

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report

No. 16-001967-PR02

(PB-K20-09-en-02)



Client
Producta SAS
Di Ladikos Eleftherios
Via F. Giuliotti, 4
62010 Montelupone (MC)
Italy

Basis *)

Test Report No. 16-001967-PR02 (PB-K20-09-en-01) as from 05.02.2018

EN 14024:2004-10

DIBt Guideline Year 17 No. 6 1986-12)

*) Correspond/s to the national standard/s (e.g. DIN EN)

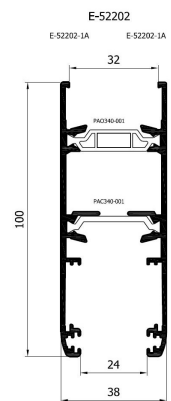
Product Metal-plastic composite profiles

Designation **E52202**

Performance-relevant product details
Profile designation: **E52202**, Material: **Alloy EN-AW 6060T6**, No. of the thermal barrier 1: **NY340S**, web height: **34 mm**, web thickness: **2,0 mm**, No. of the thermal barrier 2: **NY340ST2C**, web height: **34 mm**, web thickness: **Cavity-web thinnest wall thickness 1,3 mm**, Material of thermal barrier web: **PA 66 GF25**, surface treatment of profile: **plate finish**

Special features **-/-**

Representation



Results

Suitability test of a plastic material to be used as thermal barrier for metal Plastic composite profiles as per EN 14024:2004-10 section 4.3



Requirements for Class CW / TC2 / A fulfilled

Suitability test of a plastic material to be used as thermal barrier for metal Plastic composite profiles as per DIBt Guideline Year 17 No. 6 1986-12 section 2.2



Requirements of DIBt Guideline fulfilled

Instructions for use

The Evidence can be used for the building supervisory verification method "ÜHP".

Validity

The data and results given relate solely to the tested and described specimen. This test does not allow any statement to be made on further characteristics of the present structure regarding performance and quality.

Notes on publication

The ift-Guidance Sheet "Conditions and Guidance for the Use of ift Test Documents" applies. The cover sheet can be used as abstract.

Contents

The report contains a total of 14 page/s and annexe (10 pages).

ift Rosenheim

22.02.2018

Christian Neudecker
Deputy Head of Testing Department
Laboratory for Material Testing

Khalid El Harda, Dipl.-Ing. (FH)
Operating Testing Officer
Material Testing

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



1 Object

1.1 Description of test specimen

Thermal break metal profile

Manufacturer	ETEM Bulgaria, 119 A Ilievtzi blvd., Sofia, Bulgaria
System name	Architectural system for windows and doors, ETEM E52
Profile designation / No.	E52202
Material of half profiles	Alloy EN AW-6060 T6
Overall dimensions in mm	38 x 100
Date of manufacture	02 th of August 2017
Surface treatment/finish	plate finish

Insulation bar 1

Manufacturer	Producta
No. of the thermal barrier	NY340
Material	Polyamide thermal break PA 6.6 GF25
Web thickness in mm	2,0 mm
Web height in mm	34 mm

Insulation bar 2

Manufacturer	Producta
No. of the thermal barrier	NY340ST2C
Material	Polyamide thermal break PA 6.6 GF25
Web thickness in mm	Cavity-web thinnest wall thickness 1,3 mm
Web height in mm	34 mm

The description is based on specifications provided by the client and on inspection of the test specimen at the ift. (Item designations/ numbers as well as material specifications were provided by the client, unless designated as „ift-tested“.)

Test specimen are described in the annex "Product/Sample description".

1.2 Sampling

The following data for sampling have been presented to ift:

Sampler: Producta SAS, Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)
Datum: 10.07.2017
Documentation: A sampling report has been presented to ift.
Anlieferdatum: 16.08.2017
ift-test specimen-No.: 16-001967-PK02 / WE: 44185-001, WE: 45077-001

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



2 Procedure

2.1 Basic documents *) of the processes

Test Report No. 16-001967-PR02 (PB-K20-09-en-01) as from 05.02.2018

EN 14024:2004-10

Metal profiles with thermal barrier - Mechanical performance - Requirements, proof and tests for assessment

DIBt-Guideline, Year 17 No. 6 1986-12

Guideline for verification of the mechanical strength of metal-PVC composite profiles

*) correspond/s to the national standard/s, e.g. DIN EN

2.2 Short description of process

Determination of transverse tensile strength in new condition

Transverse tensile strength (Q) refers to the mechanical resistance of the thermal barrier when exposed to vertical loads. It is obtained from the maximum force as a function of the length of the specimen.

The specimen is loaded at a uniform feed rate of 1 mm/minute until failure of the thermal barrier. As a rule, this occurs in the form of breakage of the plastic web or deformation of the bond between plastic web and aluminium profile section. The specimens were tested in new condition, at low, high and room temperatures. The measured values are used to determine the mean value (mean) of transverse tensile strength.

The measured mean value is converted to the characteristic value of transverse tensile strength in new condition.

Immersion in water

The performance of the plastic material is determined after storing in water (+23°C) for a period of 1000 h. The transverse tensile strength in new condition at room temperature and after ageing at high and low temperature is determined.

Exposure to hot and humid atmosphere

The performance of the plastic material after exposure to hot and humid atmosphere (+85°C / > 90%) is determined by testing the characteristic transverse tensile strength in new condition and after ageing at room temperature.

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Testing for brittleness

Brittleness refers to transverse tensile strength (Q) at increased feed rates. It is obtained from the maximum force as a function of the length of the specimen.

The specimen is loaded at a uniform feed rate of 200 mm/minute until failure of the thermal barrier. Test specimens in new condition are exposed to a temperature of -10°C. The measured values are used to determine the mean value (mean) of transverse tensile strength.

The measured mean value is converted to the characteristic transverse tensile strength for the respective temperature.

Ageing method - shear strength test

Shear strength testing (M3) simulates the ageing of profiles with thermal barrier, in particular of the thermal barrier. It is used to determine the creep factor / coefficient A2.

For a time period of 1,000 hours and at a temperature of +80 °C, a constant shear load is applied representing one third of the characteristic shear strength in new condition (+80°C).

The creep factor / coefficient A2 is determined as characteristic value from the difference in shear strength at room temperature before and after ageing.

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3 Detailed results

Plastic suitability- transverse tensile strength in new condition at +80 °C test to EN 14024

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline,
Year 17 No. 6 1986-12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
TM/022076 - heat box test
equipment 20 kN
Pst/022159 - airflow oven
ventilated new
ZPM/020222 - W&B M1&M2
control tractive engine
ZPM/022501 - tractive engine
W&B M2 20 kN s.A. 20222
WM/020931 - caliper gauge
Digital Absolut 150 mm

Bar No.	Test specimen	transverse tensile strength Q in N/mm
1.12	PR02_KE_Z+80_PK01	76,4
1.13	PR02_KE_Z+80_PK02	79,6
1.14	PR02_KE_Z+80_PK03	76,3
1.15	PR02_KE_Z+80_PK04	75,7
1.16	PR02_KE_Z+80_PK05	76,6
1.17	PR02_KE_Z+80_PK06	80,4
1.18	PR02_KE_Z+80_PK07	76,9
2.13	PR02_KE_Z+80_PK08	76,3
2.14	PR02_KE_Z+80_PK09	77,5
2.15	PR02_KE_Z+80_PK10	77,6
Average value Q_{mean}^{HT}		77,3
Standard deviation s		1,5
characteristic tensile strength according $Q_c^{N_{HT}}$		74,2

