VOLKSWAGEN
AKTIENGESELLSCHAFT

Group standard

PV 3905

Issue 2015-04

Class. No.: 55031

Descriptors: ball drop test, ball drop, ball

Organic Materials

Ball Drop Test

Previous issues

PV 3905: 1972-05, 1990-02, 2005-09

Changes

The following changes have been made to PV 3905: 2005-09:

– Technical responsibility updated
– Section 5 "Inspection report": Legend point 6 expanded

1 Scope

This standard describes the test for determining the material behavior in a ball drop test at constant temperature (e.g., susceptibility to fracture and cracking at low temperatures) for components such as sheets, films, or trims made of organic materials.

2 Sampling and test preparation

The specimens must be clean and free of foreign matter.

Unless otherwise agreed upon, at least 5 specimens must be taken. In the case of roll stock, specimen must be evenly distributed over the entire width, and in the case of molded parts, specimens must be taken from as level a surface as possible.

The testing area of the specimen must be located on the axis of guide pipe and base plate recess (see figure 1). The specimen must be held in position by the erected pipe; the contact surface of the pipe must correspond to a load per unit area of approx. 50 g/cm^2.

The specimen edge must project ≥ 5 mm on all sides.

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The ball must be placed carefully on the ball holder, e.g., using a magnet with release mechanism.

The ball drop height (see figure 1, "h") must measure 200, 230, 300 up to (700 ± 1) mm (from 300 mm on in increments of 50 mm).

The ball must fall vertically.

3 Test device and schematic setup

See figure 1.

4 Aging and test conditions

Aging duration (22 ± 2) h; aging temperature according to applicable Technical Supply Specification (TL standard) and/or drawing:

– (-30 ± 1) °C for components used in the vehicle interior (e.g., dashboard, door trim panels, carpets) and exterior add-on parts (e.g., bumper, plastic fender).
– (-40 ± 1) °C for safety-relevant components (e.g., chassis, fuel tank)

Ball-drop height: 230 mm. Deviations from aging temperature and ball-drop height according to TL standard and/or drawing.

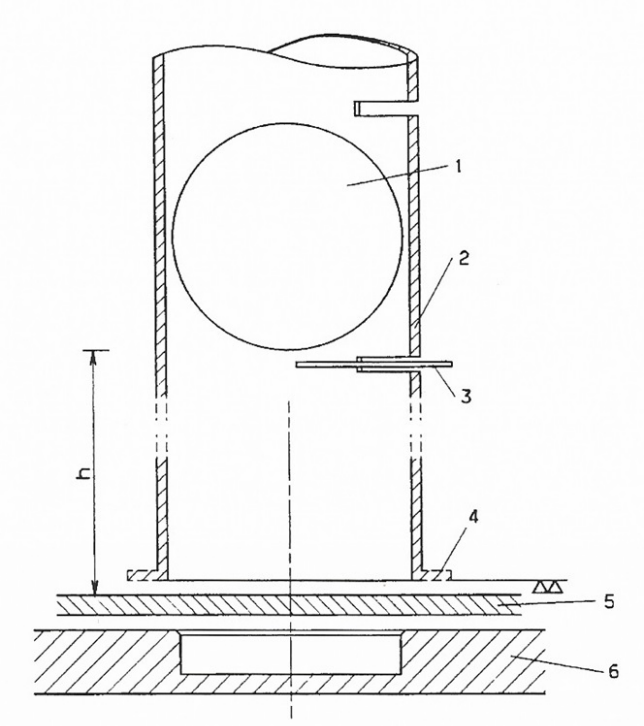
Aging starts with inserting the ball-drop device prepared for testing into the test room conditioned at aging temperature, and ends with the ball drop at aging temperature after the specified aging duration.

5 Inspection report

See figure 1 for test device.

The following must be specified in the inspection report:

1. Aging duration and aging temperature
2. Ball drop height
3. Additional or deviating test conditions
4. Finding



Legend

1	Stainless steel ball, Ø (50.0 ± 0.03) mm, (500 ± 5) g
2	Guide pipe, smooth on the inside, Ø (53.0 + 0.5) mm, with slots for ball holder
3	Ball holder, mechanically or electro-mechanically removable
4	Contact surface corresponding to a load per unit area of approx. 50 g/cm^2
5	Specimen, projecting ≥ 5 mm over the pipe contact surface
6	Aluminum base plate, with (10 ± 0.5) mm recess and Ø (50.0 ± 0.5) mm, upper edge radius r = 1 Exception: A plane aluminum base plate (without recess) is used for films (e.g., sun visor films made of PVC).

Figure 1 – Test device