratory and by the quality department.

DMH machines

Quick and easy, yet providing the best quality and dimensional accuracy. Is this a contradiction? Not if you are talking about a DMH SYSTEM. The DMH SYSTEM enables the manufacture of seals and gaskets up to a diameter of 2,500 mm.

Thanks to the extremely user-friendly software that is simple to work with, you can choose from a large number of seal profiles. You can modify the profiles with the help of the software just as you can check for

faults or errors. The documentation and calculation integrated in the DMH Software ensures expeditious preparation of an offer. The materials used are specially oriented at the DMH SYSTEM and optimised with respect to good machining capability on a lathe machine. A system from a single source, from the customer's concept up to the finished seals – quick and easy – the DMH SYSTEM.

Seals

Machined seals have not had the best reputation for a long time. In the past 25 years, we have been working on improvements of the quality of those seals. The development could reduce the costs and at the same time improve the quality. Nowadays, machined seals are no longer the choice out of necessity. In contrary, they become the first choice due to their excellent quality. However, it is of particular importance which

materials will be used. DMH has aligned its materials with the profiles and thus top-performance-products can be produced.

According to the high grade of flexibility of the DMH Software nearly all different types of profiles can be produced out of every type of semi-finished product. Contact our specialists for your very own application!

SEMI-FINISHED MATERIALS

Faster, further and higher – these attributes also apply to our industry in which demands and concepts become more and more challenging. The processing times become shorter and shorter due to cost pressure, thus raising the requirements on modern seals. Just imagine that a production plant which was working at 80% of its potential capacity a decade ago, today it has to meet the requirements of working at 100% of its capacity. Of course, a seal needs to keep up with that.

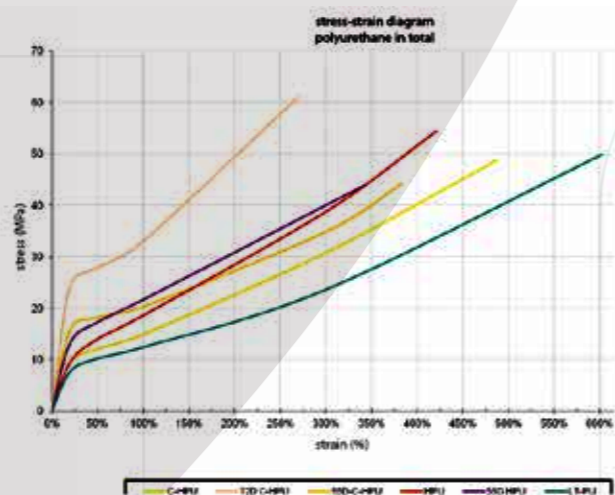
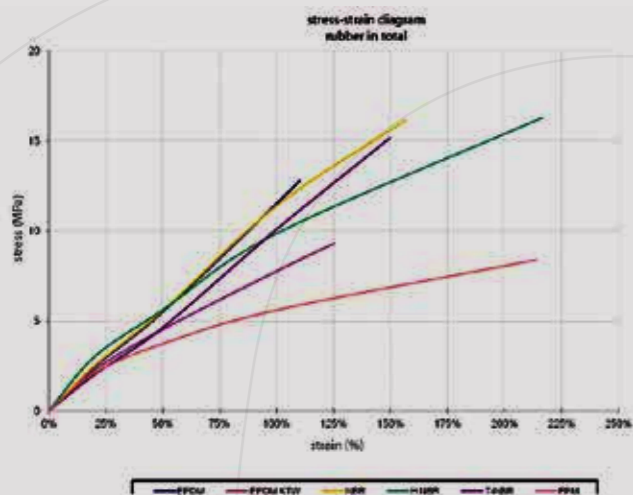
This is where we come into play. We constantly innovate and improve our materials and seal profiles. However, not only the higher demands of the production inspire us, but also our goal to help creating a clean environment. As an entrepreneur family with a long-term perspective we are particularly interested in designing processes and products in an effective and environmental friendly way.

This overall trend towards environmental sustainability proves to be a challenge for us. For example

due to the increased use of biodegradable hydraulic oils, used materials have to meet new requirements. In order to meet these demands, we have invested a lot into research and development. Extensive fundamental research enables our company to adapt the changes quickly. A complete reorganization of our polyurethane production enables us to raise our capabilities for further developments to a higher level. The best examples are our seals which are used in the mining sector. Our partners count on the reliability of our products which provide best results in spite of harsh environmental conditions.

