Test report no.: **211400/20-II**

Customer:
Yoldaş Endüstri Ürünleri San. Ve Tic. A.Ş
ITOB OSB Mah. 10034 Sok.
NO:3 Menderes
IZMIR
TURKEY

Order: Testing of the non-structural joint sealant **Elastic NP1® Construction** in accordance with EN 15651-4 Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 4: Sealants for pedestrian walkways, class 25HM.

Letter of: 2020-08-27 **Ref:** Ms. Alev Meland

Sample receipt: 2020-08-27

Test period: 2020-09-01 to 2020-11-20

The test report comprises 11 pages and 1 annex.

Würzburg, 30 November 2020
Lg/km

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Contents

1. Order 3

2. Test material 3

3. Test procedure 4

3.1 Performance requirements for non-structural sealants for pedestrian walkways 5

3.1.1 Elastic recovery 5

3.1.2 Resistance to flow 5

3.1.3 Tensile properties (secant tensile modulus) 5

3.1.4 Tensile properties at maintained extension 6

3.1.5 Determination of adhesion/cohesion properties at variable temperatures 6

3.1.6 Adhesion/cohesion properties at maintained extension after immersion in water 6

3.1.7 Change in volume 6

3.1.8 Tear resistance 6

3.2 Additional performance requirements for exterior applications 7

3.2.1 Adhesion/cohesion properties after water immersion 7

3.2.2 Adhesion/cohesion properties after salt water immersion 7

3.2.3 Artificial weathering 7

3.3 Essential characteristics 7

3.3.1 Reaction to fire 7

3.3.2 Durability 8

3.3.3 Release of chemicals dangerous to environment and health 8

3.4 Identification requirements 8

3.4.1 Thermogravimetric test 8

3.4.2 Specific gravity 8

3.4.3 Shore hardness 8

4. Test results - Elastic NP1® Construction 9

5. Assessment of the test results 11

1. Order

The Company Yoldaş Endüstri Ürünleri San. Ve Tic. A.Ş, ITOB OSB Mah. 10034 Sok., NO:3 Menderes, IZMIR, TURKEY, instructed SKZ - Testing GmbH by letter of 27 August 2020 to test the performance of an one-component joint sealant **Elastic NP1® Construction** in accordance with EN 15651-4:2012-09 Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 4: Sealants for pedestrian walkways. At time of testing, the standard EN 15651-4:2012-09 was superseded by EN 15651-4:2017-07. The testing was carried out according to EN 15651-4:2012-09 in accordance with the requirements of the Construction Products Regulation (Regulation No. 305/2011) to enable the CE conformity marking for sealants. For further information see website and the Official Journal of the European Commission.

2. Test material

The SKZ - Testing GmbH received the following samples for testing (description is based on inspection of the samples at SKZ - Testing GmbH and on the manufacturer`s data):

10 cartridges one-component sealant

Designation:	**Elastic NP1® Construction**
Type (chemical family):	Hybrid
Colour:	White
Batch number:	02772050-20W
Sample receipt:	2020-08-27

3. Test procedure

The test of the performance of the non-structural joint sealant **Elastic NP1® Construction** was performed in accordance with EN 15651-4:2012-09, Part 4: Sealants for pedestrian walkways, class 25HM.

The testing scope includes a product type determination according to EN 15651-4.

SKZ - Testing GmbH is a notified body approved according to the Construction Products Regulation for the product standard EN 15651-4 (code no.: NB 1213).

Unless indicated otherwise, preconditioning and test procedure was performed at standard conditioning atmosphere 23/50, class 1 according to DIN EN ISO 291: 2008-08.

Usually we carry out tests according to standards for which we have an accreditation. The list of all standards for which we are accredited is shown on the homepage at www.skz.de. In case of non-accredited procedures they are marked with *.

Production and pre-treatment of test specimens

For the test specimens with the joint dimensions 12 x 12 x 50 mm were produced according to ISO 8340:2005-06.

For the determination of all tensile properties and adhesion/cohesion properties substrate according to the following table was used and prepared:

Substrate according to ISO 13640:1999-12	Primer	Drying time of the primer up to the application of the sealant in the joints
Mortar M1	Without Primer	---

The preconditioning of the test specimens was carried out according to DIN EN ISO 8340:2005-09, method B.

Method A: Standard conditioning atmosphere 23/50, class 1 according to DIN EN ISO 291:2008-08

Method B: The test specimens were conditioned according to method A and subsequently, subjected three times to the following storage cycle:

a) 3 days in the oven at (70 ± 2) °C;

b) 1 day in distilled water at (23 ± 2) °C;

c) 2 days in the oven at (70 ± 2) °C;

d) 1 day in distilled water at (23 ± 2) °C

3.1 Performance requirements for non-structural sealants for pedestrian walkways

3.1.1 Elastic recovery

The test was carried out according to DIN EN ISO 7389:2004-04 with test specimens made of anodised aluminium with a 100 % extension, in relation to the initial joint width.