Calculation of the characteristic tensile strength according to EN 14024, section 5.6.1:

$$Q_c^{N_{HT}} = Q_{mean}^{HT} - 2.02 * s$$

The failure of the compound connection at shearing stress appeared as follows:

teilweise als Bruch des Kunststoffstegs (Kohäsionsbruch)

teilweise als Verformung des Stegfußes

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

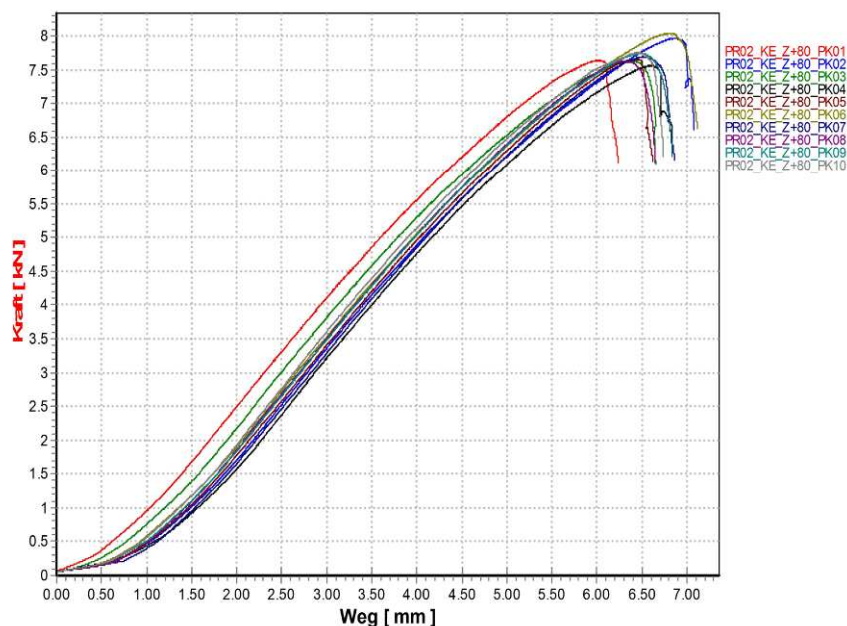
Test specimen n°
44185-001

Date of test
28. August 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Plastic suitability- transverse tensile strength in new condition at +23 °C test to EN 14024

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline,
Year 17 No. 6 1986-12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
TM/022076 - heat box test
equipment 20 kN
Pst/022159 - airflow oven
ventilated new
ZPM/020222 - W&B M1&M2
control tractive engine
ZPM/022501 - tractive engine
W&B M2 20 kN s.A. 20222
WM/020931 - caliper gauge
Digital Absolut 150 mm

Bar No.	Test specimen	transverse tensile strength Q in N/mm
1.3	PR02_KE_Z+23_PK01	110,3
2.5	PR02_KE_Z+23_PK02	118,3
2.6	PR02_KE_Z+23_PK03	123,2
1.4	PR02_KE_Z+23_PK04	114,0
2.1	PR02_KE_Z+23_PK05	117,3
1.6	PR02_KE_Z+23_PK06	112,0
2.1	PR02_KE_Z+23_PK07	117,4
2.2	PR02_KE_Z+23_PK08	112,6
2.3	PR02_KE_Z+23_PK09	114,9
2.12	PR02_KE_Z+23_PK10	116,6
Average value Q_{mean}^{RT}		115,7
Standard deviation s		3,7
characteristic tensile strength according Q_c^N RT		108,1

Calculation of the characteristic tensile strength according to EN 14024, section 5.6.1:

$$Q_c^N = Q_{mean}^{RT} - 2.02 \cdot s$$

The failure of the compound connection at shearing stress appeared as follows:

- in part as fracture of the Plastic bar at compound connection.
- in part as bending of the aluminium flanks

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

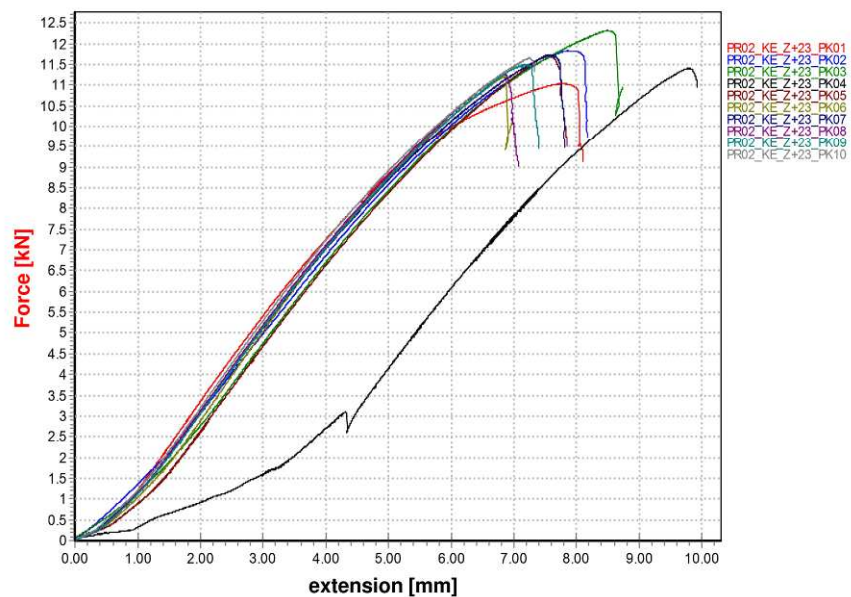
Test specimen n°
44185-001

Date of test
30. August 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)

Plastic suitability- transverse tensile strength in new condition at -20 °C test to EN 14024

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline,
Year 17 No. 6 1986-12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
TM/022076 - heat box test
equipment 20 kN
Pst/022159 - airflow oven
ventilated new
ZPM/020222 - W&B M1&M2
control tractive engine
ZPM/022501 - tractive engine
W&B M2 20 kN s.A. 20222
WM/020931 - caliper gauge
Digital Absolut 150 mm

Bar No.	Test specimen	transverse tensile strength Q in N/mm
1-1	PR02_KE_Z-20_PK01	101,6
1-2	PR02_KE_Z-20_PK02	107,0
1-3	PR02_KE_Z-20_PK03	121,9
2-1	PR02_KE_Z-20_PK04	122,8
2-2	PR02_KE_Z-20_PK05	102,5
2-3	PR02_KE_Z-20_PK06	93,2
3-1	PR02_KE_Z-20_PK07	100,0
3-2	PR02_KE_Z-20_PK08	110,1
3-3	PR02_KE_Z-20_PK09	106,6
1-10	PR02_KE_Z-20_PK10	100,4
Average value Q_{mean}^{LT}		106,6
Standard deviation s		9,5
characteristic tensile strength according Q_c^N LT		87,4

Calculation of the characteristic tensile strength according to EN 14024, section 5.6.1:

$$Q_c^N LT = Q_{mean}^{LT} - 2.02 * s$$

The failure of the compound connection at shearing stress appeared as follows:
only as fraction of the plastic bar (cohesive failure)

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

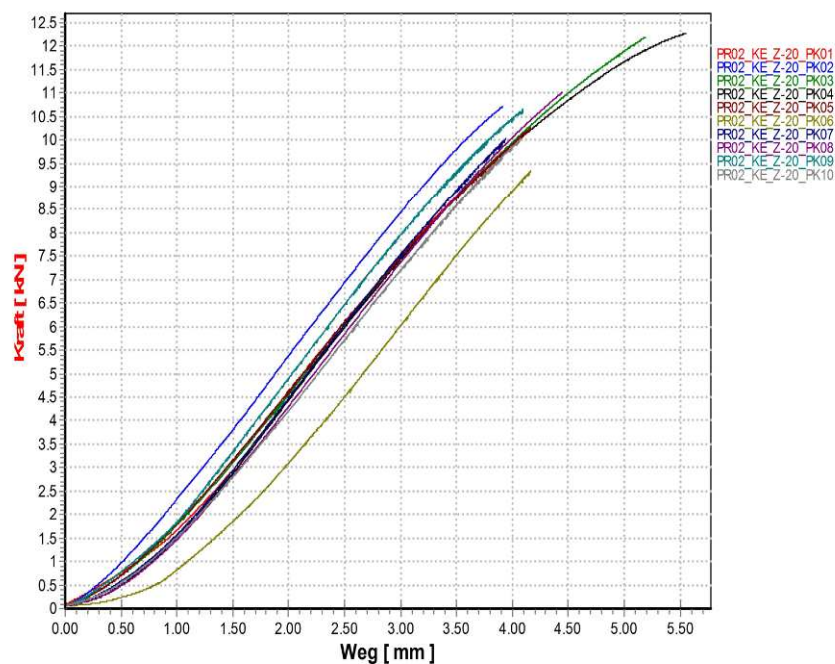
Test specimen n°
44185-001

Date of test
30. August 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Plastic suitability-Tensile test at +80 °C after immersion in water