Our R&D team is ready for your requests at any time, so please get in contact with us – together we solve your problems!

Whether it is approvals for the food industry goes according to material or certificates to DIN EN 10204. With DMH you have a partner where you can get all out of one hand.



Our laboratory is equipped with advanced analysis capabilities. We offer them the opportunity of merchantability in media materials, pressure and

temperature investigated. A list of the mechanical, thermal and chemical examination options is available on our website and in our pricelist 2013.

Polyurethanes

Thermoplastic Polyurethanes	Material number Designation Colour	Hard-ness	Temperatur-range °C			Pressure resistance bar (RT)	Main application	Description	Resistance
			-	+	Short-term				
HPU (AU*) Hydrolysis-resistant Polyurethane	100 HPU / U2 Red	95A	-20	115	150	Dynamic: 400 bar Static: 750 bar	O-rings Grooved rings Wipers Slip rings Special seals for the food and beverages industry	Compared to all other elastomers, polyurethane elastomers have excellent wear resistance, high level of tear strength and good elasticity. The permeability to gas is as low as that in the case of IIR. The HPU types are all based on a special ester polyol (*), are hydrolysis-resistant and can be used in hot water. HPU 100 and 109 have FDA approval for foodstuffs and the approval for European regulations (10/2011 EC).	Resistant to: Pure aliphatic hydrocarbons (e.g. butane, impurities (moisture, alcohols, acidic or alkaline compounds) may corrode polyurethanes! Mineral oils and greases even with critical additives Silicone oils and greases Hot water Resistant to ozone and ageing Synthetic esters Not resistant to: Aromatic solvents Concentrated alcohols Concentrated acids and bases
	109 HPU Natural	95A	-20	115	150	Dynamic: 400 bar Static: 750 bar			
	104 HPU Green	95A	-20	115	150	Dynamic: 400 bar Static: 750 bar	O-rings Grooved rings Wipers Slip rings	By default, they do not have FDA approval.	
	103 HPU Blue								
	110 HPU 55 / U2 55 Yellow	55D	-20	115	150	Dynamic: 550 bar Static: 750 bar	Wipers Face seals (DK108, DS129) Piston seals Backup rings	Depending on the hardness, the friction and wear reduces considerably. The HPU 55 types are excellent for use in piston seals and with high levels of pressure. HPU may be preferred to PTFE in several cases.	
	113 HPU 55 / U2 55 Blue								
C-HPU (EU) Hydrolysis-resistant Polyurethane	120 C-HPU Red	96A	-37	110	125	Dynamic: 500 bar Static: 750 bar	O-rings Static seals Grooved rings Wipers Flat seals	C-HPU is manufactured using high-quality ether polyol. The material is characterised by its particularly dynamic load-bearing capability and good resistance to water.	Resistant to: Pure aliphatic hydrocarbons (e.g. propane; impurities (moisture, alcohols, acidic or alkaline compounds) may corrode polyurethanes! Mineral oils and greases (some additives may corrode the material). Silicone oils and -greases Not resistant to: Aromatic solvents Concentrated alcohols Concentrated acids and bases
	122 C-HPU Steel blue								
	123 C-HPU Light blue								
	124 C-HPU Green								
	125 C-HPU Natural								
	129 C-HPU Natural								
	130 C-HPU 57 Yellow	57D	-37	115	125	Dynamic: 600 bar	DK108 / DS129 DA115 wipers and similar backup rings	Depending on the hardness, the friction and wear reduces considerably. The C-HPU 57 and 72D types are excellent to use as piston seals and with high levels of pressure. C-HPU may be preferred to PTFE in several cases. The disadvantage lies in lower resistance to temperatures and chemicals.	
	140 C-HPU 72 Black	70D	-20	110	120	Static: 1000 bar			
	151 LT-PU Plus Blue	96A	-55	110	120	Dynamic: 350 bar	Mobile hydraulics Gas fittings Pneumatics	LT-PU Plus is an advanced development with considerably improved flexibility to cold temperatures	
	170 SL-PU Anthracite	96A	-20	110	120	Dynamic: 350 bar	Pneumatic seals	This material shows fail-safe characteristics by adding lubricants.	Resistant to: Oily air and disposable lubrication.