Requirement:

The elastic recovery shall be at least 70 %.

3.1.2 Resistance to flow

The test was carried out according to DIN EN ISO 7390:2004-04.

Requirement:

According to method A at 5 °C und 50 °C the slump (flow) of the joint sealant must not exceed 3 mm.

3.1.3 Tensile properties (secant tensile modulus)

The test was carried out according to DIN EN ISO 8339:2005-09. The secant tensile modulus was determined on test specimens, which were extended by 100 % of the original width at temperatures of 23 °C and -20 °C.

Requirement:

Secant tensile modulus at 23 °C: > 0.4 MPa
or
at -20 °C: > 0.6 MPa

3.1.4 Tensile properties at maintained extension

The test was carried out according to ISO 8340:2005-09 with an extension of 100 % at temperatures of 23 °C and -20 °C.

Requirement:

After 24 h neither an adhesive nor a cohesive failure shall occur on the test specimens which are extended by 100 %.

3.1.5 Determination of adhesion/cohesion properties at variable temperatures

The test was carried out according to DIN EN ISO 9047:2016-02. The amplitude of extension/compression was ± 25 % of the initial joint width.

Requirement:

The joint sealant must not separate from the contact material nor shall the joint sealant display any signs of crack formation.

3.1.6 Adhesion/cohesion properties at maintained extension after immersion in water

The test was carried out according to DIN EN ISO 10590:2005-10 with an extension of 100 %.

Requirement:

After 24 h neither an adhesive nor a cohesive failure shall occur on the test specimens which are extended by 100 %.

3.1.7 Change in volume

The test was carried out according to DIN EN ISO 10563: 2017-09 in a forced ventilated oven with open flap.

Requirement:

The change in volume must be ≤ 10 %.

3.1.8 Tear resistance

This test was carried out according to EN 15651-4:2012-09, 4.3.2.7 with an extension of 50 %.

Requirement:

The crack width must be ≤ 12 mm.

3.2 Additional performance requirements for exterior applications

3.2.1 Adhesion/cohesion properties after water immersion

The test was carried out according to DIN EN ISO 10590:2005-10 (modified) with 28 days water immersion with an extension of 100 %.

Requirement:

After 24 h neither an adhesive nor a cohesive failure shall occur on the test specimens which are extended by 100 %. The chance of the secant modulus must be ≤ 50% related to the delivery condition.

3.2.2 Adhesion/cohesion properties after salt water immersion

The test was carried out according to DIN EN ISO 10590:2005-10 (modified) with 28 days salt water immersion with an extension of 100 %.

Requirement:

After 24 h neither an adhesive nor a cohesive failure shall occur on the test specimens which are extended by 100 %.

3.2.3 Artificial weathering

The test was carried out according to DIN EN ISO 11431 (modified).

Requirement:

After 24 h neither an adhesive nor a cohesive failure shall occur on the test specimens which are extended by 100 %.

3.3 Essential characteristics

3.3.1 Reaction to fire

The test was performed according to DIN EN ISO 11925-2:2011-02 for classification of the sealant according to DIN EN 13501-1:2010-02. As substrate calcium silicate panels in accordance with EN 13238:2010-02 were used. 6 samples were tested with edge flaming according to EN 15651-4:2012-09.

The test was not carried out at SKZ - Testing GmbH, but within the scope of a subcontract at a testing institute accredited according to DIN EN ISO 17025:2005-08 for the test.

Requirement:

Classification in fire behaviour class between A1 and F

3.3.2 Durability

No extra test of durability had been carried out.

Requirement:

In accordance to EN 15651-4:2012-09, the durability can be assessed by the properties of ISO 8339:2005-06 or ISO 8340:2005-06 and the properties of ISO 9046:2002-05, ISO 9047:2001-12, ISO 10590:2005-07 or ISO 10591:2005-07.

3.3.3 Release of chemicals dangerous to environment and health

No extra test of the release of chemicals dangerous to environment and health had been carried out.

3.4 Identification requirements

3.4.1 Thermogravimetric test

The test was performed in accordance with EN ISO 11358:1997-04, between 35 °C and 900 °C, temperature slope 10 °C/min, non-oxidative condition (nitrogen). The test was performed in accordance with DIN EN ISO 868:2003-10 after preconditioning at standard climate 23/50, class 1, for 28 days.

