June 2020

DIN EN 840-5

ICS 13.030.40

Supersedes
DIN EN 840-5:2013-02

Mobile waste and recycling containers – Part 5: Performance requirements and test methods; English version EN 840-5:2020, English translation of DIN EN 840-5:2020-06

Fahrbare Abfall- und Wertstoffbehälter –
Teil 5: Anforderungen an die Ausführung und Prüfverfahren;
Englische Fassung EN 840-5:2020,
Englische Übersetzung von DIN EN 840-5:2020-06

Conteneurs roulants à déchets et de recyclage –
Partie 5: Exigences de performance et méthodes d'essais;
Version anglaise EN 840-5:2020,
Traduction anglaise de DIN EN 840-5:2020-06

Document comprises 30 pages

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original shall be considered authoritative.

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06.20 3169517

A comma is used as the decimal marker.

National foreword

This document (EN 840-5:2020) has been prepared by Technical Committee CEN/TC 183 “Waste management” (Secretariat: DIN, Germany).

The responsible German body involved in its preparation was *DIN-Normenausschuss Kommunale Technik* (DIN Standards Committee Municipal Services), Working Committee NA 051-02-01 AA “Waste management; Containers up to 5 m^3 and container shells (national mirror committee for CEN/TC 183/WG 1)”.

For current information on this standard, please go to DIN’s website (www.din.de) and search for the document number in question.

Amendments

This standard differs from DIN EN 840-5:2013-02 as follows:

a) 4.11.2 “Handle test” has been updated;

b) Table 4 “Sequence of tests” has been corrected;

c) the document has been editorially revised and brought in line with the current rules of presentation.

Previous editions

DIN EN 840-5: 1997-03, 2004-07, 2013-02
DIN EN 840-5/A1: 2000-09

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 840-5

April 2020

ICS 13.030.40

Supersedes EN 840-5:2012

English Version

Mobile waste and recycling containers - Part 5: Performance requirements and test methods

Conteneurs roulants à déchets et de recyclage - Partie 5: Exigences de performance et méthodes d'essais

Fahrbare Abfall- und Wertstoffbehälter - Teil 5: Anforderungen an die Ausführung und Prüfverfahren

This European Standard was approved by CEN on 7 October 2019.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 840-5:2020 E

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European foreword

This document (EN 840-5:2020) has been prepared by Technical Committee CEN/TC 183 “Waste management”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2020, and conflicting national standards shall be withdrawn at the latest by October 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 840-5:2012.

The main changes compared to the previous edition are listed below:

a) 4.11.2 "Handle test" has been updated;

b) Table 4 "Sequence of tests" has been corrected;

c) the document has been editorially revised and adapted to the new design rules.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document gives the test methods for mobile waste and recycling containers according to EN 840-1 to EN 840-4. It also gives the levels to be reached during the tests or after they have been done.

This document is applicable to mobile waste and recycling containers with capacities up to 1 700 l.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 840-1, *Mobile waste and recycling containers — Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices — Dimensions and design*

EN 840-2, *Mobile waste and recycling containers — Part 2: Containers with 4 wheels with a capacity up to 1 300 l with flat lid(s), for trunnion and/or comb lifting devices — Dimensions and design*

EN 840-3, *Mobile waste and recycling containers — Part 3: Containers with 4 wheels with a capacity up to 1 300 l with dome lid(s), for trunnion and/or comb lifting devices — Dimensions and design*

EN 840-4, *Mobile waste and recycling containers — Part 4: Containers with 4 wheels with a capacity up to 1 700 l with flat lid(s), for wide trunnion or BG- and/or wide comb lifting device — Dimensions and design*

EN 10142, *Continuously hot-dip zinc coated low carbon steels strip and sheet for cold forming — Technical delivery conditions*

EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods (ISO 1461)*

EN ISO 2081, *Metallic and other inorganic coatings - Electroplated coatings of zinc with supplementary treatments on iron or steel (ISO 2081)*

3 Terms and definitions

For the purposes of this document, the terms and definitions according to EN 840-1, EN 840-2, EN 840-3 and EN 840-4 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

NOTE Terms for components of mobile waste and recycling containers and lifting devices in three languages are given in Annex A of EN 840-1:2020.