Polyurethanes

Thermoplastic Polyurethanes	Material number Designation Colour	Hardness	Temperature range °C			Pressure resistance bar (RT)	Main application	Description	Resistance
			-	+	Short-term				
PU (AU) Polyurethane	180 PU 93 Green	93A	-30	110	120	Dynamic: 500 bar Static: 750 bar	O-rings Flat seals Funnels Grooved rings Wipers Mobile hydraulics	These PUR types are based on polyester diols. They are particularly suitable in hydraulic systems, and the LT-PU types are well suited for mobile hydraulic systems in cold climatic zones.	Resistant to: Mineral oils and greases Several hydraulic media Cold water Not resistant to: Hot water Aromatic solvents Concentrated alcohols Concentrated acids and bases
	150 LT-PU Blue	94A	-50	110	120				

Rubber elastomers

Elastomer as the basis	Material number Designation Colour	Hardness	Temperature range °C			Pressure resistance bar (RT)	Main application	Description	Resistance		
			-	+	Short-term						
Nitrile-Butadiene-Rubber (NBR)	300 NBR Black	85A	-30	110	120	Dynamic: 250 bar Static: 500 bar	O-rings Static seals Grooved rings Wipers Shaft rings	NBR has good mechanical characteristics and better abrasion resistance compared to other elastomers. NBR is not resistant to weathering and the influence of ozone. NBR can be manufactured with an acryl-nitrile content of 18% to 50%. With reduced ACN content the resistance to oil decreases but simultaneously, the flexibility to cold improves	Resistant to: Aliphatic hydrocarbons (propane, butane and petrol, mineral oils and greases, diesel fuel, heating oil) Vegetable and animal fats and oils HFA, HFB and HFC fluids Many diluted acids, bases and salt solutions at low temperature Water Not resistant to: Fuels with high aromatic content (premium-grade fuels) Aromatic hydrocarbons (benzene) Chlorinated hydrocarbons (trichloro-ethylene) Polar solvents (ketones, acetones, acetic acid ethylene esters) Concentrated acids Glycol-based brake fluid Ozone, weathering and ageing		
	301 NBR White	85A	-30	110	120					Dynamic: 200 bar Static: 400 bar	O-rings Wipers Funnels Suction cork
	320 T-NBR Black	80A	-50	100	120						
Highly saturated NBR (H-NBR)	310 H-NBR Green	85A	-20	150	170	Dynamic: 250 bar Static: 500 bar	O-rings Static seals Grooved rings Wipers Shaft rings	HNBR types of rubber are manufactured from nitrile rubber by catalytic hydrogenation. As a result, the maximum possible temperature at which it can be used rises to 150°C and, in certain cases, even to 170°C. Another advantage of the fully hydrogenated qualities is resistance to oxidative corrosion (ozone).	Resistant to: Water and steam up to 150°C, ozone and weathering		
	311 H-NBR Black	90A	-20	150	170					Dynamic: 250 bar Static: 500 bar	O-rings Static seals Grooved rings Wipers
	312 H-NBR ED Black	85A	-15	150	170						

