

Elastomer Materials List

□ : Critical Specification ○ : Products containing PFAS

Rubber Materials	VALQUA Material Symbol	Characteristics and Uses	PRODUCTS	(d) Working Temperature Scope (Reference) °C	Hardness durometer A	Tensile Strength MPa	Stretch %	(b) Compression permanent set %	Applicable standards	Series Material Code
Nitrile Rubber (NBR)	B0040	Mineral oil	O-Ring	-50 – +100	40	14.4	710	27 ²⁾	MIL-R-6855DCLASS1	
	B0150	Mineral oil		-35 – +120	50	13.4	670	17 ²⁾		
	B0250	Mineral oil, animal and plant Oil	Diaphragm	-20 – +120	53	15.8	660	84 ²⁾		
	B0350	Animal and plant oil, water	General Molded Products		50	8.6	440	25 ²⁾	Notice of the Ministry	B0680 B0290
	B0750	Oil bleeding	Various Seals	-45 – +120	51	13.8	710	45 ³⁾		B0950
	B0060	Mineral oil	General Molded Products	-20 – +120	62	15.1	400	22 ²⁾		B0070 B0080
	B0160	Mineral oil	O-Ring	-30 – +100	60	25.3	560	14 ²⁾		
	B0170	Fuel oil		-30 – +120	70	16.9	340	10 ²⁾	JIS B2401 Class 2	
	B0570	Mineral oil		-35 – +120	70	16.5	320	20 ³⁾	JIS B24011 Class A Notice of the Ministry of Health and Welfare No. 201 (a)	
	B1370	For low temperatures		-50 – +120	70	14.5	190	9 ²⁾		
	B2070	Highly fragrant gasoline			70	14.5	370	13 ²⁾		
	B2270	For Vacuums			73	18.1	370	15 ²⁾		
	B2670	Abrasion resistance for pneumatics	Oilless packing TOUGHRILE		72	18.0	270	12 ²⁾		
	B2770	For high temperature oils	O-Ring	-40 – +135	70	17.0	310	15 ³⁾		B0880 B0385 B0690
	B0675	Heat resistance, friction resistance	O-Ring, Various Seals	-20 – +120	78	19.8	220	9 ²⁾		
	B0180	Mineral Oil For pneumatics	O-Ring, Mini U-Packing		83	21.0	240	14 ²⁾		
	B0780	For pneumatics	U-Packing, dust seal Cushion Packing		82	20.2	200	16 ²⁾		
	B0390	Hydraulics	O-Ring U-Packing, Dust Seal V-Packing	-35 – +120	88	19.2	160	16 ³⁾	JIS B24011 Class B JIS B2403 Notice of the Ministry of Health and Welfare No. 201 (a)	
	B0490	For low temperatures	O-Ring, U-Packing V-Packing	-50 – +100	88	15.6	150	21 ³⁾	MIL-P-5510B	
Lubricating rubber	B5075	Lubricated, non-adhesive	O-Ring, Various Seals	-25 – +150	75	19.0	290	15 ³⁾	Notice of the Ministry of Health and Welfare No. 201 (a) JIS K6353	
Super Rubber (HNBR)	B5070	Heat resistance, friction resistance	O-Ring, Various Seals	-30 – +150	73	30.3	300	10 ³⁾	Notice of the Ministry of Health and Welfare No. 201 (a)	B5060 B5080
	B5680	CFC resistance R134a)	O-Ring, Various Seals	-25 – +150	81	22.8	220	11 ³⁾		B5485
	B5290	Hot water resistance, friction resistance		-30 – +150	91	26.2	150	13 ³⁾	Notice of the Ministry of Health and Welfare No. 201 (a)	B5160 B5170 B5180
	B5490	For white		-35 – +150	88	27.1	290	28 ⁴⁾		

Note) (a) Please provide instructions indicating if an order is for an intended food product use. (b) Conditions of compression permanent set tests are as follows. 1) 70°C – 22 h, 2) 100°C – 70 h, 3) 120°C – 70 h, 4) 150°C – 70 h, 5) 150°C – 22 h, 6) 175°C – 22 h, 7) 175°C – 70 h, 8) 80°C – 70 h, 9) 204°C – 70 h