3.4.2 Specific gravity

The test was performed in accordance with DIN EN ISO 1183-1:2013-04 procedure B with a metal pycnometer.

3.4.3 Shore hardness

The test was performed in accordance with DIN EN ISO 868:2003-10 after preconditioning at standard climate 23/50, class 1, for 28 days.

The test was conducted using a Shore durometer type A. The test specimens were 6 mm thick and 60 mm in diameter.

Readings were taken 1 and 15 seconds after the fixed contact of the pressure foot with the test specimen had been effected.

Three samples were tested and five measurements were taken per sample.

4. Test results - Elastic NP1® Construction

4.1	Performance requirements for non-structural sealants for pedestrian walkways				
	Property	*Unit*	*Requirement*		*Result*
4.1.1	Elastic recovery (DIN EN ISO 7389)	%	≥ 70		84
4.1.2	Resistance to flow (DIN EN ISO 7390)	mm	A vertical 5 °C	≤ 3	0
			A vertical 50 °C	≤ 3	0
4.1.3	Secant tensile modulus (DIN EN ISO 8339)	MPa	at 23 °C, 100 % extension	> 0.4	0.8
		MPa	at -20 °C, 100 % extension	> 0.6	1.0
4.1.4	Tensile properties at maintained extension (DIN EN ISO 8340)	---	No failure (NF) at 23 °C and -20 °C		NF [1]
4.1.5	Adhesion/cohesion properties at variable temperatures (DIN EN ISO 9047)	---	No failure (NF)		NF [1]
4.1.6	Adhesion/cohesion properties at maintained extension after immersion in water (DIN EN ISO 10590)	---	No failure (NF)		NF [1]
4.1.7	Change in volume (DIN EN ISO 10563)	%	≤ 10		-3.4
4.1.8	Tear resistance (EN 15651-4, 4.3.2.7)	mm	≤ 12		7.1
4.2.	**Additional performance requirements for exterior applications**				
4.2.1	Adhesion/cohesion properties after 28 days water immersion	---	NF[1] ≤ 50%[2]		NF[1] -30.5%
4.2.2	Adhesion/cohesion properties after 28 days salt water immersion	---	NF[1]		NF[1]
4.2.3	Aritificial weathering (DIN EN ISO 11431)	---	NF[1]		NF[1]
4.3	**Essential characteristics**				
	Property				*Result*
4.3.1	Reaction to fire (DIN EN ISO 11925-2)				Class E [3]
4.3.2	Durability (EN 15651)				Pass [4]
4.3.3	Release of chemicals dangerous to environment and health (EN 15651)				NPD [5]

1 Neither adhesive nor cohesive failure occurred.
2 Related to the delivery condition
3 The test was not carried out at SKZ - Testing GmbH, but within the scope of a subcontract at a testing institute accredited for the test. The test report and classification report are present at the SKZ - Testing GmbH.
4 Durability had been shown by positive results according to ISO 8339, ISO 8340, ISO 9047 and ISO 10590.
5 NPD: No performance determined.