Rubber elastomers

Elastomer as the basis	Material number Designation Colour	Hardness	Temperature range °C			Pressure resistance bar (RT)	Main application	Description	Resistance								
			-	+	Short-term												
Ethylene-Propylene Rubber (EPDM)	330 EPDM Black	85A	-45	130	180	Dynamic: 150 bar Static: 300 bar	O-rings Flat seals Funnels Grooved rings Wipers	EPDM has outstanding resistance to ageing and the impact of weathering, and against ozone, light and UV. EPDM is particularly good for use in steam and suds.	Resistant to: Hot water and hot steam up to 150°C with special types up to 180°C Glycol-based brake fluids (cross-linked peroxide types) Many organic and inorganic acids Detergents, baking soda and caustic potash solutions Hydraulic fluids based on phosphate acid esters (HFD-R) Silicone oils and greases Many polar solvents (ketones, esters and alcohols) Resistant to ozone, weathering and ageing.								
	331 EPDM KTW Black	85A	-45	130	180					Dynamic: 150 bar Static: 300 bar	Flange seals (gaskets) O-rings						
	332 EPDM White	85A	-45	130	180							Dynamic: 150 bar	Special profiles	EPDM is often used in the foodstuffs and drinking water segments. There are special approvals for this purpose in accordance with FDA, KTW and W270			
	333 EPDM FDA Black	85A	-45	90	150										Dynamic: 150 bar Static: 300 bar	O-rings Flat seals Translational and rotational wipers	Not resistant to: Mineral oils and greases as well as fuels
	335 EPDM FDA & KTW Black	82A	-40	120	180												
Fluorinated rubber FPM	350 FPM Brown	82A	-20	220	300	Dynamic: 150 bar Static: 300 bar	O-rings Wipers Grooved rings Shaft seals Piston seals	FPM has the maximum resistance to temperature amongst the prevalent sealing elastomers. In addition, it is highly resistant to oil and fuels. In practice, the terms FPM, FKM and Viton® very often lead to confusion and incorrect interpretations. All these designations represent one basic material – „Fluorinated rubber“.	Resistant to: Mineral oils and greases HFD fluids Silicone oils and silicone greases Vegetable and animal oils and fats Aliphatic hydrocarbons (petrol, butane, propane and natural gas) Aromatic hydrocarbons (benzene, toluene) Chlorinated hydrocarbons (trichloro-ethylene, carbon tetrachloride) Fuels and those containing methanol Resistant to ozone and weathering								
	351 FPM FDA Brown	85A	-20	220	250					Dynamic: 150 bar Static: 300 bar	FPM - DIN-ISO standard FKM - ASTM standard	FPM is available with varying fluorine content. The higher the fluorine content – the better is the chemical resistance.					
	352 FPM Black	85A	-20	210	250								Dynamic: 150 bar Static: 300 bar	Not resistant to: Polar solvents (acetone, methylethylketone, ethyl acetate, diethylether, dioxane) Skydrol 500 and 7000 Glycol-based brake fluids Ammonia gas, amines and alkalis Steam			
	353 FPM ED Black	85A	-20	220	300										Dynamic: 150 bar Static: 300 bar	Rapid Gas Decompression RGD Tested in accordance with NORSOK M710	Low molecular weight acids (formic acid and acetic acid) Methanol above about 40°C
	354 FPM ED Black	85A	-20	220	300												
TFE/P AFLAS®	360 TFE/P Black	85A	-5	200	230	Dynamic: 150 bar Static: 250 bar	O-rings Flat seals Flange seals (gaskets)	Tetrafluoroethylene/propylene is a fluoroelastomer with good resistance to chemicals. One great advantage compared to FPM types lies in the resistance to water and steam.	Resistant to: Water, steam Mineral oils and greases Aromatic hydrocarbons Not resistant to: Amines, ketones and halogens								
	361 TFE/P 90A Black	90A	-5	200	230					Dynamic: 180 bar Static: 300 bar							

Rubber elastomers

Elastomer as the basis	Material number Designation Colour	Hardness	Temperature range °C			Pressure resistance bar (RT)	Main application	Description	Resistance
			-	+	Short-term				
			Silicone MVQ	340 MVQ Blue	85A				
341 MVQ FDA Transparent	85A								
342 MVQ FDA White	85A								

