

IVD-Instruction Sheet No. 2

Issue January 2011

Classification of Sealants

**- According to the CPD
(CE marking) and international
standardization**

**- Classification by elastic / plastic
behavior and Maximum Movement
Accommodation**

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1 Preamble

The instruction sheet defines and explains the requirements of European and international standards and the Construction Products Directive for sprayable sealants.

Applicable standards are the following:

- DIN EN ISO 11600
- DIN EN 15651 1-5 as well as the standards cited therein.

In addition, a classification of sealants can also be based upon the fields of application, the elastic/ plastic behavior and the maximum movement accommodation (German: ZGV), which is also called the movement capability.

The purpose of classification is to provide the customer with easily understandable basic information on a sealant.

For the description of sealants in practice in addition to the terms elastic and plastic also auxiliary terms are being used such as permanently elastic, softelastic, hardelastic plastic or permanently elastic. These terms are incorrect and lead to confusion of the user. In the original IVD Data Sheet No. 2 (March 1999) of the Technical Working Group in the IVD thus both terms elastic and plastic were supplemented by the terms elastoplastic and plastoelastic.

The characterization of sealants as elastic, plastic, elastoplastic and plastoelastic, as well as the linking of the standardized test method for the determination of the elastic recovery to the maximum movement accommodation determined through many years of practical experience have proven itself, but were mainly used only in the German market.

The introduction of the DIN EN 15 651 and the classifications of sealants used within makes it necessary to adopt this classification system. DIN EN 15 651 thereby affects the scope of other existing standards, such as DIN 18545-2, Sealing of glazings with sealants and DIN 18540, Sealing of exterior wall joints in building using joint sealants.

Only parts of the German standards persist (as residual standards) that are not part of the DIN EN 15651.

With the publication in the Official Journal of European Union (OJEU), the harmonized parts of DIN EN 15 651 are mandatory and require the CE marking according to the CPD.

Scope of this instruction sheet is to present a general overview of sealants, which takes into account existing standards and labelling requirements, and in addition regulates the relationship between maximum movement accommodation, type of sealant and requirements to be met by the sealant.

2 Classification of Sealants

According to DIN EN 15 651 sprayable sealants are classified according to their fields of application as follows:

F	- Sealants for facade elements	DIN EN 15651 - 1
G	- Sealants for glazing	DIN EN 15651 - 2
XS/S	- Sealants for sanitary joints	DIN EN 15651 - 3
PW	- Sealants for pedestrian walkways	DIN EN 15651 - 4

These standards define minimum European requirements for the serviceability of sealants and shall basically eliminate barriers to trade.

2.1 Classification according to DIN EN ISO 11600

The requirements for determination of the maximum movement accommodation according to the classification to DIN EN ISO 11 600 is summarized in Table 1. The previous characterization by IVD-Instruction Sheet No. 2 is also shown in addition.

Classification according to DIN EN ISO 11600:									
Max. movement accommodation:		25%		20%		12,5%		7,5%	Testing method
Description:		elastic				plastic			
Sealant class:		25LM	25HM	20LM	20HM	12,5E	12,5P	7,5P	
Sea-lant type	Sealant for glazing („Typ G“)	+	+	+	+				DIN EN ISO 11600-G; Carrier material: glass (mandatory), optional anodized aluminium
	Sealants for fa- çade elements („Typ F“) (Sealants for use in all other construction joints except glazing)	+	+	+	+	+	+	+	DIN EN ISO 11600-F; Carrier material: Mortar M1 and/or anodized aluminium and/or glass

Previous Characterization to IVD-Instruction Sheet No. 2:						
Max. movement accommodation:		25%	20%	15%	10%	Testing method
Description:		elastic	plasto-elastic	elasto-plastic	plastic	
-	Sealants (general)	≥70% [100%]	≥40% <70% [80%]	≥20% <40% [60%]	<20% [50%]	Elastic recovery to DIN EN ISO 7389-B after [x%] expansion; Carrier material: anodized aluminium

Legend: + = possible classifications according to DIN EN ISO 11600

Table 1: New classification according to DIN EN ISO 11600 and comparison with the previous characterization by IVD-Instruction Sheet No. 2

If a sealant is not classifiable according to the criteria of DIN EN ISO11600, the maximum movement accommodation shall be determined by the manufacturer in the area of $\leq 7.5\%$.

In addition to the maximum movement accommodation of a sealant always the precise classification according to DIN EN ISO 11 600 should be given, i.e. ISO 11600-type-class subgroup. In the subgroup the carrier materials and the primers used in the tests are to be indicated using the following abbreviations: mortar (M1 or M2), glass (G), anodized aluminum (A), used with a primer (p) or not with a primer (up).