Rubber Materials	VALQUA Material Symbol	Characteristics and Uses	PRODUCTS	(d) Working Temperature Scope (Reference) °C	Hardness durometer A	Tensile Strength MPa	Stretch %	(b) Compression permanent set %	Applicable standards	Series Material Code
Fluoro Rubber (FKM)	D0070	Heat resistance, oil resistance, chemical resistance	Gasket Diaphragm	-15 – +200	72	14.6	370	22 ⁶⁾		D0060 D0080
	D2270	Electrical conductivity, high strength	O-Ring, belt	-10 – +200	71	29.4	420	13 ⁶⁾		
	D0270	Low compression permanent set For vacuums	O-Ring	-15 – +200	72	13.9	260	4 ⁶⁾	JIS B2401 Class 4 D Notice of the Ministry of Health and Welfare No. 201 (a)	D0260 D0280 D0290
	D2470	Acid resistance		-20 – +200	70	18.7	430	30 ⁷⁾		
	D2570	For high temperatures Low compression permanent set		-15 – +230	72	13.6	230	3.8 ⁶⁾		
	D2670	Solvent resistance		-50 – +200	73	7.8	220	7 ⁷⁾		
	D2770	General-Use		-15 – +200	73	14.1	250	13 ⁶⁾		
	D0970	Alkali resistance		0 – +200	70	17.6	270	23 ⁶⁾	Notice of the Ministry of Health and Welfare No. 201 (a)	
	D1270	Solvent-resistance		-15 – +200	70	15.3	320	18 ⁷⁾	JIS B2401 Class 4 D Equivalent	D0880
	D9070	Color (Brown)		-15 – +200	71	13.1	220	4 ⁶⁾		
	D0675	Steam resistance Low compression permanent set		0 – +200	75	18.6	160	15 ⁶⁾		
	D0875	For low temperatures		-30 – +200	78	18.6	190	–		D1490
	D0390	Low compression permanent set High strength	Various Seals	-15 – +200	90	17.6	170	14 ⁶⁾		D0360 D0370 D0380
	D0890	Steam resistance	O-Ring	0 – +200	89	18.0	260	32 ⁶⁾		
	D9270	Anti-staining properties (white)		-10 – +200	72	15.0	270	16 ⁶⁾	Notice of the Ministry of Health and Welfare No. 201 (a)	
	D9160	For transparent, non-polluting semiconductors		-10 – +150	61	13.6	500	36 ⁵⁾		
	FFJ0RITZ™-SB	Highly superior chemical resistance		0 – +200	77	17.9	160	–		
	FFJ0RITZ™-TR	Highly superior crack resistance		0 – +260	72	11.1	160	–		
Perfluoroelastomer (FFKM)	FFJ0RITZ™-HS	Highly Superior Heat Resistance		0 – +300	77	20.0	160	–		
(C) TOUGHRETHANE™ (AU, EU)	R0090	Heat resistance	Various Seals	-30 – +100	87	32.8	310	17 ²⁾		R0060 R0070 R0080
	R0490	High performance	TOUGHRETHANE P Long-Lasting Seal	-20 – +80	93	43.0	360	28 ⁸⁾		R0595
	R5190	General-Use	Ball, Coupling	-25 – +80	90	44.0	550	40 ¹⁾		R5180 R5185 R5195 R5198
	R5390	Water resistance	Various Seals, Films	-30 – +80	90	39.2	500	35 ¹⁾		R5380 R5385 R5395
	R5590	Oil resistance	Hydraulic Packing		90	44.0	500	40 ⁸⁾		R5585 R5595 R5598
	R5795	Transparency	Printing sheets	-20 – +80	95	44.0	450	40 ¹⁾		
	R6195	Hydrolysis resistance	TOUGHRETHANE New Series Hydraulic Packing		94	51.0	400	28 ⁸⁾		R6190
	R6395	Low compression permanent set	Various Seals General Molded Products	-30 – +100	95	39.2	540	23 ⁸⁾		R6390

Note) (c) TOUGHRETHANE™, a trademark of VALQUA, is a urethane rubber product produced and sold by VALQUA. (d) The working temperature scope will change based on usage conditions and demanded capabilities, such as the nature of flowing materials and pressure involved. Please contact us for details. Note) The physical characteristics values are all examples of measured values at room temperature, and are not standard values.