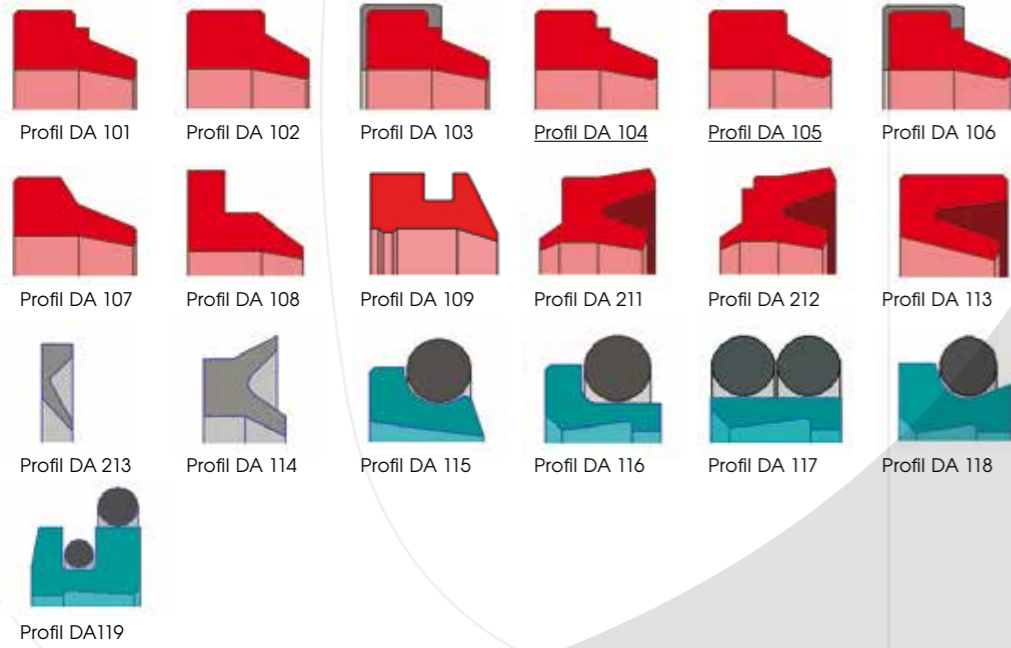
Plastics

Material	Designation / Colour	Hardness	Temperature range °C			Pressure resistance bar (RT)	Main application	Description	Resistance
			-	+	Short-term				
			Technical plastics	400 POM Natural white	85D				
410 PA 6G Natural white	85D	-40	110	-					
420 UHMW-PE	61D	-200	80	-					
Technically high-performance plastics	430 PEEK Beige	-	-40	260	300	Dynamic: 500 bar up to 140°C	Backup rings Special parts Hot water meters Pump impellers Slide bearing	Considering its extraordinary mechanical, thermal and chemical properties, PEEK is used primarily in aeronautical and space travel applications as well as under extreme conditions in the offshore segment. PEEK is also suitable for the use in hot water segments.	Resistant to: Almost all organic and inorganic chemicals. Resistant to hydrolysis up to 280°C. Resistant to high-power radiation, especially the glass fibre reinforced types Not resistant to: concentrated nitric acid, certain halogenated hydrocarbons not UV-resistant and carbon-filled types are better suitable
Polytetrafluoroethylene (PTFE)	600 PTFE pure White	55D							