4 Tests

4.1 General

Before and after the tests a visual inspection of the container shall be done for the purpose of:

a) checking that the container is not damaged and has no visual defect;

b) checking that the manufacturing characteristics of the container to be tested are those specified in the standards applying to the container according to EN 840-1 to EN 840-4;

c) comparing the condition of the container before and after the sequence of the tests.

After completing the tests some deformation of the container is permissible, however, it shall remain entirely functional.

4.2 Control before the tests

4.2.1 Visual aspects

No obvious damage, cracks, bubbles, large flashes or sharp edges shall be present. No surface defects (unsmooth areas; trails in colour) perceivable from a distance of 1 m by the naked eye shall be visible.

4.2.2 Compatibility with EN 840-1 to EN 840-4

4.2.2.1 Components

Body, lid, wheels and other fittings shall conform to the relevant container standard.

4.2.2.2 Sizes and dimensions

Functional and safety dimensions for the container and its components shall be checked according to the figures and the relevant tables of EN 840-1 to EN 840-4.

4.2.2.3 Volumes

The volumes of container shall be measured:

a) for the body, by tank method;

b) for the lid, by tank method;

c) volume results in a) and b) minus any duplicated volumes.

The volumes shall be within the tolerances according to EN 840-1 to EN 840-4.

For containers according to EN 840-3 volume measurement by means of calculation is allowed.

4.2.2.4 Tank method

The test equipment shall consist of a tank with sufficient capacity to receive the container to be tested.

The test procedure is as follows:

— place the empty container in a tank, the container shall not be inclined;

— simultaneously fill the tank and the container with water at a temperature of (15 ± 5) °C;

— measure the quantity of water inside the container.

Accuracy of measurement shall be ± 1 % of the measured capacity of the container.

4.2.3 Deflection for comb lifting system

The frontal receiver shall have a horizontal deflection of no more than:

a) 1,5 % of the length of the frontal receiver for plastic;

b) 0,6 % of the length for steel.

For other systems the values are to be defined when the systems are standardized.

4.2.4 Masses

The tolerances on the container mass claimed are as follows: for plastic containers ± 5 % and for metal containers ± 10 %.

4.2.5 Colour

The colour shall be defined and agreed between customer and supplier. For colour measurement, differences and tolerances refer to existing International Standards.

4.2.6 Marking

Marking of the container shall correspond to EN 840-1 to EN 840-4.

4.3 Control after the tests

Not withstanding variations in deflection and sizes, it shall be possible to lift and tilt the container loaded according to 4.5 with nominal load safely on the designated lifting equipment and to move the container on its wheels.

4.4 Conditions of the test

The tests shall be carried out at the following temperatures:

— T_1 = (23 ± 5) °C

— $T_2 = (-18^{0}_{-2})$ °C.

The minimum duration of conditioning before testing at a test temperature T_2 shall be 12 h. If the test shall be carried out outside the room conditioned at T_2 it shall be carried out within 5 min after taking the test pieces from the conditioned room. If the duration of the tests is more than 5 min, then the container shall be kept in the conditioned room for at least 15 min before a new 5 min period of testing.

For special purposes a temperature lower than −18 °C or higher than 23 °C can be agreed; in this case it shall be indicated in the test report.

4.5 Test load

For the test the containers are to be filled with ballast bags of HDPE granules of 4 kg max., with granules having a density of 0,5 kg/dm³.

The test load shall be 0,4 kg/dm³ multiplied by nominal volume, but not more than 440 kg.

4.6 Other test conditions

Any other test conditions shall be defined within the tests involved.

4.7 Tests on the containers

4.7.1 General

All tests shall be carried out on new containers.

4.7.2 Impact tests by ball drop

The ball drop test is not compulsory for steel containers.

The ability of sensitive points of the container to resist impacts at low temperature shall be tested under conditions in 4.4.

The 2-wheeled containers shall be placed on a concrete or steel surface in the normal position.