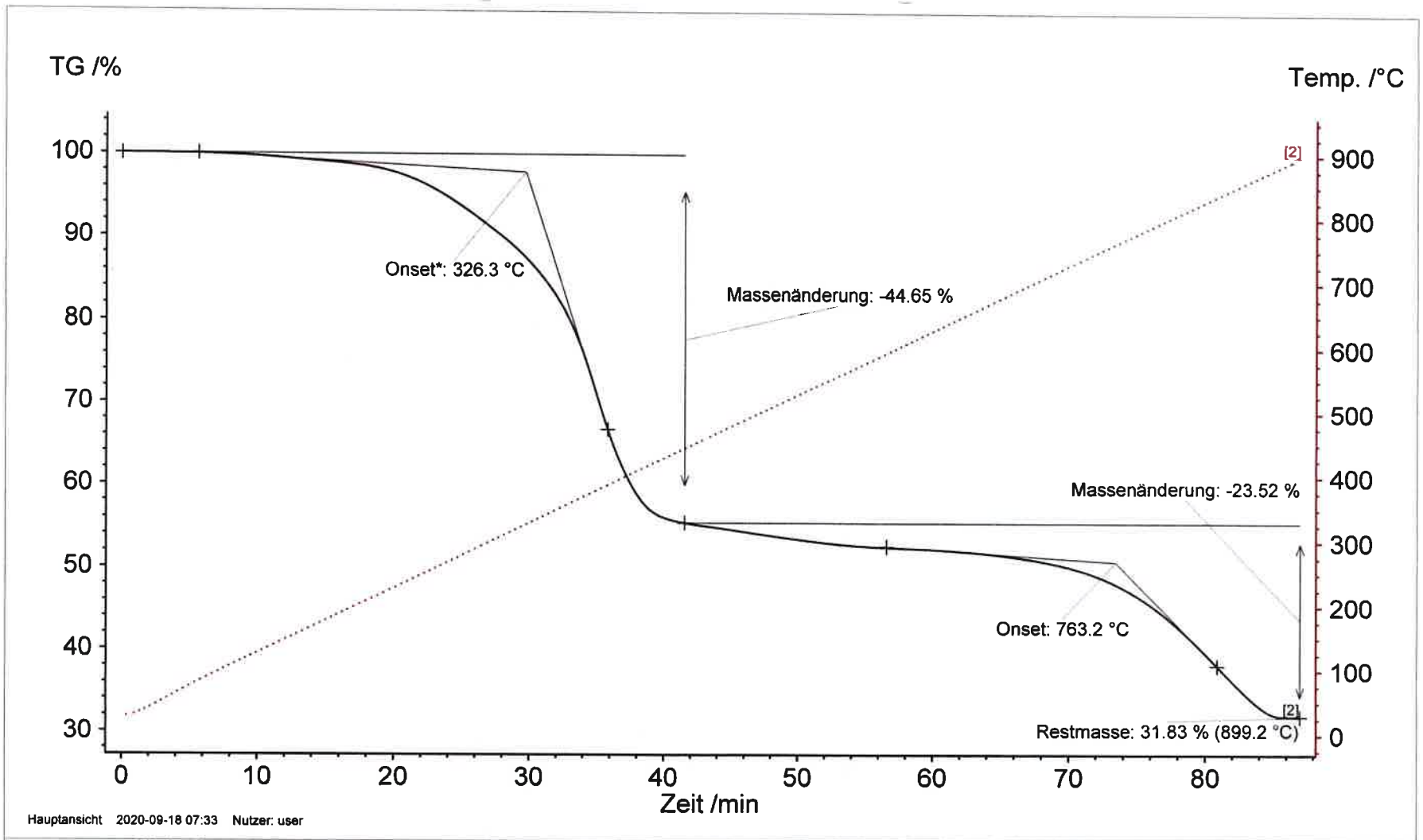
4.4	**Identification requirements**					
	Property	*Unit*	*Single values*			*Result*
4.4.1	Ash content (EN ISO 11358)	%	---	---	---	31.8 [6]
4.4.2	Specific gravity (DIN EN ISO 1183-1)	g/cm³	1.42	1.42	1.43	1.42
4.4.3	Shore hardness (DIN EN ISO 868) after 1 and 15 s	Shore A	1 s: 37	1 s: 37	1 s: 38	38
			15 s: 40	15 s: 39	15 s: 40	40

[6] The results of the thermogravimetric test are indicated in annex 1.

5. Assessment of the test results

The one-component non-structural joint sealant **Elastic NP1® Construction** in conjunction with substrate mortar M2 (without Primer)) meets the requirements according to EN 15651-4:2012-09, class 25HM.

Designation	
Type:	Non-structural sealant type PW (pedestrian walkways)
Intended Use:	EXT-INT (external and internal use)
Further designation:	---
Substrate:	Mortar M1 (without primer)
Pre-conditioning	Procedure B (according to DIN EN ISO 8340)
Class:	25HM



Gerät :	NETZSCH TG 2....	**Datei :**	N:\Thermoanalyse\Auftra...\Dichtstoff_B.ngb-dt8	**Methode :**	Dichtstoff....	**Bemerkung :**	211400 / Yoldas / 53189 / Dichtstoff Elastic NP1 construction white nicht ausgehär....
Projekt :	DIN EN ISO 11358-1 (10/2014)	**Probe :**	Dichtstoff_B	**Probentr./TC :**	TG 209F1 std (Al2O3 support)/P	**Atmosphäre :**	-- / N2 / N2
Proben-ID :	tg-44	**Material :**	Dichtstoff	**Probenmasse :**	100.3901 mg	**Korr./Bereich :**	0:2:0/2000 mg
Datum/Zeit :	17.09.2020 15:59:11	**Korrektur-Datei :**	Korrektur der Methode Dichtstoff_frisch	**Modus /Messtyp. :**	TG/Probe + Korrektur	**Zyklen vor Messung :**	0xVak
Labor :	SKZ-Testing GmbH	**Tempkal. Datei :**	10-07-2020 11:16	**Segmente :**	1/1		
Operator :	Engelhart	**Bereich :**	30°C/10.0(K/min)/900°C	**Tiegel :**	Al2O3 85 µl, open		

Schi

Erzeugt mit NETZSCH Proteus Software