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline,
Year 17 No. 6 1986-12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
TM/022076 - heat box test
equipment 20 kN
Pst/022159 - airflow oven
ventilated new
ZPM/020222 - W&B M1&M2
control tractive engine
ZPM/022501 - tractive engine
W&B M2 20 kN s.A. 20222
WM/020931 - caliper gauge
Digital Absolut 150 mm

Bar No.	Test specimen	transverse tensile strength Q in N/mm
1.25	PR02_KE_H2O_Z+80_PK01	58,6
1.26	PR02_KE_H2O_Z+80_PK02	55,4
1.27	PR02_KE_H2O_Z+80_PK03	59,0
1.28	PR02_KE_H2O_Z+80_PK04	58,3
1.29	PR02_KE_H2O_Z+80_PK05	58,3
1.30	PR02_KE_H2O_Z+80_PK06	59,0
2.25	PR02_KE_H2O_Z+80_PK07	57,0
2.26	PR02_KE_H2O_Z+80_PK08	61,3
2.27	PR02_KE_H2O_Z+80_PK09	67,9
2.28	PR02_KE_H2O_Z+80_PK10	61,6
Average value $Q_{mean}^{5.2.2}_{HT}$		59,6
Standard deviation s		3,4
Characteristic transverse tensile strength $Q_c^{5.2.2}_{HT}$		52,7

Calculation of the characteristic tensile strength according to EN 14024, section 5.6.1:

$$Q_c^{5.2.2}_{HT} = Q_{mean}^{5.2.2}_{HT} - 2.02 \cdot s$$

The failure of the compound connection at shearing stress appeared as follows:
only as fraction of the plastic bar (cohesive failure)

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

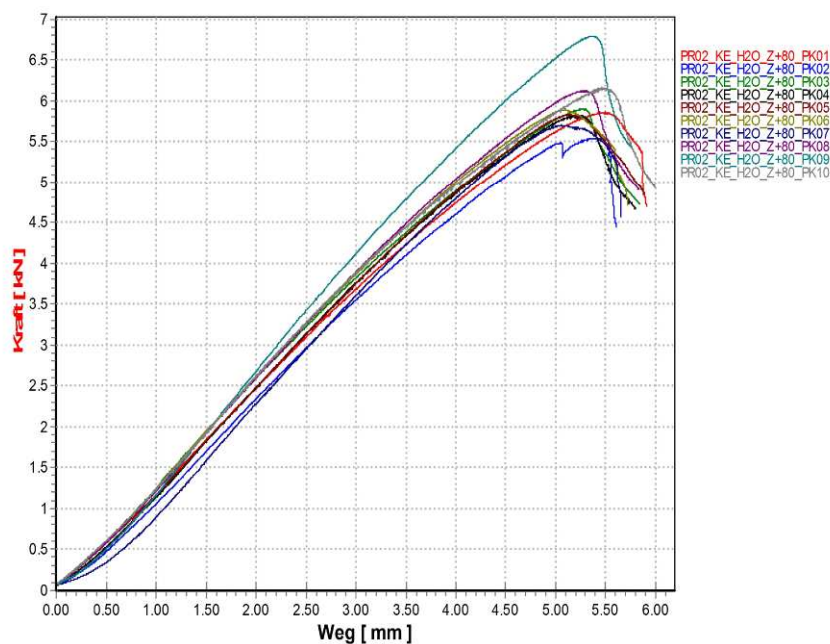
Test specimen n°
44185-001

Date of test
6. Oktober 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Plastic suitability-Tensile test at -20°C after immersion in water

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline,
Year 17 No. 6 1986-12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
TM/022076 - heat box test
equipment 20 kN
Pst/022159 - airflow oven
ventilated new
ZPM/020222 - W&B M1&M2
control tractive engine
ZPM/022501 - tractive engine
W&B M2 20 kN s.A. 20222
WM/020931 - caliper gauge
Digital Absolut 150 mm

Bar No.	Test specimen	transverse tensile strength Q in N/mm
1.19	PR02_KE_H2O_Z-20_PK01	118,8
1.20	PR02_KE_H2O_Z-20_PK02	120,4
1.21	PR02_KE_H2O_Z-20_PK03	114,4
1.22	PR02_KE_H2O_Z-20_PK04	118,0
1.23	PR02_KE_H2O_Z-20_PK05	117,6
1.24	PR02_KE_H2O_Z-20_PK06	119,7
2.19	PR02_KE_H2O_Z-20_PK07	120,4
2.20	PR02_KE_H2O_Z-20_PK08	120,6
2.21	PR02_KE_H2O_Z-20_PK09	122,9
2.22	PR02_KE_H2O_Z-20_PK10	121,3
Average value $Q_{mean}^{5.2.2}_{LT}$		119,4
Standard deviation s		2,3
Characteristic transverse tensile strength $Q_c^{5.2.2}_{LT}$		114,7

Calculation of the characteristic tensile strength according to EN 14024, section 5.6.1:

$$Q_c^{5.2.2}_{LT} = Q_{mean}^{5.2.2}_{LT} - 2.02 * s$$

The failure of the compound connection at shearing stress appeared as follows:
only as fraction of the plastic bar (cohesive failure)

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

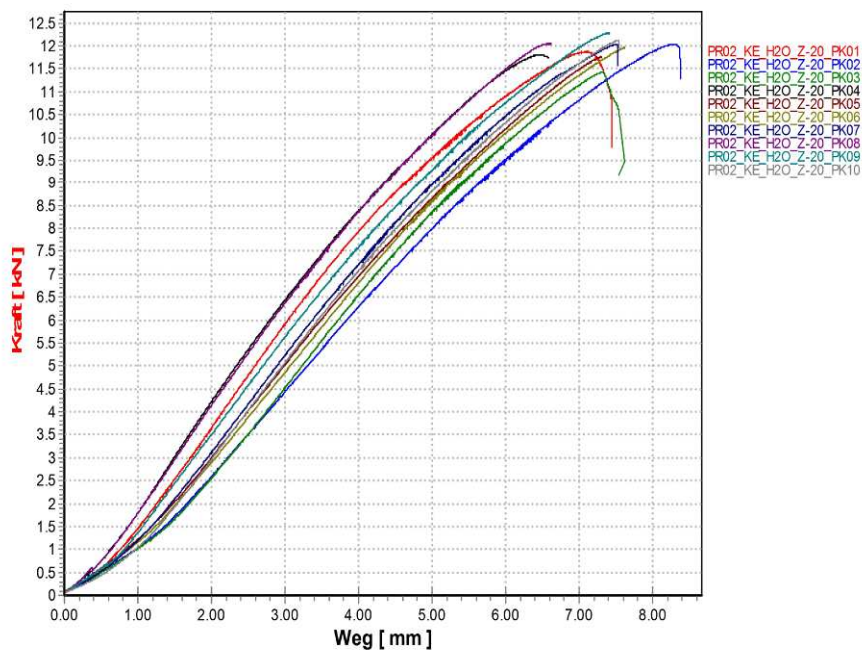
Test specimen n°
44185-001

Date of test
6. Oktober 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Plastic suitability-transverse tensile strength at +23 °C after exposure to hot and humid

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline,
Year 17 No. 6 1986-12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
TM/022076 - heat box test
equipment 20 kN
Pst/022159 - airflow oven
ventilated new
ZPM/020222 - W&B M1&M2
control tractive engine
ZPM/022501 - tractive engine
W&B M2 20 kN s.A. 20222
WM/020931 - caliper gauge
Digital Absolut 150 mm