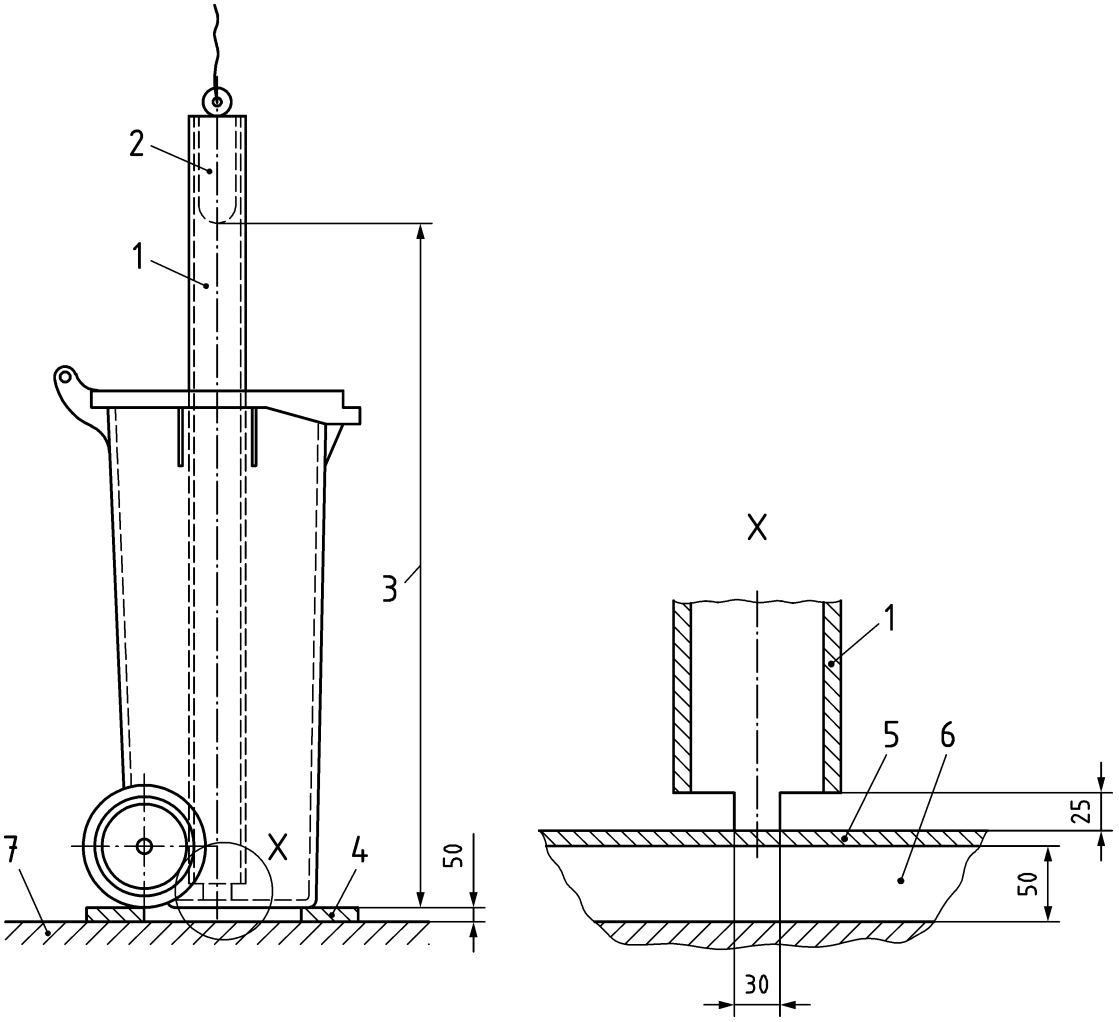
There shall be a steel frame between the concrete surface or the steel surface and the container so that the complete area of the bottom of the container can be deflected during the test.

The 4-wheeled containers shall stand on their wheels.

Ball drop tests shall be carried out using a 5 kg steel cylinder, diameter 65 mm, with hemispheric end radius of 32,5 mm. The steel cylinder is guided in a vertical pipe with a slot or with holes in order to allow the air to escape during the drop.

The device shall be according to Figure 1.

