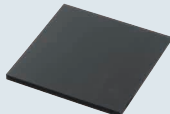


# Urethane Bumpers

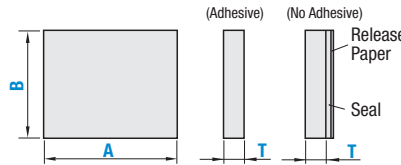
Super Low Hardness / Extra-Low Hardness

**Urethane Sheets – Extra-Low Hardness**



RoHS10

**SUTLL** No Adhesive  
**SUTLLA** Adhesive



**Accuracy Standards**  
**-T Dimension Tolerance**

5, 10	15-25	30
±0.4	±0.8	±1.0

**-Dimensional tolerances of A and B**

200mm or Less	205-250
+3 0	+5 0

**Material:** Extra Low Hardness Urethane (Black)  
**Hardness:** Shore A15 (High Impact Resilience)

Ⓢ The tolerances are verified at 23°C ±2 and 40-80% humidity.  
Ⓢ Edges may remain white after cutting.

Part Number		5 mm Increment	
Type	T	A	B
No Adhesive SUTLL	5	10-250	10-250
	10		
	15		
Adhesive SUTLLA	20		
	25		
	30		

Ⓢ A≥B≥T

**Part Number Example**

Part Number - A - B  
SUTLL5 - 250 - 100

## Features of Extra Low Hardness Urethane

- High physical strength that cannot be obtained from conventional soft materials.
- MISUMI original material that suppresses self-adhesion, which is the problem of soft material.
- This material has high resistance against impact, and little permanent compression.
- It has the same properties as ether polyurethane.

## Comparison of Characteristics


Properties	Extra Low Hardness Urethane	Nitrile	Ethylene	Silicon	Fluorine
Impact Resilience	Excellent	Good	Good	Excellent	Acceptable
Compression Set	Excellent	Excellent	Good	Excellent	Good
Abrasion Resistance	Excellent	Excellent	Good	Not Acceptable	Excellent

# Shock Absorbing Bumpers

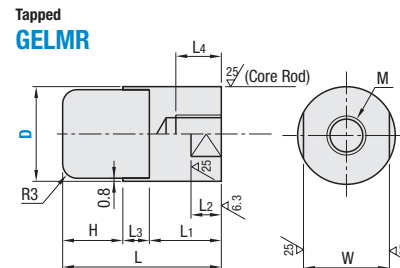
Tapped / Threaded

New Bumpers provided with shock and sound absorbing effect, made of soft shock-absorbing gel. Refer to P.2569.

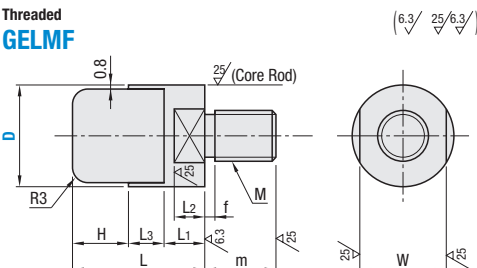
**Shock Absorbing Bumpers – Tapped / Threaded**



**Tapped GELMR**



**Threaded GELMF**



**Material:** Viscoelastic elastomer (gray)  
**Hardness:** Asker F75 (Two-layered; F98 for outer layer)  
**Core Rod Material:** 304 Stainless Steel

Part Number	H	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	M	W	
Tapped GELMR	12	8	22	11	4	3	6.5	M5 x 0.8	10
	16	10	28	14	5	4	9	M6 x 1.0	14
			31	17			12	M8 x 1.25	
	20	13	35	17	6	5	12	M8 x 1.25	17
			39	21			15	M10 x 1.25 (Fine Thread)	
			44	24			18	M12 x 1.75	
	30A	15	46	26	8	5	21	M14 x 1.5 (Fine Thread)	27

Part Number	H	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	M	W	m	f	
Threaded GELMF	12	8	16	5	4	3	M5 x 0.8	10	8	1.5
	16	10	20	6	5	4	M6 x 1.0	14	10	2
	20	13	26	8	6	5	M8 x 1.25	17	12	2
	30	15	30	10	8	5	M10 x 1.5	27	14	2.5

**Part Number Example**

Part Number  
GELMR16A

## Precaution for Use

- Do not stick or cut with sharpened objects.
- Do not tear or twist.
- Insert it only from the vertical direction.
- Keep away from fire.
- Do not use detergents for cleaning.
- Replace it when broken.