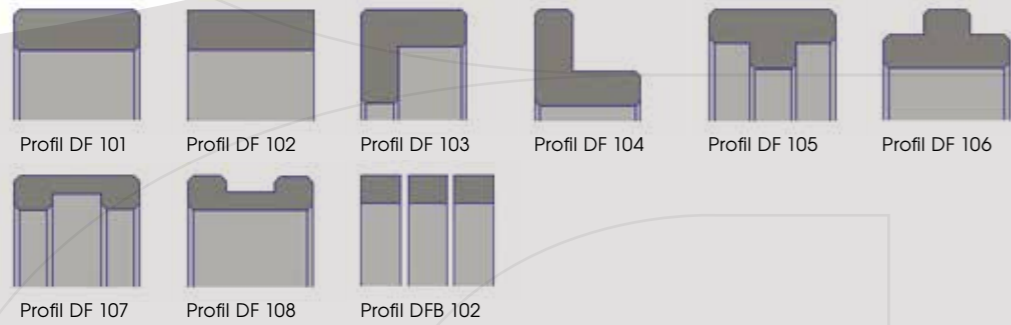
Plastics

Material	Designation / Colour	Hardness	Temperature range °C			Pressure resistance bar (RT)	Main application	Description	Resistance
			-	+	Short-term				
			Polytetrafluoroethylene (PTFE)	651 PTFE TFM White	57D				
610 PTFE I Anthracite	58D				350 bar	Slip rings Guide belts WDR	Filled with glass 15% and MOS2 5% Improved resistance to pressure and less creep tendency Food dielectric properties		
620 PTFE II Brown	60D				450 bar	Guide belts for hydraulic systems Slip rings	With 40% bronze, it is the most prevalent type. For all hydraulic applications		
601 PTFE D05 Turquoise	57D				250 bar	Spring-backed grooved rings Wipers	Low permeability to gas than the commonly filled types. Lower cold flow		
611 PTFE D05 Glass Turquoise	60D				300 bar	Backup rings	Guide belts and wipers for harsher conditions		
612 PTFE D08 Orange	62D				350 bar	Guide belts for hydraulic systems Slip rings	Best creep strength high wear resistance and less creep tendency		
621 PTFE D46 Grey turquoise	63D		-200	260	-	650 bar	Slip rings	High level of resistance with the addition of particularly conductive bronze	
640 PTFE Carbon Black	67D				650 bar	Guide rings and slip rings for pneumatic systems	For hard chrome-plated surfaces and hardened surfaces	Not recommended for: Hydraulic oils with zinc	
641 PTFE E-Carbon Black	60D				450 bar		For soft contact surfaces e.g. aluminium, stainless steel, bronze		
630 PTFE Graphite	60D				350 bar	Spring-backed seals		Recommended for: All hydraulic fluids Used in water-based hydraulic systems and pneumatic systems.	
650 PTFE Econol Cream	56D								
613 PTFE Glass White grey	60D				400 bar		Good dielectric properties		
654 PTFE PEEK Cream	60D				650 bar	For extreme applications	Good chemical resistance High creep strength High wear resistance		
602 PTFE Conductive Black	57D				350 bar	Against anti-static charge	By adding conductive pigments, it is electrically conductive.		