Dimensions in millimetres



Key

1	vertical (plastic) pipe (inside diameter: 70 mm)	5	container bottom
2	steel cylinder (diameter: 65 mm; 1 hemispheric end; mass: 5 kg)	6	free room
3	height fall (0,80 m)	7	concrete or steel surface
4	steel frame (see 4.7.2)		

Figure 1 — Device for ball drop test

The following areas of containers shall be tested by impact tests:

a) on the body bottom (see Figure 2d) there shall be 3 successive impacts for each impact point defined below:

   1) the injection point(s),

   2) A and D or C and B.

   after the test the container shall be waterproof in the tested points;

b) there shall be 2 successive impacts for each impact point defined below (see Figures 2a), 2b), 2c))

1) the centre of the lid (E),

2) one corner of the lid (cylinder to be tangent to the lid) (F),

3) the corner diametrically opposite (cylinder to be tangent to the lid) (G),

4) each hinge (H),

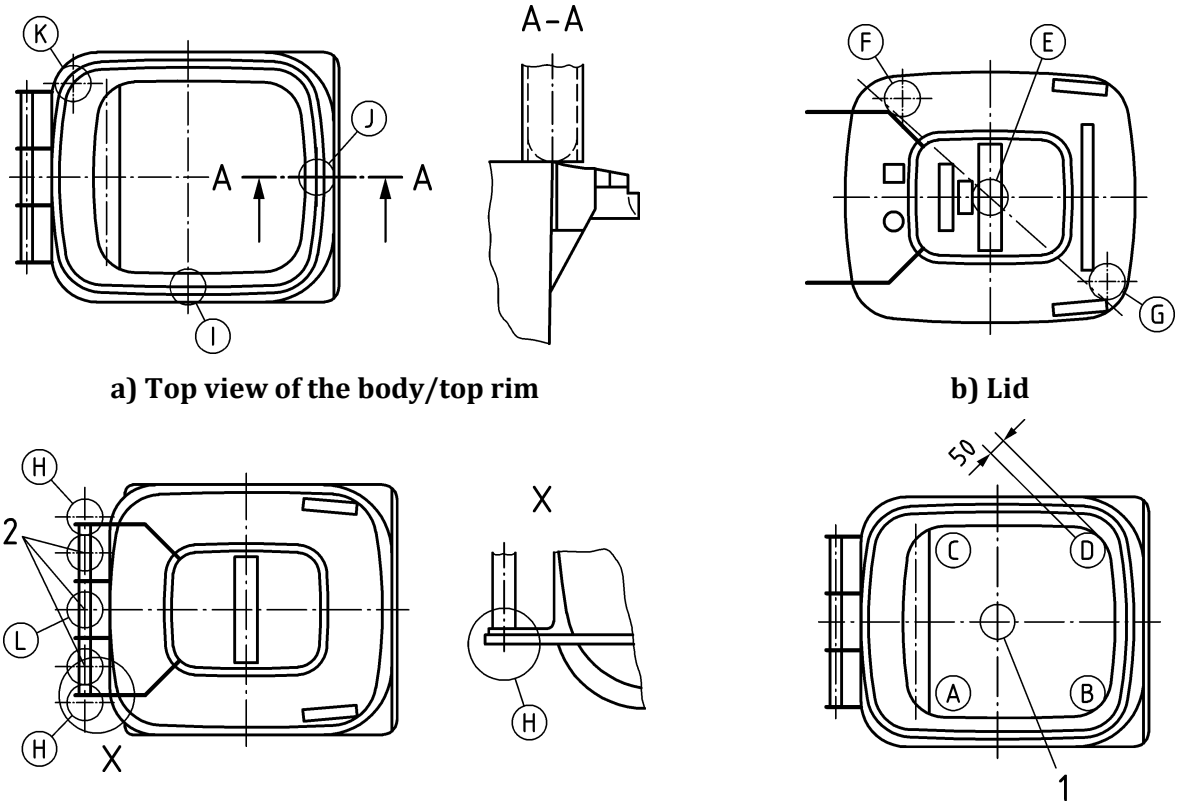
5) the centre of the front face of the top rim (J),

6) the centre of a lateral face of the top rim (I),

7) the back corner opposite the lateral face previously tested of the top rim (K),

8) centre of any handle (L, see Figure 2c) key 2).

