Mushroom Type Bumpers EPDM / NR

5-950.02

RoHS
WEEE

Advantages

- Universal in use and made of rubber.
- Long service lives and an economical answer to many needs.
- Protection against damage to other components when opening and closing hinged hatch covers or doors.
- Used as rubber feet, they absorb vibration, too.
- Vigorous movements are damped.
- Scratches on the floor are prevented.

Material

- **Mushroom type bumpers:** EPDM 30% / NR 70%, black, Shore A60°

Remarks

Mushroom type bumpers

	Product number	D	d	d1	h	h1	h2	Delivery Unit
a)	209-3101.00-00000	20 mm	7 mm	9 mm	15 mm	5 mm	2 mm	10 pcs.
b)	209-3102.00-00000	10 mm	5 mm	6 mm	8,5 mm	3 mm	1,5 mm	10 pcs.

Guidelines for storage, cleaning and maintenance

as per DIN 7716

1. Applicability
The guidelines which follow are applicable to products made both of pure rubber and rubber combined with other products, to elastomers made of natural rubber and/or synthetic rubber as well as to glued or laminated products and solutions.

2. General
The properties of most rubber products will be affected if they are stored under adverse conditions or improperly handled. They may be made unserviceable due to excess hardening, softening, permanent deformation or spalling, fissures or other surface damage.
The changes may be caused by the effects of oxygen, ozone, heat, light, moisture, solvents or storing under tension. If properly stored and handled, rubber products will retain their properties virtually unchanged over several years.

3. Storage area
The storage room should be cool, dry, free of dust and ventilated but not drafty.

3.1. Temperature
The storage temperature should be 15°C and may not exceed 25°C since this could cause a change in the physical properties or could shorten the shelf life. Neither should the storage temperature fall below -10°C. Even lower temperatures are generally not detrimental but the products could become extremely stiff. Chilled products should gradually be brought up to a temperature of 20°C. Adhesives and solutions may never be colder than 0°C; the minimum storage temperature for products made of certain chloroprene rubber compounds may, under certain circumstances, be 12°C.

3.2. Heating
Where the storage area is heated, radiators and piping should be shielded. The heat sources in the storage areas should be engineered so that the temperature of the items in storage does not exceed 25°C. Minimum clearance between the heat source and the stored products is 1 m.

3.3. Moisture
Storing rubber products in damp storage rooms should be avoided. No condensation may form. Relative humidity should be less than 65%.

3.4. Lighting
The rubber products should be protected against light, and in particular, against the sun's direct rays and strong artificial illumination with a high share of ultraviolet light. It is for this reason that the windows in storerooms should be covered with a red or orange (never blue) coating or film. All sources which emit light in the ultraviolet spectrum are damaging to rubber. Preference is to be given to using standard incandescent lamps for illumination.

3.5. Oxygen and ozone
Rubber products should be protected against changes in room air and above all against drafts; this may be done by placing them in protective bags or envelopes or in airtight containers. This applies in particular to items with a large surface area in relationship to the volume such as rubberized items or cellular materials. Since ozone is particularly detrimental, no equipment which generates ozone may be present in storerooms; examples of such sources include fluorescent illumination, mercury vapor lamps, electric motors or other devices which could create arcs or electrical discharges. Combustion gases and vapors which could liberate ozone through photo-chemical processes should be removed. Solvents, fuels, lubricants, chemicals, acids, disinfectants and the like may not be stored in the storeroom. Rubber solutions must be stored in a separate room, observing regulations on the storage and movement of flammable fluids.

4. Storage
It is important to ensure that rubber products are free of strain when stored, i.e., not subject to tension, pressure or other stresses since strain can promote permanent deformation and fissuring. Certain metals, and copper and manganese in particular, are damaging to rubber products. It is for this reason that rubber products may not be in contact with these metals during storage but will rather have to be protected by adequate packaging or isolation with a layer of a suitable material such as paper or polyethylene. The materials used in the containers for the packing and covering materials may not contain any components damaging to rubber, such as copper or copper alloys. Gasoline, oil and the like, and films containing plasticizers may not be used for packaging. If powder is applied to rubber products, then the powder may not contain any components which would be damaging to the rubber products. Products suitable for use as powder are talcum powder, prepared chalk (Spanish white), fine-grain mica flour and rice starch. Contact between rubber products made up of differing compounds should be avoided; this is particularly true for products of different colors. The period in storage should be kept as short as possible. During longer storage periods, it is necessary to insure that newly arrived products are stored separate from those previously on hand.