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

Test specimen n°
44185-001

Date of test
5. September 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

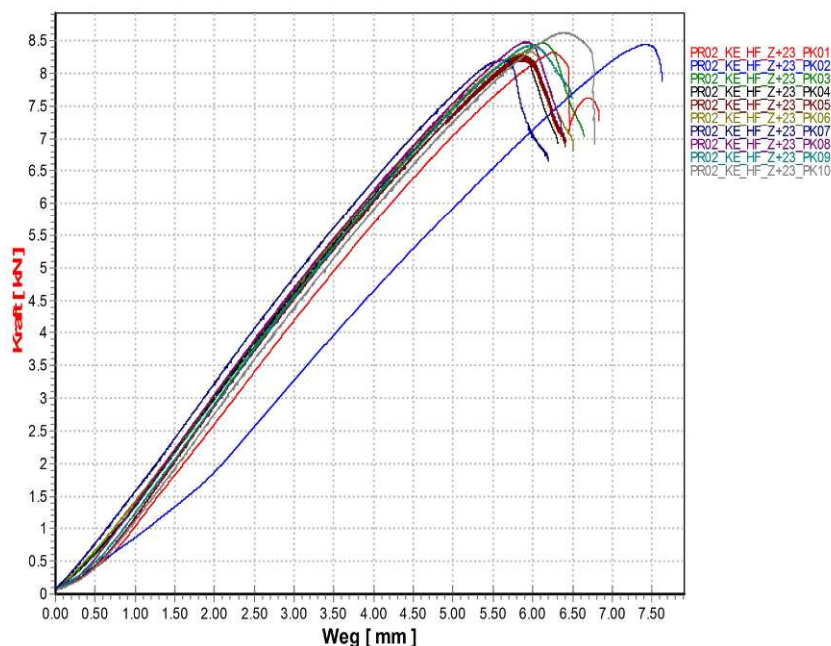
Deviations to testing procedure
none

Bar No.	Test specimen	transverse tensile strength Q in N/mm
1.39	PR02_KE_HF_Z+23_PK01	83,2
1.38	PR02_KE_HF_Z+23_PK02	84,4
1.37	PR02_KE_HF_Z+23_PK03	84,7
1.42	PR02_KE_HF_Z+23_PK04	82,6
1.41	PR02_KE_HF_Z+23_PK05	82,8
1.40	PR02_KE_HF_Z+23_PK06	83,3
2.37	PR02_KE_HF_Z+23_PK07	82,1
2.38	PR02_KE_HF_Z+23_PK08	84,9
2.39	PR02_KE_HF_Z+23_PK09	84,3
2.40	PR02_KE_HF_Z+23_PK10	86,3
Average value $Q_{mean}^{5.2.3}_{RT}$		83,9
Standard deviation s		1,3
Characteristic transverse tensile strength $Q_c^{5.2.3}_{RT}$		81,3

Calculation of the characteristic tensile strength according to EN 14024, section 5.6.1:

$$Q_c^{5.2.3}_{RT} = Q_{mean}^{5.2.3}_{RT} - 2,02 * s$$

The failure of the compound connection at shearing stress appeared as follows:
only as fraction of the plastic bar (cohesive failure)



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Plastic suitability-Testing for brittleness at -10°C

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline,
Year 17 No. 6 1986-12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
TM/022076 - heat box test
equipment 20 kN
Pst/022159 - airflow oven
ventilated new
ZPM/020222 - W&B M1&M2
control tractive engine
ZPM/022501 - tractive engine
W&B M2 20 kN s.A. 20222
WM/020931 - caliper gauge
Digital Absolut 150 mm

Bar No.	Test specimen	transverse tensile strength Q in N/mm
1-4	PR02_KE_Z-10_PK01	109,1
1-5	PR02_KE_Z-10_PK02	93,7
1-6	PR02_KE_Z-10_PK03	93,3
2-4	PR02_KE_Z-10_PK04	116,0
2-5	PR02_KE_Z-10_PK05	101,3
2-6	PR02_KE_Z-10_PK06	98,8
3-4	PR02_KE_Z-10_PK07	109,0
3-5	PR02_KE_Z-10_PK08	114,3
3-6	PR02_KE_Z-10_PK09	107,6
1-11	PR02_KE_Z-10_PK10	92,9
Average value $Q_{mean}^{5.2.5}_{LT}$		103,6
Standard deviation s		8,8
Characteristic transverse tensile strength $Q_c^{5.2.5}_{LT}$		85,9

Calculation of the characteristic tensile strength according to EN 14024, section 5.6.1:

$$Q_c^{5.2.5}_{LT} = Q_{mean}^{5.2.5}_{LT} - 2,02 * s$$

The failure of the compound connection at shearing stress appeared as follows:
only as fraction of the plastic bar (cohesive failure)

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

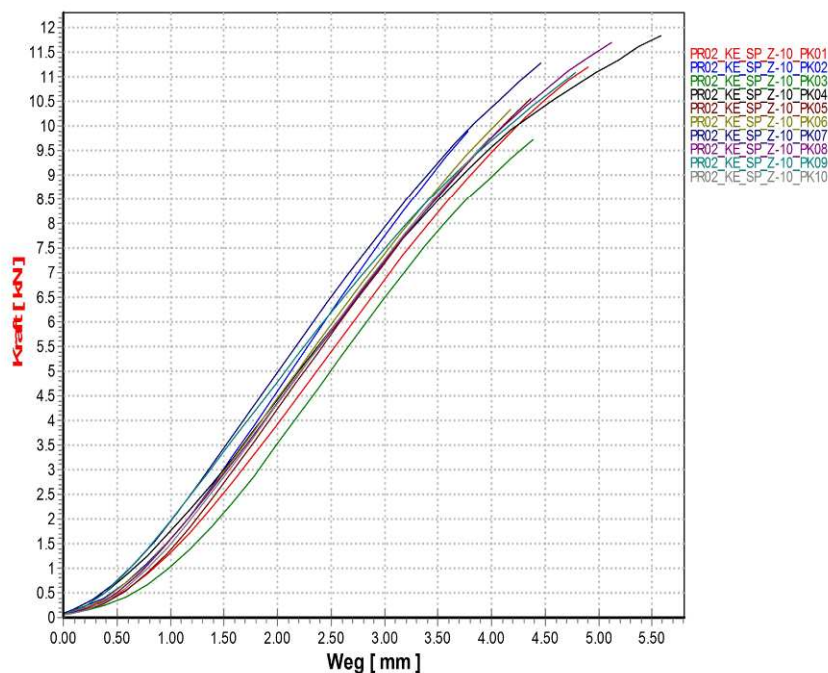
Test specimen n°
44185-001 / 45077

Date of test
28. August 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)

Thermal barrier profile - Mechanical performance to EN 14024 - Section 5.4 test of shear strength T and elasticity constant c at +23 °C

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Basis of testing
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline, Year 17 No. 6 1986-
12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Test equipment used
ZPM/020222 - W&B M1&M2 control
tractive engine
ZPM/022501 - tractive engine W&B
M2 20 kN s.A. 20222
WM/020931 - caliper gauge Digital
Absolut 150 mm

Test specimen	Shear strength T in N/mm	Elasticity constant c in N/mm ²	Bar No.
PR02_Schub_+23°C_PK01	34,4	75	1_3
PR02_Schub_+23°C_PK02	36,2	83	2_5
PR02_Schub_+23°C_PK03	41,5	79	2_6
PR02_Schub_+23°C_PK04	43,2	80	1_4
PR02_Schub_+23°C_PK05	42,5	78	2_1
PR02_Schub_+23°C_PK06	42,1	82	1_6
PR02_Schub_+23°C_PK07	33,8	87	2_1
PR02_Schub_+23°C_PK08	42,9	78	2_2
PR02_Schub_+23°C_PK09	33,7	81	2_3
PR02_Schub_+23°C_PK10	35,6	79	2_12
Average value T_{mean}^N RT	38,6	80	Average value c_{mean}^N RT
Standard deviation s	4,1		
characteristic shear strength T_c^N RT	30,2	80	characteristic elasticity constant c_c^N RT

Calculation of the characteristic shear strength according to EN 14024, section 5.6.2:

$$T_c^N = T_{mean}^N - 2.02 \cdot s$$

Calculation of the characteristic elasticity constant according to EN 14024, section 5.6.5:

$$c_c^N = c_{mean}^N$$

The failure of the compound connection at shearing stress appeared as follows:
only as offset of metal and plastic profile

