



## Test Report

**Number:** 2022-08-5319-05

**NB-Number:** 1513

**Client:** Armolan Europe GmbH  
Alter Postweg 1  
67346 Speyer  
Deutschland

**Commission:** Impact test and classification of flat glass  
with safety film according DIN EN 12600

**Product:** 4 mm float glass with film ARM safety 4 Mil (100 µm)

**Number of pages** 5

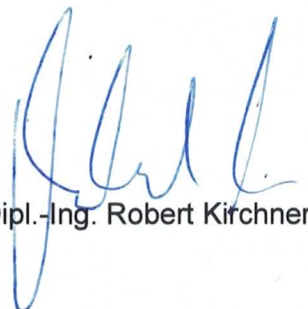
Underlying guidelines and test methods:

**DIN EN 12600:2003-04** Pendulum test – Impact test method and classification for flat glass

Rohrbach, 06. November 2024

  
Dipl.-Ing. Michael Friedmann



  
Dipl.-Ing. Robert Kirchner

The test results stated in this test report exclusively refer to the specified test material.

Reproduction of this test report requires our written permission.

Publication of extracts only is prohibited.

The signatories are responsible for the release of this test report.

**Geschäftsführer** [Dipl.-Ing. Michael Friedmann · Dipl.-Ing. Robert Kirchner · HRB Landau 3143]

**Adresse** [Große Ahlmühle 7 · 76865 Rohrbach · Deutschland · Tel +49 (0) 63 49-93 93 1-0 · Fax +49 (0) 63 49-93 93 1-99]

**Internet** [info@friedmann-kirchner.de · www.friedmann-kirchner.de]

**Content:**

|                              |   |
|------------------------------|---|
| 1 Test material.....         | 3 |
| 2 Test Equipment.....        | 3 |
| 3 Tests and results .....    | 4 |
| 3.1 Test .....               | 4 |
| 3.2 Breakage behaviour ..... | 5 |
| 3.3 Classification .....     | 5 |

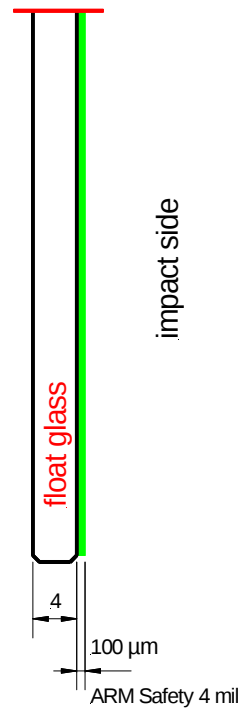
## 1 Test material

Basic glass: Floatglass according DIN EN 572-2

Processed to: Flat glass with safety film

Test specimen: 4 Glass panes 876 x 1938 mm Nominal thickness 4 mm

Glass structure:



Sample numbers: 1 – 4

Sampling: by the client

Receipt of specimen: 05.09.2023

## 2 Test Equipment

Following test equipment was used:

- P085 – Digital Calliper MarCal 16 ER
- P124 – Test frame according DIN EN 12600:2003-04
- P125 – Double tyre impactor

The test equipment used is subject to test equipment surveillance.

### 3 Tests and results

#### 3.1 Test

The test was executed in our laboratory according DIN EN 12600:2003-04 chapter 5 with the samples No. 1 – 4.



Fig. 1: Test frame with sample

| 4 mm float glass with ARM Safety 4 mil |            |                |                        |
|----------------------------------------|------------|----------------|------------------------|
| Drop height [mm]                       | Sample No. | Sample broken? | Breakage according 4a? |
| 190                                    | 1          | No             | -                      |
|                                        | 2          | No             | -                      |
|                                        | 3          | No             | -                      |
|                                        | 4          | No             | -                      |
| 450                                    | 1          | Yes            | Yes                    |
|                                        | 2          | Yes            | No                     |
|                                        | 3          | No             | -                      |
|                                        | 4          | Yes            | No                     |
| 1200                                   | 3          | Yes            | No                     |

### 3.2 Breakage behaviour

The breakage behavior corresponds to type B, which according to this standard is typical for a normally cooled glass with a film bonded to a surface.



Fig. 2: Sample 2 with breakage behaviour Type B

### 3.3 Classification

According to the test results, the tested product is classified as follows:

| Type                                   | Classification |
|----------------------------------------|----------------|
| 4 mm float glass with ARM Safety 4 mil | 3 (B) 3        |

---- End of test report ---