○ : Products containing PFAS

Note) (a) Please provide instructions indicating if an order is for an intended food product use. (b) Conditions of compression permanent set tests are as follows. 1) 70°C – 22 h, 2) 100°C – 70 h, 3) 120°C – 70 h, 4) 150°C – 70 h, 5) 150°C – 22 h, 6) 175°C – 22 h, 7) 175°C – 70 h, 8) 80°C – 70 h, 9) 204°C – 70 h (c) TOUNGHEATHANETM, a trademark of VALQUA, is a urethane rubber product produced and sold by VALQUA. (d) The working temperature scope will change based on usage conditions and demanded capabilities, such as the nature of flowing materials and pressure involved. Please contact us for details.

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Types and characteristics of pneumatic packing



One-Ring Packing TOUGHRILE™



Cushion Packing

Sealants used in pneumatic equipment are expected to be compact, have high sealing performance, economical, and with low sliding friction so as to allow operation even in low-pressure environments. As a result, materials selection, optimized form design, and a high degree of dimensional accuracy all corresponding to the intended use are necessary.

Use	Name	Cross-Sectional Shape	Series	Characteristics	Material	VALQUA Product Number
For Pistons	Small diameter One-Ring packing		PSP	This product is small-diameter piston packing for dual-pressure type 1-Rings, and can be applied to uncut tubes with rough dimensional accuracy and surface smoothness.	Super Rubber	2060
					Nitrile Rubber	
					Fluoro Rubber	
	U-Packing		UPP	This product is asymmetrical packing for large cross-sections, and can be used for general-use pneumatic cylinders.	Nitrile Rubber	2060
For rods	One-Ring packing		PUD	This product is an oilless rod packing with a duster lip, with limited installation space.	Abrasion-resistant Nitrile Rubber TOUGHRILE™ Super Rubber	2060
	U-Packing		UPR	This product is asymmetrical packing for large cross-sections, and can be used for general-use pneumatic cylinders.	Nitrile Rubber	2060
	Cushion Packing		CPC	Cushion packing for use in general-use pneumatic cylinders.	Nitrile Rubber	2060
			CPF	A floating-type cushion packing that smoothes out the operation of pneumatic cylinders.	Abrasion-resistant Nitrile Rubber TOUGHRILE™	2060
	Dust Seal		DPS	A dust seal for use in general-use pneumatic cylinders.	Nitrile Rubber	2060
			DHS	This product should be used for large diameter pneumatic cylinders (rod diameter φ 50 or greater) and general-use industrial equipment.	Nitrile Rubber Fluoro Rubber	2060 4060

☆TOUGHRILE™, a trademark of VALQUA, is an oilless packing made by VALQUA. As TOUGHRILE™ is a strategic material (or investment) as defined by the Foreign Exchange and Foreign Trade Act, any export will require export approval in accordance with the Act.

Our company, since our founding in 1927, started off producing synthetic rubber V-Packing which led us to be one of the first to begin production on O-Rings, with VALQUA actually being the first company in Japan to receive JIS approval for JIS-standard O-Rings. In 1964, we received Defense Agency certification for airplane-use O-Rings MIL-P-5516B Class B AN6227 and AN6230 hydraulics O-Rings, and began production of MIL-standard airplane-use O-Rings. Even now, with our airplane-use packing still leading our product lineup, we continue making products under stringent product quality management for a variety of industries, such as general-use industrial products, nuclear power-related products, and semiconductor manufacturing-related products.



Note) The VALQUA SG Series is the series version of O-Rings with particularly thin wire diameters in order to meet our customer's requests for miniaturization of equipment.