5. Cleaning and maintenance
Rubber products may be cleaned with soap and warm water and then allowed to dry at room temperature.
After a longer period in storage (6 to 8 months), the products can be cleaned with a 1.5% solution of sodium bicarbonate. Residues from this cleaning solution are to be rinsed away with water. Effective and particularly gentle cleaning agents can be recommended by the manufacturer. Solvents such as trichloroethylene, carbon tetrachloride and hydrocarbons may not be used for cleaning. Do not use sharp or abrasive objects such as wire brushes, sandpaper, etc.

Explanations and instructions

Elastomer designation in accordance with ASTM D 1418-76

CR Polychlorinated butadiene e.g. Neoprene
EPDM Ethylene-propylene terpolymers e.g. Keltan
NBR Acrylonitrile butadiene copolymers e.g. Perbunan
NR Natural rubber (polyisoprene)

Elastomers and their properties

Chemical designation	Natural rubber	Nitrile rubber	Chloroprene rubber	Ethylene-Propylene-diene-rubber
Acronym according to ASTM D 1418	NR	NBR	CR	EPDM
Hardness range (Shore A) +/-5 [A]	40-90	45-90	40-90	40-85
Tear resistance N/mm²	4-15	4-14	5-15	6-13
Rebound resilience at 20°C	++	0	+	+
Abrasion resistance	++	+	+	+
Elastic properties	++	+	+	+
Chemical resistance [B]	+	0	+	++
Resistance to oil [B]	-	++	+	-
Resistance to fuels [B]	none	+	-	-
Solvent resistance [B]	-	+	+	0
Temperature resistance °C [C]	-40 to +80	-30 to +100	-25 to +100	-40 to +100
Ozone resistance	0	0	++	++
Gen. weathering resistance	+	+	++	++
Gas impermeability	0	+	+	0
Resistance to permanent deformation [D]	++	+	+	+
Bonding to metal	++	0	+	0
Dielectric properties	++	-	0	++

Explanation of symbols

A = For the specific data on the hardness range, please request the technical data sheet. The hardness range for the edge protection is measured in Shore A, the hardness range for the sponge rubber is measured in density g/cm³.
B = Because of the numerous possible chemicals, solvents, application-temperatures and duration, the values stated may vary in individual cases. In particular a type of elastomer that generally displays a low resistance, may be very resistant to certain media.

++ = excellent to very good
+ = good
o = satisfactory to moderate
- = low to poor

C = In general, the resistance declines at relatively low or high temperatures.
D = These are limits that may fluctuate according to the composition of the mixture. Continuous use at limit levels brings about a change in the physical values. Special elastomer mixtures are necessary for extreme loads.

Factory Tolerances

The purpose of the subsequently compiled tolerances from the respective standard is to facilitate the quick assignment of tolerated dimensional deviations.
(Not applicable to drawing with fixed tolerances.)

Mouled rubber parts based on DIN 7715 M4

Nominal range [mm]	Tolerance ± [mm]
– 6.3	0.5
> 6.3 – 10.0	0.7
> 10.0 – 16.0	0.8
> 16.0 – 25.0	1.0
> 25.0 – 40.0	1.3
> 40.0 – 63.0	1.6
> 63.0 – 100.0	2.0
> 100.0 – 160.0	2.5
> 160.0	1.5 %

Solid rubber profiles (cross section) based on DIN ISO 3302-1 E2

Nominal range [mm]	Tolerance ± [mm]
– 1.5	0.25
> 1.5 – 2.5	0.35
> 2.5 – 4.0	0.40
> 4.0 – 6.3	0.50
> 6.3 – 10.0	0.70
> 10.0 – 16.0	0.80
> 16.0 – 25.0	1.00
> 25.0 – 40.0	1.30
> 40.0 – 63.0	1.60
> 63.0 – 100.0	2.00