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25
powder coated before

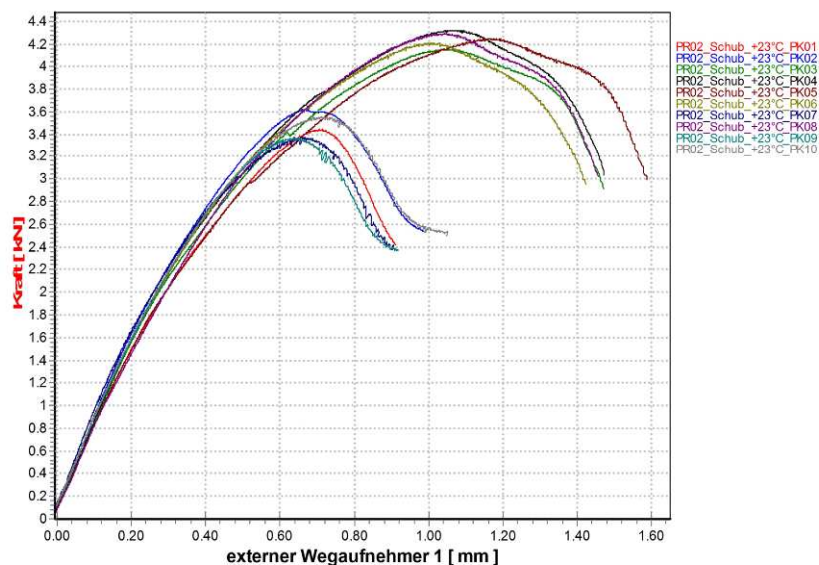
Test specimen n°
44185-001

Date of test
4. September 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviation to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)

Thermal barrier profile - Mechanical performance to EN 14024 - Section 5.4 test of shear strength T and elasticity constant c at +23 °C after aging, Process 3

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Grundlagen der Prüfung
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

DIBt-Guideline, Year 17 No. 6 1986-
12
Guideline for verification of the
mechanical strength of metal-PVC
composite profiles

Verwendete Prüfmittel
ZPM/020222 - W&B M1&M2 control
tractive engine
ZPM/022501 - tractive engine W&B
M2 20 kN s.A. 20222
WM/020931 - caliper gauge Digital
Absolut 150 mm

Test specimen	Shear strength T in N/mm	Elasticity constant c in N/mm ²	Bar No.
PR02_DS_+23°C_PK01	30,7	55	1_7
PR02_DS_+23°C_PK02	33,6	59	2_11
PR02_DS_+23°C_PK03	30,7	56	1_9
PR02_DS_+23°C_PK04	28,7	57	1_10
PR02_DS_+23°C_PK05	31,2	49	1_11
PR02_DS_+23°C_PK06	31,0	56	1_12
PR02_DS_+23°C_PK07	34,9	53	2_7
PR02_DS_+23°C_PK08	32,4	62	2_8
PR02_DS_+23°C_PK09	33,9	61	2_9
PR02_DS_+23°C_PK10	33,0	58	2_10
Average Value $T_{mean}^{M3}_{RT}$	32,0	56	Average value $c_{mean}^{M3}_{RT}$
Standard deviation s	1,9		
characteristic shear strength $T_c^{M3}_{RT}$	28,2	56	characteristic elasticity constant $c_c^{M3}_{RT}$

Calculation of the characteristic shear strength according to EN 14024, section 5.6.2:

$$T_c^{M3}_{RT} = T_{mean}^{M3}_{RT} - 2.02 \cdot s$$

Calculation of the characteristic elasticity constant according to EN 14024, section 5.6.5:

$$c_c^{M3}_{RT} = c_{mean}^{M3}_{RT}$$

The failure of the compound connection at shearing stress appeared as follows:
only as offset of metal and plastic profile

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25
powder coated before

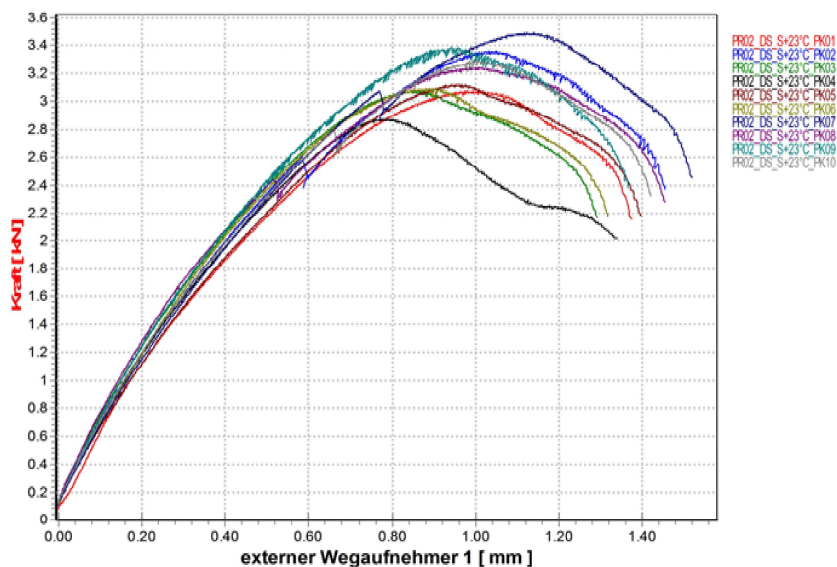
Test specimen n°
44185-001, 45077-001

Date of test
1. September 2017

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to testing procedure
none



Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Suitability of the thermal barrier-Plastic unification - Classification and evaluation

Project-No.
16-001967-PR02

Task No.
16-001967

Client
Producta SAS

Categories for use according to EN 14024, section 3.2

Category	Temperature categorie	System Type
CW	TC2	A
(Fassade)	(-20 bis +80 °C)	(*)

* Übertragung von Schubkräften hat keine Auswirkungen auf die Querkzugfestigkeit.

Basis of test
EN 14024:2004-10
Metal profiles with thermal barrier -
Mechanical performance -
Requirements, proof and tests for
assessment

Test equipment used
-/-

Ergebnisse nach DIBt-Richtlinie, Punkt 3, und EN 14024, Absatz 5.7.2

Testing	Specification of DIBt-Guideline	Specifications of EN 14024	Results
Tractive force after water immersion at low temperature	$R_{UZv} \geq 20 \text{ N/mm}$	$Q_{req} \geq 20 \text{ N/mm}$ $Q_{c \text{ Water}_{LT}} \geq 0.7 \times Q_{c \text{ N}_{LT}}$	passed
Tractive force after water immersion at high temperature	$R_{UZv} \geq 20 \text{ N/mm}$	$Q_{req} \geq 20 \text{ N/mm}$ $Q_{c \text{ Water}_{HT}} \geq 0.7 \times Q_{c \text{ N}_{HT}}$	passed
Tractive force after storage in moist environment	no specifications	$Q_{req} \geq 20 \text{ N/mm}$ $Q_{c \text{ Humidity}_{RT}} \geq 0.7 \times Q_{c \text{ N}_{RT}}$	passed
Tractive force for determination of brittleness	$R_{UZv} \geq 20 \text{ N/mm}$ $R_{UZv}^{200 \text{ mm/min}} \geq 0.7 \times R_{UZv}^{2 \text{ mm/min}}$	$Q_{req} \geq 20 \text{ N/mm}$ $Q_{c \text{ Brittleness}_{LT-10}} \geq 0.7 \times Q_{c \text{ N}_{RT}}$	passed
Testing for stress*) cracking	no stress cracking	no stress cracking	passed
Calculation value A_2	1,1	**)	

*)The suitability of plastic is stated in test report 16-001967-PR01 of ift Rosenheim

**) Value A_2 was calculated as per EN 14024, Clause 5.6.3, using the following formula, if the result is <1 you have to replace A_2 with 1.

