

Storage, cleaning and aging characteristics of the
rubber spring elements from RESATEC AG

1 Area of application

The following information concerns the products of the company RESATEC AG which are made from natural rubber and/or synthetic rubber or made with materials from other substances. The information is based on the standard DIN 7716.

2 General

The physical characteristics change with most products made from kautschuk rubber and normal rubber if the conditions are unfavourable or the treatment is incorrect. This can lead to a reduced life time and make them unusable due to excessive hardening, softening, permanent deformation, cracking or other surface damage. Changes can be caused due to the influence of oxygen, ozone, heat, light, moisture, solvents or storage under tension. The characteristics of products stored and treated correctly remain almost unchanged for a long period of time.

3 Storage Room

The storage room should be cool, dry, dust free and moderately ventilated. Open air outdoor storage is not allowed.

The storage temperature of rubber products alters the storage life of the rubber spring elements significantly. To ensure a long storage life the following temperature range should be maintained:

Rubber spring elements should not be stored below -10°C or above $+25^{\circ}\text{C}$.

Temperatures above or below should not be continuous (only seasonal changes).

Products can become stiff if they have been subjected to low temperatures during storage or transport. These products should be stored for 1 - 2 days at a temperature of about 18°C before being used. This is best done in the packaging to prevent any moisture condensation on the product.

The rubber spring elements are to be protected against direct heat from any heating source or should have a minimum distance of at least one metre.

Avoid storage in damp storage rooms. Make sure that no condensation takes place.

A relative humidity of less than 65% is the most favourable.

Protect the end surfaces of rubber spring elements against direct sunlight and from any strong artificial light that has a high level of ultra violet. If this is not possible then the storage room windows should be painted red or orange or covered with a coloured foil. Use of normal lamps for the lighting is preferred.

Because ozone is especially damaging, the storage rooms should have no devices that generate ozone due to sparks or other electrical discharges. Combustion gases and fumes that can lead to ozone formation due to photo chemical processes should be eliminated.

Solvents, fuels, lubricants, chemicals, acids, disinfection agents or similar should not be stored in the same storeroom.

4 Storage and Handling

Make sure that the product is not stored under tension which means without strain, pressure or other deformation, because any tension can cause cracks or a permanent deformation. In particular the following products should be stored and transported without any compressive load due to being stacked or supported; vibration and shock elements of the product models CH, CS, DB, TB, OM, DVM, VD and RD.

The packaging container and the covering materials should not contain any components that are damaging to the product like copper or copper alloys, gasoline, oil, oil-impregnated paper, printing ink or similar.

5 Cleaning

The rubber spring elements can be cleaned with soap and warm water. The cleaned product should be dried at room temperature. Solvents like trichlorethylene, carbon tetrachloride and hydrocarbons should not be used for cleaning. Also not allowed is the use of sharp edged objects, wire brushes, emery paper, abrasive pads, etc. Rubber-metal connections should be cleaned with a glycerol-alcohol (1:10) mixture. If disinfection is necessary do this after thoroughly cleaning the product. Do not use the disinfectant at the same time as the cleaning agent. Make sure that the disinfectant is compatible with the rubber. Especially oxygen or halogen cleaved agents such as potassium permanganate or chlorinated lime can be harmful in small cross sections of the rubber bodies.

6 Ageing Characteristics

RESATEC AG uses a SBR based rubber mixture for the standard rubber spring elements which was specially developed for this application. Using fillers positive characteristics have been created for the temperature range up to 90°C and in the dynamic application range. Ageing is noticeable with the following parameters:

Period of time	New	~10 years
DVR DIN ISO 815[24h, 23°C, 50%]	4 - 5%	5 - 6%
DVR DIN ISO 815[24h, 70°C, 50%]	5 - 6%	6 - 8%
Shore hardness A	~73° +/- 2°	75° +/- 2°
Tear resistance	is 3 times better than NR	unchanged

It is not necessary to add an antioxidant agent to prevent ageing due to heat, as with an NR, because our rubber mixture is vulcanised with almost no sulphur.

To maintain the dynamic characteristics we use the ageing protection agent IPPD from the company Bayer.

7 Storage life of the RESATEC rubber spring elements

After vulcanisation the rubber profiles are stored for about three months. This allows the initial breakdown of the internal tension, without the diameter changing due to the precompression. A purely unstressed rubber profile, if correctly stored can be stored for up to 10 years without any relevant change in the physical parameter.

Taking into consideration the overlapping of the rubber stock products managements, after the assembly of the rubber profiles to rubber spring elements they are released to the market after a period of maximum 6 to 9 months. If the storage is correct, assembled products can be stored for up to five years before being put to use.

The service life for rubber spring elements when being used strictly within the limitations and being protected from damaging emissions:

Single shift operation (8 hrs per day) about 7 - 8 years

Dual shift operation (16 hrs per day) about 5 - 7 years

Three shift operation (24 hrs per day) about 3 - 5 years

Products that were delivered more than a year before and/or were already put to use will not be accepted back due to the continuous design development and the traceability. With unstressed products the rubber body should be exchanged. This process can cause damage to the surface so further processing is necessary to bring a reconditioned product to the market. The maximum refund is 50% of the purchase price.