Sponge rubber (cross section) based on DIN ISO 3302-1 E3

Nominal range [mm]	Tolerance ± [mm]
– 1.5	0.4
> 1.5 – 2.5	0.5
> 2.5 – 4.0	0.7
> 4.0 – 6.3	0.8
> 6.3 – 10.0	1.0
> 10.0 – 16.0	1.3
> 16.0 – 25.0	1.6
> 25.0 – 40.0	2.0
> 40.0 – 63.0	2.5
> 63.0 – 100.0	3.2

Tolerances for custom lenght (rubber) based on DIN ISO 3302-1 L3

Nominal range [mm]	Tolerance ± [mm]
– 40	1.6
> 40 – 63	2.0
> 63 – 100	2.5
> 100 – 160	3.2
> 160 – 250	4.0
> 250 – 400	5.0
> 400 – 630	6.3
> 630 – 1000	10.0
> 1000 – 1600	12.5
> 1600 – 2500	16.0
> 2500 – 4000	20.0
> 4000	2 %

PVC-Profiles (cross section) based on DIN 16941 3A and 3B

Nominal range [mm]	Tolerance ± [mm]
– 3	0.4
> 3 – 6	0.6
> 6 – 10	0.7
> 10 – 18	0.8
> 18 – 30	1.0
> 30 – 50	1.2
> 50 – 80	1.5
> 80 – 120	1.9
> 120 – 180	2.3
> 180 – 250	2.8
> 250 – 320	3.5
> 320	1.4 %

Tolerances for custom length (PVC) based on DIN 16941 4B

Nominal range [mm]	Tolerance ± [mm]
– 400	5.0
> 400 – 1000	10.0
> 1000 – 2500	20.0
> 2500 – 6000	30.0
> 6000	2 %

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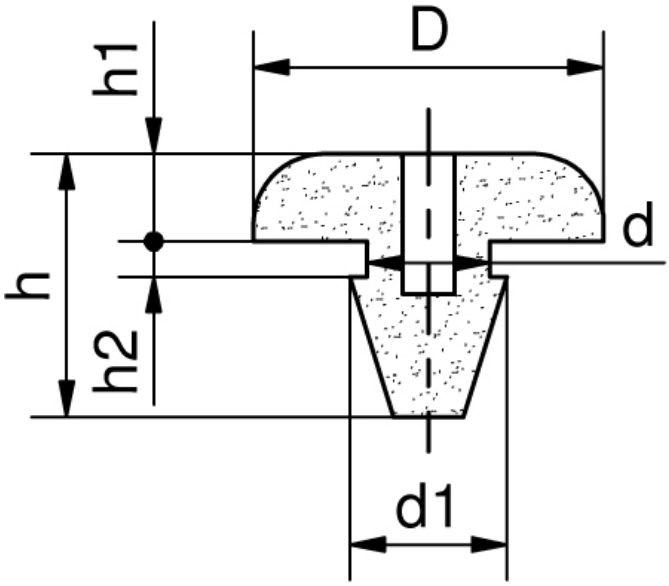
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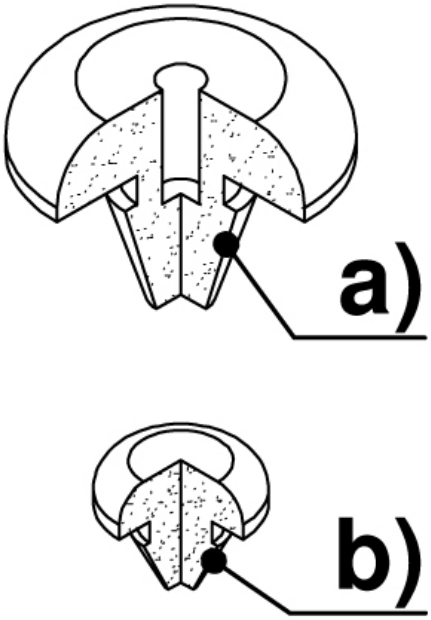
a)

b)