Examples:

Sealant for facade elements with a maximum movement accommodation of 25 %, high modulus (HM), tested at a mortar Type 1 with a primer (M1p):

Either: ISO 11600-F-25HM - M1p
or: ISO 11600-F-25HM
Tested at a mortar type 1 with primer

2.) Glazing sealant with a maximum movement accommodation of 25%, low-modulus (LM), tested at anodized aluminum (Ap) pretreated with a primer and glass without primer (Gup):

Either: ISO 11600-G-25LM - Ap, Gup
or: ISO 11600-G-25LM

3 CE – Marking of Sealants

3.1 General Marking

The conformity assessment and marking is carried out according to DIN EN 15651-5.

Details of the CE marking are set out in annexes ZA of the relevant standards (DIN EN 15 651 1-4).

The standard envisions a certain format (minimum size no smaller than 4 mm and form) on the packaging and in the technical data sheets.

CE mark

Marking and labelling according to EN 15651-5

3.2 Review of the Requirements (Conformity Assessment)

The proof of the product requirements for the compliance with the CE-mark is done by an initial test and the manufacturer's own production control.

Depending on the system of certification of conformity, the initial test has to be conducted at an external test institute.

4 General Definitions

Construction Products Directive (CPD)

The Construction Products Directive defines the usability of building products according to the six essential requirements:

- Mechanical resistance and stability
- Fire Protection
- Hygiene, health and environmental protection
- Safety in use
- Sound insulation
- Energy saving and thermal protection

CE - Marking

The CE-marking under the Construction Products Directive is awarded to products when they meet the requirements of a harmonized standard.

The CE-marking is shown both on the primary package (cartridge) and on the accompanying documents (technical sheet).

After expiration of the coexistence phase only CE-marked products can be marketed.

Elastic Sealant

Sealant, which predominantly holds elastic properties after processing.

The tensions within the sealant caused by joint movements are approximately proportional to the stress.

Harmonised Standard

A harmonized standard is created after the granting of a mandate by the European Commission to CEN (European Standardisation body).

Plastic Sealant

Sealant, which predominantly holds plastic properties after processing.

The tensions within the sealant caused by joint movements are stooped very quickly.

Maximum Movement Accommodation (Motility)

The maximum movement accommodation (German abbreviation: ZGV) describes the motility of a sealant (especially in terms of elongation, compression and shear) within which the sealant retains its functional capability and is able to fulfill its duty for permanent sealing. The maximum movement allocation of a sealant is indicated in percent.

If a sealant has a maximum movement allocation of 25%, this means that the sealant seen from of the stress-free neutral position during the life cycle of installation may e.g. be stretched by + 12.5% and compressed by -12.5% (or e.g. by +15% and -10%, etc.), which means a total deformation of 25% may occur. A higher total deformation would overstrain the sealant.

The maximum movement accommodation is an essential characteristic for the calculation of the required joint width and thus is of crucial importance for the planner and the user.

Relationship between sealant class and maximum movement accommodation

The standard DIN EN ISO 11600 defines - depending on the sealant-type - so called sealant classes which make up the maximum movement accommodation (Table 2).

Sealant Class	Maximum Movement Accommodation (ZGV)
25 LM	25 %
25 HM	25 %
20 LM	20 %
20 HM	20 %
12,5 E	12,5 %
12,5 P	12,5 %
7,5 P	7,5 %

Table 2: Relationship between sealant class and maximum movement accommodation

Remarks:

1.) The short terms used for the sealant classes in Table 1 serve as detailed description of the sealant and have the following meanings:

- LM - Low Modulus/expansion stress value
- HM - High Modulus/expansion stress value
- E - elastic
- P - plastic

2.) Sealants in classes 25, 20 and 12.5E are referred to as elastic sealants, sealants in classes 12.5 and 7.5P are referred to as plastic sealants.

5 Reference List

DIN EN ISO 11600

Building construction - Jointing products - Classification and requirements for sealants
Beuth-Verlag GmbH, 10787 Berlin

DIN EN ISO 7389

Building construction - Jointing products - Determination of elastic recovery of sealants
Beuth-Verlag GmbH, 10787 Berlin

DIN EN 15651-1

Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 1:
Sealants for facade elements
Beuth-Verlag GmbH, 10787 Berlin

DIN EN 15651-2

Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 2:
Sealants for glazing
Beuth-Verlag GmbH, 10787 Berlin

DIN EN 15651-3

Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 3:
Sealants for sanitary joints
Beuth-Verlag GmbH, 10787 Berlin

DIN EN 15651-4

Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 4:
Sealants for pedestrian walkways
Beuth-Verlag GmbH, 10787 Berlin

DIN EN 15651-5

Sealants for non-structural use in buildings and pedestrian walkways - Part 5: Evaluation
of conformity and marking
Beuth-Verlag GmbH, 10787 Berlin