WIPERS



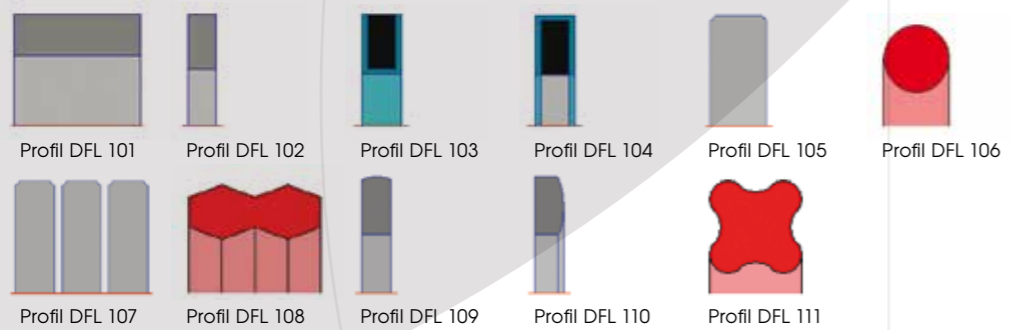
GUIDE RINGS



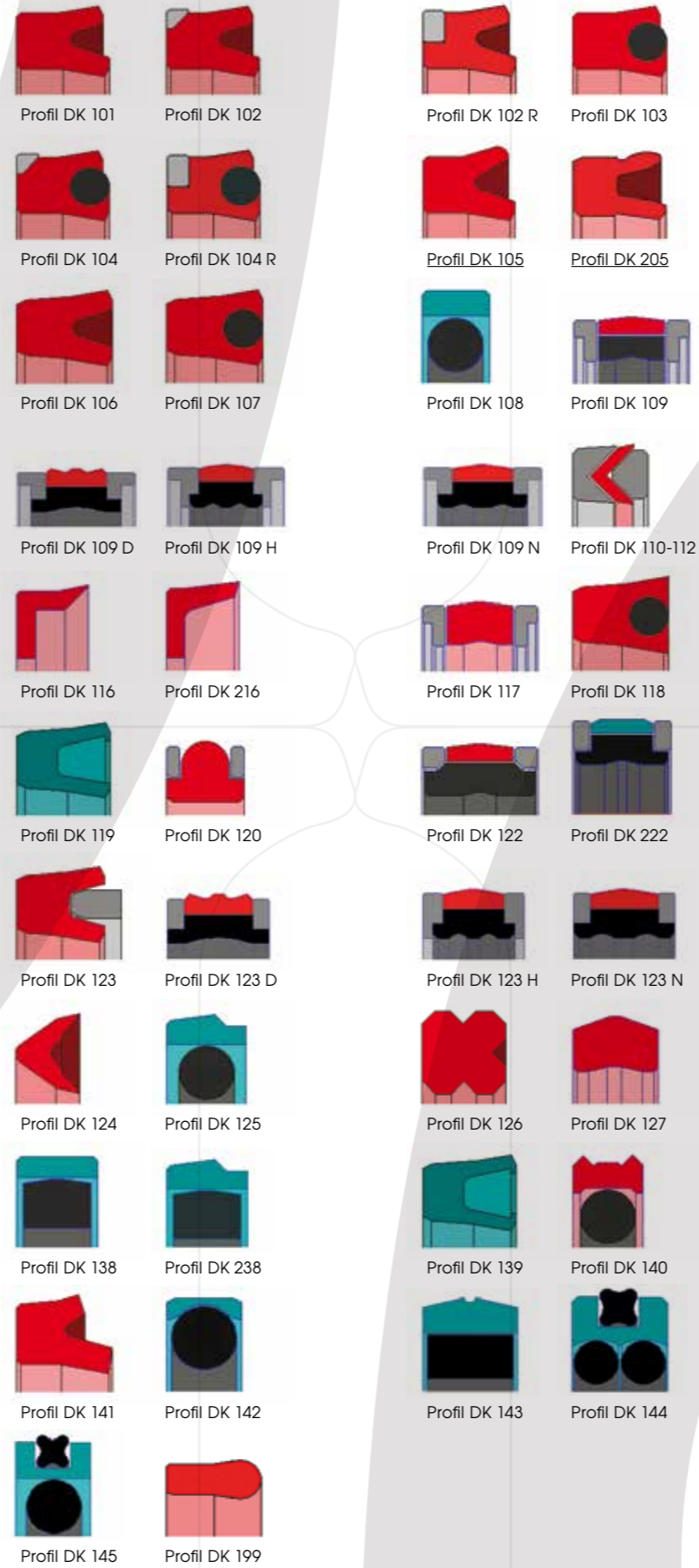
BACKRINGS



GASKETS



PISTON SEALS

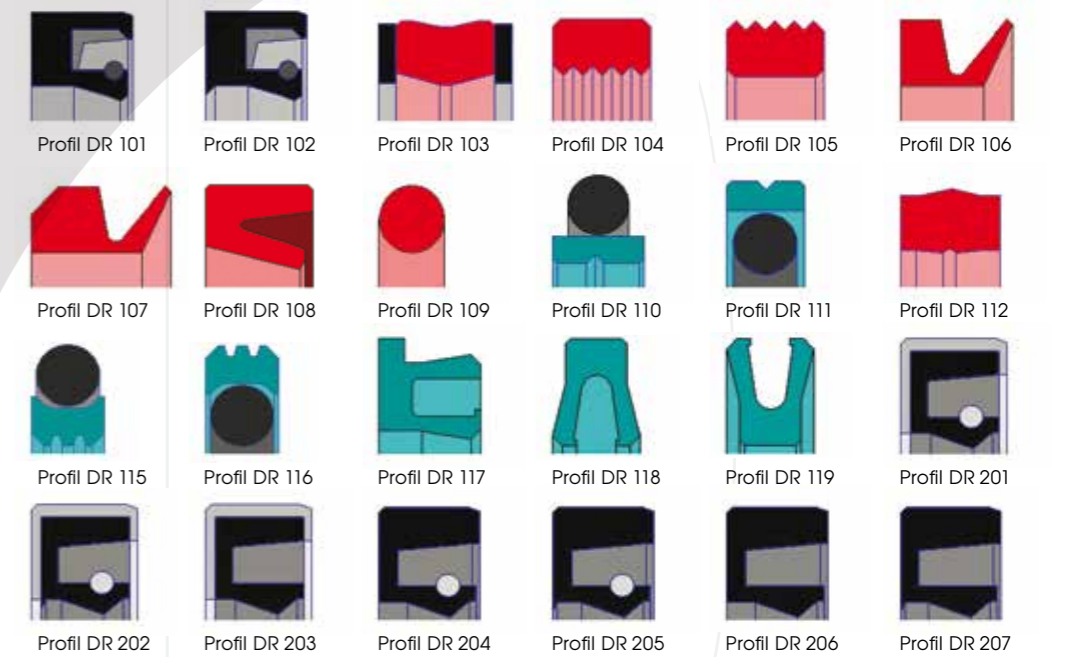


ROD SEALS



≡ PNEUMATIC

ROTARY SEALS



DMH

SOLUTION FOR SEALS

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