Test specimen
Profile: E52202
Insulation bar: NY340S,
NY340ST2C
Material: PA66 GF25

Test specimen n°
44185-001

Date of test
2. Februar 2018

Responsible test engineer
Khalid El Harda

Testing personnel
Khalid El Harda

Deviations to classification
procedure
none

$$A_2 = \frac{T_c^{NEW}_{RT}}{T_c^{M3}_{RT}} = \frac{30,2}{28,2} = 1,1$$

In analysis of comparison of specifications and results, the specifications of the DIBt-Guideline and EN 14024 of the product

Profile: E52202
Insulation bar: NY340S, NY340ST2C fulfilled.
Material: PA66 GF25

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018
Client: Producta SAS
 Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



CUSTOMERS NUMBER		CUSTOMERS NAME		E-52202
CUSTOMERS NUMBER		CUSTOMERS NAME		PROFIL'S NUMBER

E-52202
E-52202-1A E-52202-1A

CUSTOMER'S NUMBER		TOLERANCES ACCORDING TO DIN OR AFNOR	
The signature of the customer representative approves the test results and the test specimen.			
DATE		SIGNATURE	

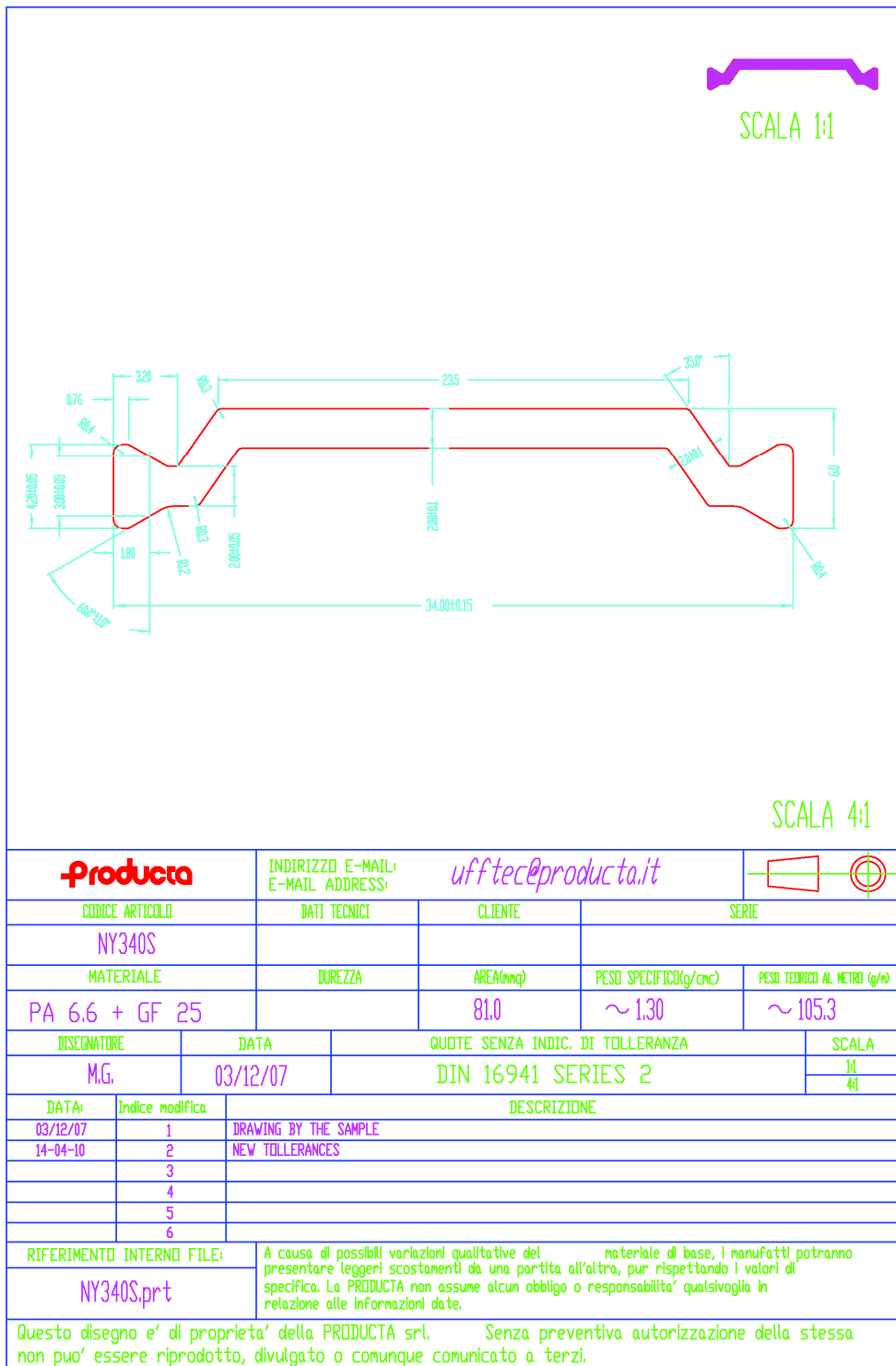
1. IRON POLITECNICO STR. - MAGOLIA		TEL. (+39) 210 489605 FAX. (+39) 210 489600	
NOT INDICATED THICKNESS mm		PER IN mm	
CIRCUMSCRIBING CIRCLE mm		PER OUT mm	
ESTIMATED WEIGHT g/m		DESIGNED BY	
ESTIMATED AREA mm²		CONTROLLED BY	
APPLICATION		REVISOR	
SCALE: 1:1		DIES NUMBER	
		E-52202	

tested Profile (specified by the manufacturer)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

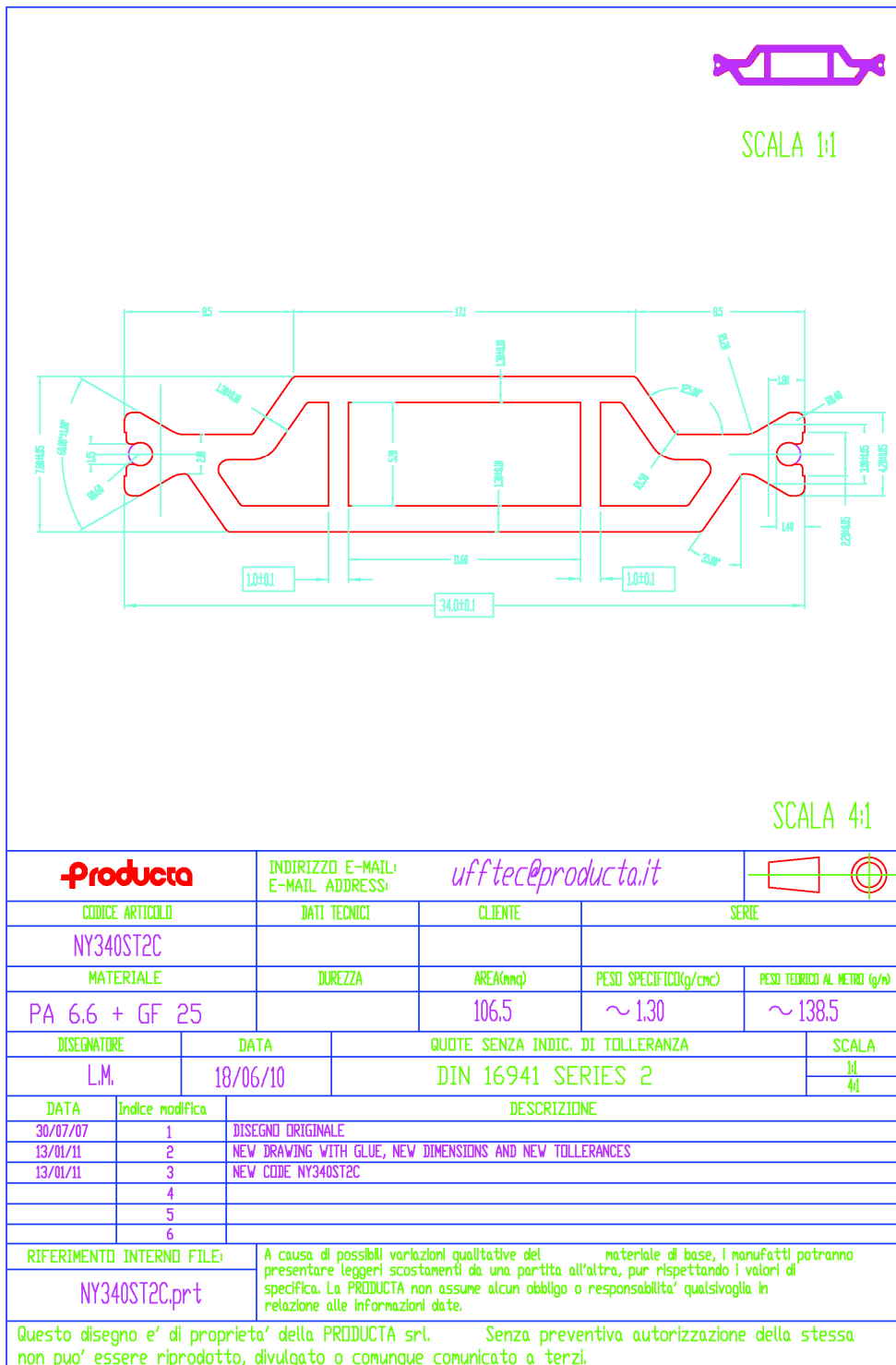
Client: Producta SAS
Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)