DIN 18540

Sealing of exterior wall joints in building using joint sealants
Beuth-Verlag GmbH, 10787 Berlin

DIN 18545-2

Sealing of glazings with sealants - Part 2: Sealants, designation, requirements, testing
Beuth-Verlag GmbH, 10787 Berlin

DIN 52460

Sealing and glazing - Terms
Beuth-Verlag GmbH, 10787 Berlin

DIN EN 26927

Building construction; jointing products; sealants; vocabulary
Beuth-Verlag GmbH, 10787 Berlin

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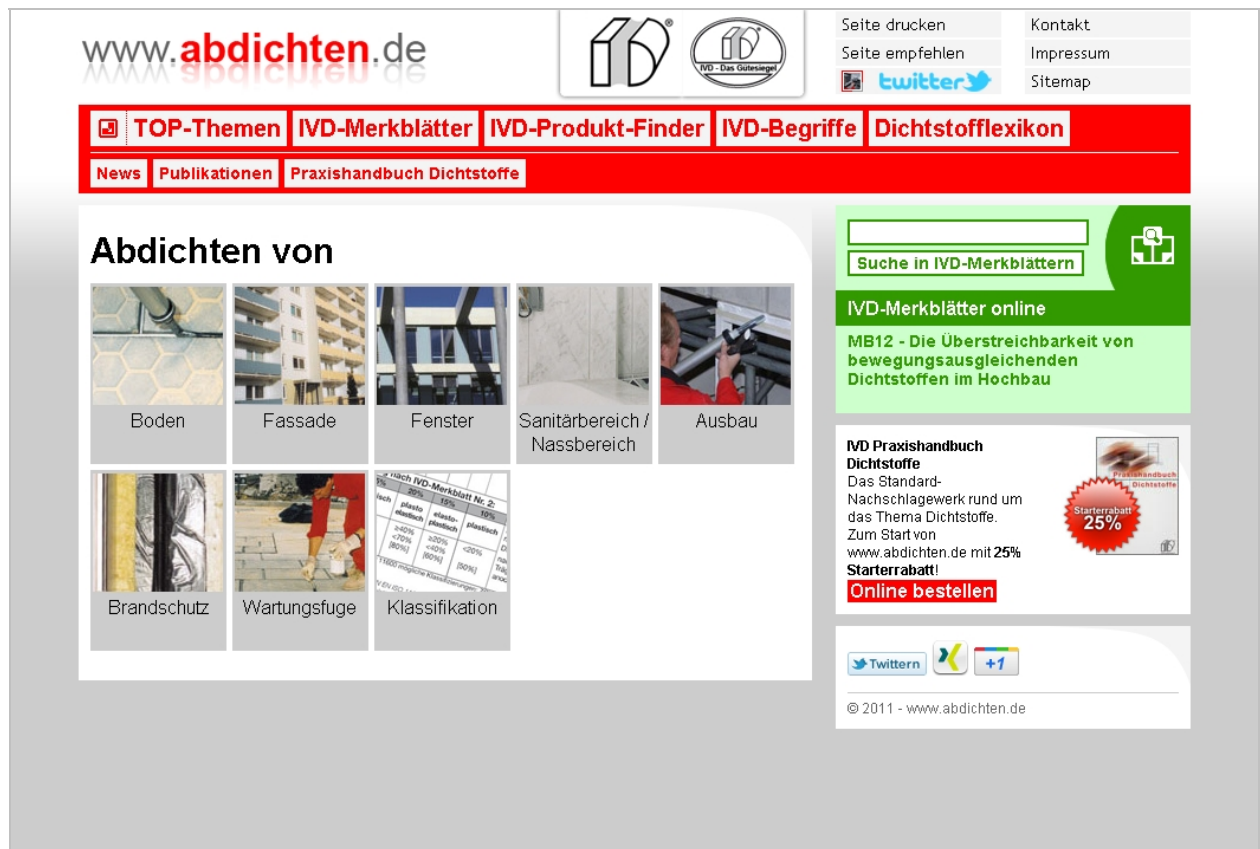
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www.abdichten.de

The **IVD-Product-Finder** helps you find the advised quality products of the IVD corporate members according to the **IVD instruction sheets**.

In addition, **all information** about the **joint-sealing** in the areas of **soil, facade, windows, sanitary** and **water construction**.

As well as the **IVD term search**, the entire sealant online lexicon and continuously **updated news** about the topic.



The screenshot shows the website's navigation menu with categories like 'TOP-Themen', 'IVD-Merkblätter', and 'IVD-Produkt-Finder'. It features a search bar, a grid of application areas (Boden, Fassade, Fenster, etc.), and promotional banners for 'IVD-Merkblätter online' and 'IVD Praxishandbuch Dichtstoffe' with a 25% discount offer.

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