Type	Standard	For general equipment		For automobile	For aircraft
		JIS B2401	VALQUA SG standards	JASO F404	AS568A
BY MATERIALS	For General-use	Class 1 A Class 1 B	Nitrile Rubber (NBR)	Class 1 A	Nitrile Rubber (NBR)
	For Fuel Use	Class2	Nitrile Rubber (NBR) Fluoro Rubber (FKM) Fluorosilicone Rubber (FVMQ)	Class 2	Nitrile Rubber (NBR) Fluoro Rubber (FKM) Fluorosilicone Rubber (FVMQ)
	For Animal and Plant Oils	Class3	Ethylene Propylene Rubber (EPDM) Styrene Butadiene Rubber (SBR)	Class 3	Ethylene Propylene Rubber (EPDM) Styrene Butadiene Rubber (SBR)
	For Heat Resistance	Class 4 C	Silicone Rubber (VMQ)	Class 4 C	Silicone Rubber (VMQ)
	For Heat Resistance and Oil Resistance	Class 4 D	Fluoro Rubber (FKM) Acrylic rubber (ACM)	Class 4 D Class 4 E	Fluoro Rubber (FKM)
	For Coolants	—	—	Class 5	—
BY Use		P (moving part) G (fixed part) V (vacuums) ISO (general industrial)	For fixed part	For moving part For fixed part	For moving part For fixed part

Large-diameter O-Rings (inner diameter dimensions of φ300 or more) can be made in the customer's desired dimensions with no limitations on maximum diameter dimensions through specialized vulcanization molding. Note that there are no differences in performance or quality when compared with products made through vulcanization molding using general-use presses.

Color O-Ring

This product series takes the traditionally black O-Rings and differentiates their component rubber materials by color. This will make identifying O-Ring materials easier, preventing installation errors and other mistakes. Furthermore, the white-colored product is frequently used as sealant for semiconductor equipment due to its efficacy at managing problems with contamination.

Rubber Materials	VALQUA Material Symbol	Color Tone	Application
Silicone Rubber (VMQ)	E0170	Reddish Brown	JIS B 2401 Class 4C Equivalent
	E0870	White	JIS B 2401 Class 4C Equivalent
Fluoro Rubber (FKM)	D9070	Brown	JIS B 2401 Class 4D Equivalent
	D9270	White	JIS B 2401 Class 4C Equivalent

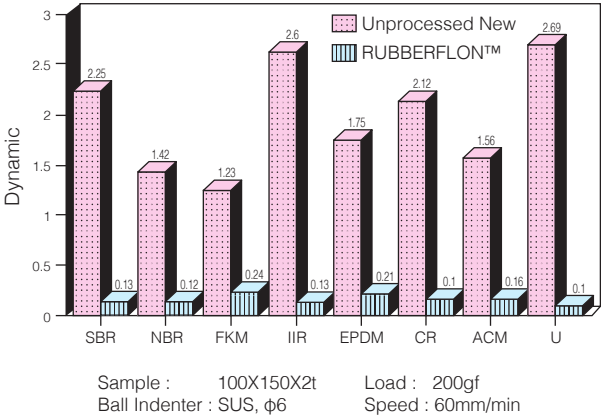
Note) We accept requests for materials other than those described above (such as acrylic rubber).

NEW RUBBERFLON™ O-Ring

When conducting continuous automatic installation of rubber products, the production line can see stoppages due to products becoming twisted during installation caused by strong resistance, and adhesion between products. The NEW RUBBERFLON™ O-Ring has had its surface modified in order to eliminate such defects. This product reacts with nearly all elastomers, like nitrile, fluoro rubber, and acrylic rubber, and forms a tightly bonded film. This film retains high followability even after being extended, leaving it unlikely to separate after installation, and is typically used in stationary seals (gaskets).

Uses: 1. Continuous Automated Installation Lines, 2. Component Supply Lines, 3. Oil and Grease, 4. Equipment Seal Anchoring Prevention

Dynamic Friction Coefficient



Note) NEW RUBBERFLON™ is not a surface quality modification of fluorine based products.