



DEUTSCHER SCHRAUBENVERBAND E.V.
HERSTELLER MECHANISCHER VERBINDUNGSELEMENTE

DSV - Information

Minimum shelf life of surface coatings on bolts and nuts

Status: July 2022

Table of contents

- 1. **Scope and field of application 2**
- 2. **Fundamental information about shelf life..... 2**
- 3. **Requirements for Spare Parts 3**
- 4. **Achievable durability of bolts, studs and nuts after coating 3**
- 5. **Applicable documents..... 4**

1. Scope and field of application

This DSV information is used to estimate the shelf life for spare parts requirements and to evaluate the stock of screws, bolts, studs and nuts made of steel.

In this DSV information, the required minimum shelf life only concerns properties that are directly influenced by the applied coating systems.

In addition to the required corrosion protection, functional properties are also affected, which are influenced by the coating system itself and/or other coatings, some of which are applied separately.

In this context, the shelf life of screws depends on several parameters. In addition to a suitable coating system, the storage and transport conditions must also be mentioned there.

2. Fundamental information about shelf life

The requirements for minimum storage life are intended to ensure that the properties that were assumed for the design of a screw or bolt connection are still available after a longer period of time when the component is used.

2.1 Temporary protection (storage and transport protection)

In this context, "temporary protection" means minimal corrosion protection that allows further processing without impairment. This can apply to short-term interim storage and/or transport to the next process step.

2.2 Durability of Corrosion protection

The "durability of corrosion protection" is about the corrosion protection that still has to be provided after a longer period of time, which should still meet the original requirements.

Most corrosion protection requirements apply either until they leave the coating plant or until they arrive at the installation site.

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The primarily refers to friction behavior. However, other properties influenced by coatings, such as adhesive/clamping (security) coatings, shall still be able to produce the required effect.

3. Requirements for spare parts

If a screw is installed as a spare part in a workshop (with / without brand loyalty), the assembly procedures usually differ greatly from those used in series assembly. Increased requirements for process stability and statistical evaluations do not come into play.

4. Achievable durability of screws, bolts and nuts after coating

The following table is based on previous experience in the industry or standard specifications and will be updated further. Nevertheless, functional tests may have to be carried out before use.

Corrosion protection		DIN EN ISO 9227-NSS	Durability
transport protection	oiled	-	3 months
	phosphated		
	phosphated + oiled		
Low protection	Zn, partly without passivation	≤ 72h	6 months
Medium protection	Zn plus TopCoat or Sealer if necessary	≤ 480h	3 years
	ZnFe		
Heavy protection	flZn plus TopCoat or Sealer if necessary	>480h	5 years
	ZnNi		
Coefficients of friction			Durability
Oil			3 months
Dry - Lubrication films			2 years
TopCoats / final layers (>2µm) with integral lubricant			5 years
Sealers (0,5 bis 2µm) with integral lubricant			5 years
fastener locking device			Durability
adhesive coatings, in accordance with DIN 267-27			4 years
locking coatings, in accordance with DIN 267-28			4 years

Higher shelf lives can possibly be achieved by various packaging or shrink-wrapping.

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This data is based on the following storage conditions:

Dry, frost-free and not exposed to direct sunlight, dust-free, without foreign contamination, in the original packaging

Examples of durability of coating systems:

(The product used with the shortest shelf life determines the best-before date)

example 1:

Screw/nut with the surface protection system ZnNi + dry sliding film ⇒ 2 years MHD*

example 2:

Screw/nut with the surface protection system flZn + adhesive coating ⇒ 4 years MHD*

example 3:

Screw/nut with the surface protection system ZnFe + locking coating ⇒ 3 years MHD*

5. Applicable documents

- VW 99 000: 2020-07
Übergreifende Anforderungen zur Leistungserbringung im Rahmen der Bauteilentwicklung
- VDA 235-104: 2022-06
Cr(VI)-free coating systems for fasteners with metric thread
- DIN 267-27: 2009-09
*Fasteners -
part 27: Steel screws, bolts and studs with adhesive coating, Technical specifications*
- DIN 267-28: 2009-09
*Fasteners -
part 28: Steel screws, bolts and studs with locking coating, Technical specifications*

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If you have any questions about the content of this document, please contact the office of the Deutscher Schraubenverband e.V.

Created by the Project Group "shelf life of surface coatings"
in the Working Group Surface Coatings