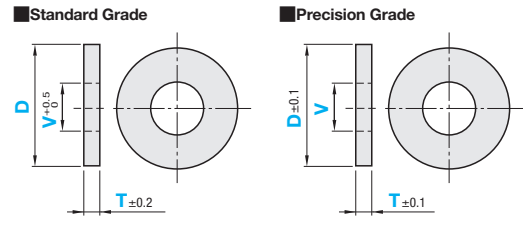


Urethane Washers

Standard, Antistatic, Heat Resistant, Vulkollan®, Abrasion Resistant, Ceramic Urethane, Adhesive

Adhesive Type is convenient for temporary fixing.



For Vulkollan®, see the tolerance table.
 The tolerances are verified at 23°C±2 and 40~80% humidity.
 Standard Grade Tolerance

D Tolerance	D Tolerance	T Tolerance	V Tolerance
6~40 ±0.2	6~40 ±0.5	3~5 ±0.5	2~50 +0.1
41~60 ±0.3	41~60 ±0.6	5.5~10 ±0.2	51~80 +0.2
61~100 ±0.4	61~100 ±0.7		

For Vulkollan®, see the table on the right.
 Precision Grade Tolerance
 V Tolerance ±0.3

Type	Standard Grade	Precision Grade	Material	Hardness	Photo No., Color
Standard	URWS	UAWS	Standard Urethane	Shore A95	① Natural Color
	URWH	UAWH	(Ether Polyurethane)	Shore A90	
	URWM	UAWM	Standard Urethane (Ester Polyurethane)	Shore A70	
	URWL		Standard Urethane (Ester Polyurethane)	Shore A50	③ Brown
	URHWH		Heat Resistant Urethane	Shore A90	
	UREWH		Abrasion Resistant Urethane	Shore A90	
Configurable Type	URFS	UAFSN	Standard Urethane	Shore A95	① Natural Color
	URFH	UAFH	(Ether Polyurethane)	Shore A90	
	URFM	UAFM	Standard Urethane (Ester Polyurethane)	Shore A70	
	URFL		Standard Urethane (Ester Polyurethane)	Shore A50	② Gray
	URFY		Standard Urethane (Ester Polyurethane)	Shore A30	
	URFHE		Antistatic Polyurethane	Shore A90	
	URFME		Antistatic Polyurethane	Shore A70	③ Brown
	URFLE		Antistatic Polyurethane	Shore A50	
	URHFH		Heat Resistant Urethane	Shore A90	
	VULFH		Super Abrasion Resistant Urethane Vulkollan®	Shore A92	⑤ Beige
	VULFM		Super Abrasion Resistant Urethane Vulkollan®	Shore A68	
	UREFH		Abrasion Resistant Urethane	Shore A90	
	UREFM		Abrasion Resistant Urethane	Shore A70	⑥ Gray
	URCES		Ceramic Urethane	Shore A95	
	URCEH		Ceramic Urethane	Shore A90	
URCEM		Ceramic Urethane	Shore A70		

For features of Ceramic Urethane, see P.389.
 Urethane turns yellow by aging, but physical property or characteristics remain unchanged.
 For Yellow Discoloration of Urethane, see P.392.
 Depending on the production lot, the side face may show marks from machining.

Characteristic Values of Antistatic Urethane

Specific Volume Resistivity	2.1x10 ⁹ Ω·cm
Surface Resistivity	4.0x10 ⁹ Ω

(Conditions: Temperature 30°C Humidity 60%)
 All other properties are equal to those of urethane of the same hardness.

Standard

Part Number	Type	D	V Selection								T Selection						
			6	8	10	12	15	20	25	30	35	40	50	60			
Standard Grade																	
URWS	(Standard Shore A95)	6	2										1	2	3		
URWH	(Standard Shore A90)	8	2	3	4								1	2	3		
URWM	(Standard Shore A70)	10		3	4	5	6						1	2	3	5	
URWL	(Standard Shore A50)	12			4	5	6	8					1	2	3	5	
URHWH	(Heat Resistant Shore A90)	15			4	5	6	8	10				1	2	3	5	
UREWH	(Abrasion Resistant Shore A90)	20				5	6	8	10	12				3	5	10	
UREWM	(Abrasion Resistant Shore A70)	25				5	6	8	10	12	16	20		3	5	10	
Precision Grade																	
UAWS	(Standard Shore A95)	30														5	10
UAWH	(Standard Shore A90)	35														5	10
UAWM	(Standard Shore A70)	40														5	10
		50														5	10
		60														5	10