Insulation bar (specified by the manufacturer)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS
Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)

Insulation bar (specified by the manufacturer)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS
Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)

ALLOY DATA SHEET EN AW-6060 [AlMgSi]

Chemical composition according to EN573-3(weight%, remainder AL)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	remarks	each	total
0.30 – 0.6	0.10 - 0.30	max. 0.10	max. 0.10	0.35 – 0.6	max 0.05	max 0.15	max 0.10		max 0.05	Max 0.15

Mechanical properties according to EN755-2

Temper	Wallthickness e***	Yield stress Rp _{0.2} [MPa]	Tensile strength Rm [MPa]	Elongation A A _{50mm} [%] [%]		Hardness** HB
T4	e ≤ 25	60	120	16	14	45
T5	e ≤ 5	120	160	8	6	55
	5 < e ≤ 25	100	140	8	6	50
T6	e ≤ 3	150	190	8	6	65
	3 < e ≤ 25	140	170	8	6	60
T66	e ≤ 3	160	215	8	6	70
	3 < e ≤ 25	150	195	8	6	80

Physical properties (approximate values, 20°C)

Density [kg/m³]	Melting range [°C]	Electrical conductivity [MS/m]	Thermal conductivity [W/m.K]	Co-efficient of thermal expansion 10 ⁻⁶ /K	Modulus of elasticity [GPa]
2700	585-650	28-34	200-220	23.4	~70

Material of half profiles (manufacturer's data)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS
Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Addendum to the certification reference system – NF aluminium profiles with thermal barrier

NF 252 – Revision no. 06

Technical document 1: Aluminium profiles RPT of polyamide (PA), of PVC or of ABS

4/23

3 CHARACTERISTICS OF THE MATERIAL OF THE THERMAL BARRIER AND OF THE THERMAL BARRIER ITSELF

The supplier of the material of the thermal barrier will need to provide the applicant with corroboration of the hydrolysis tests specified in 5.2.3 of Standard NF EN 14024 as well as the corroboration of the brittleness tests specified in 5.2.5 of standard NF EN 14024 (once).

3.1 POLYAMIDE (PA 6-6)

- Designation of the manufacturer or formulator by a precise reference.
- Identification by an IR spectrograph or thermogravimetry.
- Physical or mechanical characteristics on the extruded product with a water content corresponding to the state of equilibrium under standardised conditions (23° C 50% RH):

		Requirement	Identification
Tensile strength	According to NF EN ISO 527 (1-2)	≥ 50 MPa	
Elongation to break	According to NF EN ISO 527 (1-2)	≥ 5%	
Modulus of elasticity under tension	According to NF EN ISO 527 (1-2)	≥ 2000 MPa	
Density ²	According to NF EN ISO 1183-1	-	Identification ± 0.05 g/cm ³
Percentage of glass fibres ²	According to NF EN ISO 3451-1 Method A-850°C or NF EN ISO 1172	-	Identification ± 3%
Melting point	According to NF EN ISO 3146 or ISO 11357-3 and ISO 11357-3/A1	≥ 250° C	
Durability under solar radiation: <ul style="list-style-type: none"> - Corroboration to be supplied for the coloured polyamide - Corroboration not required for the UV stabilised black polyamide containing carbon black (subject to corroboration of the quantity of carbon black) 			

² The nominal values are declared by the supplier of the strips and verified by CSTB, if need be, as regards the thermal barrier material of the reference profile within the framework of the tests in Chapter 4 of this technical document.

Material data sheet (manufacturer's data)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS
Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Addendum to the certification reference system – NF aluminium profiles with thermal barrier

NF 252 – Revision no. 06

Technical document 1: Aluminium profiles RPT of polyamide (PA), of PVC or of ABS

7/23

4 EXAMINATION EVALUATION FOR THE DESIGNER OF THE RPT ALUMINIUM PROFILES

This chapter concerns the corroborations requested from the designer of the RPT aluminium profiles as part of an application for certification or extension submitted by an applicant/holder, manufacturer of RPT Aluminium profiles.

The supplier of the thermal barrier material will need to supply the designer with the corroboration of the brittleness tests, specified in 5.2.5 of Standard NF EN 14024.

4.1 TESTS OF AGEING OF THE RPT PROFILE

Preamble: The ageing tests are carried out in the laboratory of the mark, the cost to be borne by the designer of the RPT aluminium profiles.

The ageing procedure to qualify the RPT aluminium profiles, covered by this document, is the ageing method 2 of Standard NF EN 14024 for a required temperature category TC1.

Within the framework of the NF mark, it is acceptable that:

- the characteristic values $T_c^{M2_{RT}}$ (Type A or Type B profiles only), $Q_c^{M2_{RT}}$ and f will be used to qualify an RPT aluminium profile, whatever the production unit from which it comes, and whatever the supplier of the material of its thermal barrier (as long as the thermal barrier material conforms to the standards and other specifications set down in Chapter 2.2 of the NF 252 certification reference system and in this document).
- the characteristic values $T_c^{M2_{RT}}$ (Type A or Type B profiles only), $Q_c^{M2_{RT}}$ and f of a reference RPT aluminium profile, defined by the following characteristics:
 - ☐ designer of the RPT aluminium profile
 - ☐ supplier of the thermal barrier(s)
 - ☐ number of thermal barriers
 - ☐ nature of the thermal barrier(s) (material, colour, nature of any wire)
 - ☐ shape of the thermal barrier(s)
 - ☐ bonding of the thermal barrier(s) against the aluminium profiles (thickness of the aluminium separator, directly backed onto the strips, presence of flanges)
 - ☐ where relevant, alignment of the bottoms of the thermal barriers

will be used to qualify RPT profiles conforming to the same characteristics and to the following conditions:

$e \geq e_{\text{reference profile tested M2}}$	$L \leq L_{\text{reference profile tested M2}}$	$a/b \leq a/b_{\text{reference profile tested M2}}$
-------------------------------------------------	-------------------------------------------------	-----------------------------------------------------

with e: thickness of the thermal barrier(s)

L: width of the thermal barrier (s)

a/b: eccentricity according to NF EN 14024

Material data sheet (manufacturer's data)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS
Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)

Addendum to the certification reference system – NF aluminium profiles with thermal barrier

NF 252 – Revision no. 06

Technical document 1: Aluminium profiles RPT of polyamide (PA), of PVC or of ABS

15/23

The specifications shall, in particular, include the following in addition to the trade name of the product:

6.1.2.1 For the polyamide thermal barriers (PA 6-6)

- a) The dimensional characteristics with their tolerances under the humidity conditions to be specified in agreement with the thermal barrier's manufacturer.
- b) Identification using IR spectrography or thermogravimetry: thermal barriers to be supplied by the manufacturer to the applicant/holder once a year
- c) The physical and mechanical characteristics (determined on extruded product):

Tensile strength	According to NF EN ISO 527 (4-5)	(1)
Elongation to break	According to NF EN ISO 527 (4-5)	(1)
Modulus of elasticity under tension	According to NF EN ISO 527 (4-5)	(1)
Density	According to NF EN ISO 1183-1	(2)
Glass fibre percentage	According to NF EN ISO 3451-1 Method A-850°C or NF EN ISO 1172	(2)
Melting point	According to NF EN ISO 31466 or ISO 11357-3 and 11357-3/A1	(1)

(1) to be supplied by the manufacturer of thermal barriers to the applicant/holder once a year: tests performed on thermal barriers usually 30 mm in width

(2) to be supplied by the manufacturer of thermal barriers to the applicant/holder (if requested during the follow-up audits, the manufacturer shall give the applicant/holder the results within one month maximum following the audit for consultation at the future audit)

- d) The conditions relative to delivery, in particular:

- ☐ The packaging.
- ☐ The number of batches with the production dates.