## Elasticity of Shock Absorbing Gel

**Shock Absorbing Gel**      **Urethane Shore A50**

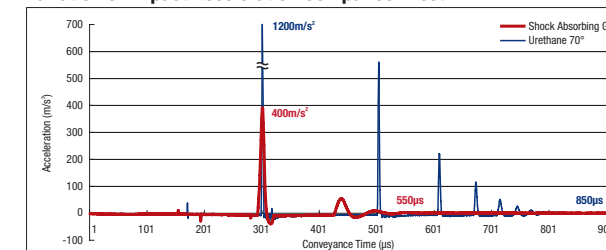
Normal State    When applied force    Normal State    When applied force



A major characteristic is the three-dimensional slow recovery, the function to recover after compression slowly and in multiple directions. Pressed as thin as in the picture and recovers to the original shape gradually after being released from pressure.

\*The double-layer structure of the gel part reduces stickiness.

## Variation of Impact Acceleration Comparison Test



	Max. Impact Acceleration (m/s <sup>2</sup> )	Convergence Time (µs)
Shock Absorbing Gel	400	550
Urethane 70°	1200	850
Urethane 50°	836	1273
Extra Low Hardness Urethane 15°	450	1660
Low Rebound Urethane	1750	450
Nitrile Rubber	1050	670
Low Rebound Rubber	1580	400

\*Convergence time is defined as the time until acceleration falls below 10 m/s<sup>2</sup>.

## From Test Results

Peak acceleration of shock absorbing gel is lower at around 30% of other materials and convergence speed is higher. (Extra low hardness urethane has a low peak value as well, but takes three times longer to converge.) This is because the material transmits energy dispersing in multiple directions, while absorbing impact force. From these characteristics, effects such as impact absorption and noise reduction can be expected. (Effects differ depending on operation environment.)

## Test Conditions

Measuring method: Measured with accelerometer secured on the hammer dropped on the test materials  
Size of test material: ø30, Height 20 mm  
Measuring instruments:  
Hammer: Weight 958 g, drop height 255 mm  
Length from fulcrum to barycenter: 255 mm

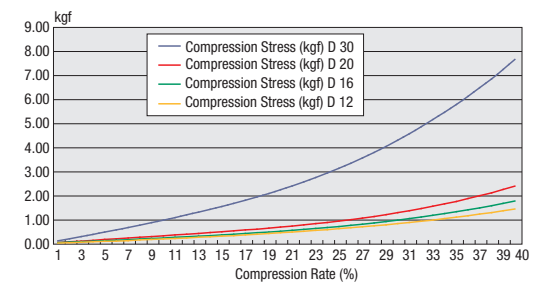
## Equipment:

Acceleration pickup (Bruel & Kjaer Type 4507B001)  
Data logger (Keyence NR-500, NR-HA08)  
PC, Sensor amplifier (Ono Sokki SR-2200)  
Measurement condition: Temperature 18°C, Humidity 40%

## 40% Compressive Load Test Results

D	12	16	20	30	Test Conditions
40% Compression Load Average (kgf)	1.4	1.8	2.4	7.7	A static compression load measurement test causing the 60% thickness in repeated three times. Above are the mean values of three measurement results.

Ⓢ Recommended Load      Ⓢ These are not guaranteed values but an example of a set of measured values.



**Application Example**

Bumper      Shaft Attachment