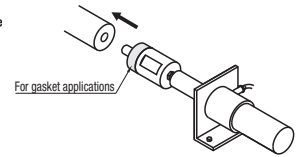
Configurable Type

Part Number	Type	D	V Selection				T Selection	
			1mm Increment	1mm Increment	1mm Increment	0.5mm Increment	0.5mm Increment	
Standard Grade								
URFS	(Standard Urethane Shore A95)	6~15					1.0~5.0	
URFH	(Standard Urethane Shore A90)	16~30		0 (No Hole)			5.5~10.0	
URFM	(Standard Urethane Shore A70)	31~45		2~41 (V≤D-4)			1.0~5.0	
URFL	(Standard Urethane Shore A50)	46~60					1.0~5.0	
URFY	(Standard Urethane Shore A30)	61~80					5.5~10.0	
URFHE	(Antistatic Polyurethane Shore A90)			0 (No Hole)			1.0~5.0	
URFME	(Antistatic Polyurethane Shore A70)			10~70 (V≤D-4)			5.5~10.0	
URFLE	(Antistatic Polyurethane Shore A50)						1.0~5.0	
Precision Grade								
UAFSN	(Standard Urethane Shore A95)	81~100		0 (No Hole)			1.0~5.0	
UAFH	(Standard Urethane Shore A90)			20~80 (V≤D-4)			5.5~10.0	
UAFM	(Standard Urethane Shore A70)						5.5~10.0	

When V=0, there is no hole. Vulkollan® is available for T=3.0 or more. For Ceramic Urethane, T=5.0 or more.

Ordering Example
 Part Number - V - T
 URWL20 - 10 - 5

Ordering Example
 Part Number - D - V - T
 URFM - D19 - V3 - T4.5
 URFH - D35 - V18 - T8.0



Standard

For economical packages, see P.392. (Note that tolerances etc. are different.)

Standard / Precision	Material	Hardness (Shore A)	Unit Price																						
			Standard Urethane			Heat Resistant / Abrasion Resistant Urethane			Precision Grade																
			95	90	70	50	90	90	70	95	90	70													
Part Number		Type		D		URWS		URWH		URWM		URWL		URHWH		UREWH		UREWM		UAWS		UAWH		UAWM	
Standard Grade		URWS		6																					
		URWH		8																					
		URWM		10																					
		URWL		12																					
		URHWH		15																					
		UREWH		20																					
		UREWM		25																					
Precision Grade		UAWS		30																					
		UAWH		35																					
		UAWM		40																					
				50																					
				60																					

Configurable Type

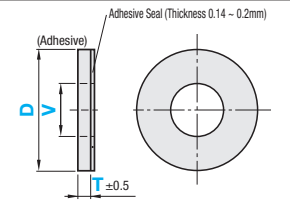
Standard / Precision	Material	Hardness (Shore A)	Part Number	Type	D	T	Unit Price																			
							Standard Urethane			Antistatic Polyurethane			Heat Resistant / Vulkollan®			Abrasion Resistant Urethane			Ceramic Urethane			Precision Grade				
							95	90	70	50	30	90	70	50	92	68	90	70	95	90	70	95	90	70		
Standard Grade							URFS	URFH	URFM	URFL	URFY	URFHE	URFME	URFLE	URHFH	VULFH	VULFM	UREFH	UREFM	URCES	URCEH	URCEM	UAFSN	UAFH	UAFM	
Standard Grade							6~15	1.0~5.0																		
							16~30	5.5~10.0																		
							31~45	1.0~5.0																		
							46~60	5.5~10.0																		
							61~80	1.0~5.0																		
							81~100	5.5~10.0																		

Adhesive Type Washers convenient for temporary fixing.

Urethane Washers - Adhesive

Type	Type	Material	Hardness	Color
Urethane Washers - Adhesive	URWHS	Standard Urethane (Ether Polyurethane)	Shore A90	Natural Color
	URWMS	Standard Urethane (Ester Polyurethane)	Shore A70	

Temperature limit for seals is 80°C.



Type	D Selection	V Selection	T Selection	Tolerance				Unit Price							
				T1, 3		T5		URWHS (Shore A90)			URWMS (Shore A70)				
				D	V	D	V	T1	T3	T5	T1	T3	T5		
Adhesive URWHS (Shore A90)	8	3	4	1	3										
	10	3	4	5	6	±0.6	0~+0.6	±0.7	0~+0.7						
	12		5	6	8										
	15			6	8	±0.8	0~+0.8	±0.9	0~+0.8						
URWMS (Shore A70)	20		8	10	12										
	25			10	12	±0.9	0~+0.9	±1.0	0~+1.0						
	30			10	12										

Ordering Example
 Part Number - V - T
 URWHS20 - 10 - 5