- e) The inspection methods and procedures employed by the manufacturer of the thermal barriers, to check the pertinent characteristics and to check the presence of an extrusion traceability marking on the thermal barriers themselves.

6.1.2.2 For the PVC thermal barriers

- a) The dimensional and weight characteristics with their tolerances

- b) The characteristics checked at extrusion:

- ☐ Heat reversion.
- ☐ Marking.

- c) The conditions relative to deliveries, in particular:

- ☐ The packaging.
- ☐ The number of batches with the production dates.

- d) The inspection methods and procedures employed by the manufacturer of the thermal barriers, to check the pertinent characteristics and to check the presence of an extrusion traceability marking on the thermal barriers themselves.

Material data sheet (manufacturer's data)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Probekörperbeschreibung / Description of test specimen
K20-09 Metall-Kunststoff-Verbundprofil für die Materialprüfung /
Metal-plastic composite profile for material test
16-004329-PR01

Seite / Page 1 von / of 2

Die Beschreibung des geprüften Probekörpers dient der Identifizierung des Produkttyps, für den die festgestellten Werte gelten.

Die Angaben sind Voraussetzung für die Erstellung eines ift-Nachweises; nur bei Angabe aller angeforderten Daten ist ggf. eine nachträgliche Gutachtliche Stellungnahme möglich.

Alle Angaben des Auftraggebers werden vom ift auf Plausibilität geprüft und dabei ggf. festgestellte Abweichungen und/oder ergänzende Feststellungen dokumentiert.

The description of the specimen to be tested serves to identify the product type, for which the values determined will apply.

The details are the precondition for issuing the "ift-Nachweis"; only upon provision of all requested data subsequently requested Expert Statements may be issued.

All details provided by the client will be checked for plausibility by ift, and any deviations observed and/or additional findings will be documented.

Wareneingang-Nr.:

ID of goods received:

ift Mitarbeiter:

ift staff member:

Alle Maßangaben in mm

All dimensions in mm

Nicht Zutreffendes bitte löschen
Please delete non-appropriate.

Eigenschaft Characteristic	Angaben des Auftraggebers (unverändert) Information provided by client (unchanged)	ift Kontrolle ift-check
Produkt / Bauart / Komponente Product / Design / Component	Metall-Kunststoff-Verbundprofil Metal-plastic composite profile	ok
Hersteller Manufacturer	ETEM Bulgaria, 119 A Ilievtzi Blvd., Sofia, Bulgaria	
Bezeichnung / Typ / Artikelnummer Designation / Type / Item number	Profile E52202	
System / System	Architectural system for windows and doors, ETEM E52	
Material der Einzelschalen Material of individual sections	Alloy EN-AW 6060T6 (Datenblatt/Abnahmeprüfzeugnis bitte als Anlage) Alloy EN-AW 6060T6 (Please enclose data sheet / acceptance test certificate)	
Abmessungen (H x D) Dimensions (H x T)	(Bitte bemaßte Querschnittszeichnung beilegen) Enclosed dimensioned presentation of cross section	
Oberflächenbehandlung Surface treatment	pulverbeschichtet powder coated Die Oberflächenbehandlung wurde vor dem Verbinden der Einzelschalen mit den Dämmleisten durchgeführt. Surface treatment took place before joining the individual profile sections to the thermal barrier.	plate finish
Herstelldatum Date of manufacture	02.08.2017	
Besonderheiten Special features		
Verbundsteg / Isoliersteg 1 Thermal barrier/ connecting bar / insulating web 1	Polyamide thermal break Material PA 6.6 + GF25	
Hersteller Manufacturer	Producta	
Bezeichnung / Typ / Artikelnummer Designation / Type / Item number	NY340ST2C	

Ve-PK--4375-de/ (01.09.2016)

Description of test specimen (manufacturer's data)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Probekörperbeschreibung / Description of test specimen
 K20-09 Metall-Kunststoff-Verbundprofil für die Materialprüfung /
 Metal-plastic composite profile for material test
 16-004329-PR01

Seite / Page 2 von / of 2

Eigenschaft Characteristic	Angaben des Auftraggebers (unverändert) Information provided by client (unchanged)	ift Kontrolle ift-check
Material der Dämmzone Material of thermal barrier	Datenblatt und bemaßte Querschnittszeichnung beilegen Enclosed data sheet and dimensioned presentation of cross section	ok
Steghöhe Web/bar height	7,8 ±0,05 mm	ok
Stegdicke Web/bar thickness	34 ±0,1 mm	Cavity-web thinnest wall thickness 1,3 mm
Verbundsteg / Isoliersteg 2 Thermal barrier/ connecting bar / insulating web 2	Polyamide thermal break Material PA 6.6 + GF25	
Hersteller Manufacturer	Producta	
Bezeichnung / Typ/ Artikelnummer Designation / Type/ Item number	NY340S	
Material der Dämmzone Material of thermal barrier	Datenblatt und bemaßte Querschnittszeichnung beilegen Enclosed data sheet and dimensioned presentation of cross section	
Steghöhe Web/bar height	6 mm	ok
Stegdicke Web/bar thickness	34±0,15 mm	ok

Ve-PK--4375-de/ (01.09.2016)

Description of test specimen (manufacturer's data)

Evidence of Performance

Determination of Mechanical Strength of Thermal Break Metal Profiles

Test Report No. 16-001967-PR02 (PB-K20-09-en-02) dated 22.02.2018

Client: Producta SAS Di Ladikos Eleftherios, 62010 Montelupone (MC) (Italy)



Probennahmebericht

Blatt 1 von 1

Probennahmebericht

ift-Projekt Nr.: 16-001967-PR01

Firma: Producta SAS
Di Ladikos Eleftherios

Verwendungszweck / Produktnorm	EN 14024
Anzahl	60 Abschnitte Länge 120mm + 20 Ersatz
Hersteller	PRODUCTA SAS
Herstellwerk	PRODUCTA/MONTELUPONE HAUPT- WERK
Produktionslinie	NY3
Herstelldatum / Zeitpunkt der Probennahme	26/6/2017
Ort der Probennahme	MONTELUPONE / ITALIEN
Bezeichnung oder Beschreibung der Probe	NY340S
Probe zur Ermittlung der Eigenschaft(en) (Bezeichnung / Prüfnorm)	EN 14024
Kennzeichnung der Probe durch den Hersteller (Nr.)	/
Zweck der Prüfung	Isoliersteg als therm. Trennung in Metall- Kunststoff-Verbundprofilen
Verantwortlicher Bearbeiter	CORINNA HERTEL
Identifikationsnummer der Prüfstelle	Notified Body Nr.: 0757 ift Rosenheim GmbH

Die Auswahl der Probe(n) erfolgte durch den Auftraggeber

HINWEIS:

Zur Verwendung des Prüfnachweises im Rahmen eines ITT gemäß Produktnorm
ist ein Probennahmebericht zwingend erforderlich.

Probe(n) entnommen:

Reconati 10/7/17
Ort, Datum

Producta sas
di Ladikos Eleftherios & C.
Via F. Testi 4, Zona Ind.le E. Fermi
62010 MONTELUPONE (MC)
Tel. 0733.225022 - Fax 0733.224011
Cod. Fisc. 01491700246 - IVA IT 00246850432
Unterschrift/Stempel

D_ID 509 / 08-04

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sampling report (manufacturer's data)