Dimensions in millimetres



a) Top view of the body/top rim

b) Lid

c) Handles, hinges

d) Body bottom

Key

1 injection point (if one injection point only, impact on it and on A - D or B - C)

2 middle of handle

Figure 2 — Impact points for ball drop test

Outside of the conditioning room (see 4.4), the test shall not last more than 5 min. After this time the container shall be reconditioned for at least 15 min.

After the test the following procedure shall be applied, if there is any doubt about the result:

— fill the body with a water volume equal to 10 % of the maximum capacity of the body;

— wait for 10 min.

After 10 min, if the container leaks, it is declared to be non-conforming.

4.7.3 Impacts on an inclined plane

Only 4-wheeled containers shall be tested with impact on each wall of the body and on each corner to check the resistance to straining and breaking of sensitive areas, including protruding areas and fittings. The test conditions shall be:

— test temperature T_1 = room temperature;

— test load according to 4.5;

— inclination of 10° (ten degrees) to the horizontal;

— impact against a wall perpendicular to the moving direction;

— a total of 16 impacts according to the sequence in Table 1.

During the procedure the lid shall be closed. The loaded container shall be placed on a trolley with an inclination of 10° (ten degrees) (relative to the horizontal). Precautions shall be taken to avoid accidental tipping of the container during the test (see Figure C.1).

Other apparatus than shown in Figure C.1 may be used if it allows the same impact and velocity conditions.

The impact velocity shall be (1,85 ± 0,05) m/s when a face is tested and (1,3 ± 0,05) m/s when a corner is tested.

The vertical faces of the container will be numbered from 1 to 4 and the face marked 1 being the large face fitted for the (comb) lifting system. Corners are marked 1.2, 2.3, 3.4 and 4.1.

Table 1 — Sequence of the lateral impacts

Impact n°	Face or corner tested	No of impacts
1 to 2	Face 1	2
3 to 4	Corner 1.2	2
5 to 6	Face 2	2
7 to 8	Corner 2.3	2
9 to 10	Face 3	2
11 to 12	Corner 3.4	2
13 to 14	Face 4	2
15 to 16	Corner 4.1	2

After completing the test some deformation of the container is permissible, however, it shall remain entirely functional.

4.7.4 Kerb travel (run)

Only 4-wheeled containers shall be tested for kerb travel using run tests under the following conditions:

— test shall be carried out at room temperature T_1;

— test load according to 4.5;

— apparatus shall comply with Annex A;

— kerb height shall be 140 mm orthogonal to the moving direction and located at the end of the run;

— wheels are to be guided in order to be orthogonal to the kerb at the time of the impact;

— impact velocity shall be (1,85 ± 0,05) m/s;

— there shall be 4 impacts for each of the shorter ends of the container (8 in total).

After the test there shall be no permanent deformation or breakage which disturbs handling, tilting, rolling (castors move freely).

4.7.5 Kerb travel (drops)

4.7.5.1 General

Strength tests shall be carried out on 2- and 4-wheeled containers under the following conditions:

— test temperature T_1 = room temperature;

— test load according to 4.5;

— height fall of 140 mm.

The container shall be lifted up to 140 mm and then dropped freely so that 2 wheels hit the ground first.

After the test there shall be no permanent deformation or breakage, which disturbs handling, tilting, rolling or safety and health (castors shall move freely).

4.7.5.2 Test conditions

— 2 wheels shall hit the ground;

— at least 1 000 drops shall be carried out;

— number of 5 drops per minute maximum;

— test apparatus shall be according to Figure B.1 and B.2.

After the test there shall be no permanent deformation or breakage which disturbs handling, tilting, rolling (castors move freely).

4.8 Stability test

The static stability of empty and loaded containers on a flat plane of 10° (ten degrees) to the horizontal shall be tested at first on empty containers and after that on containers filled with the nominal load.

The test shall be carried out without wind.

For 4-wheeled containers, the brakes, if any, could prevent them from rolling. Other arrangements shall be made to prevent containers from gliding or rolling without hindering tipping.

The container shall be checked in 3 directions.

a) Stability at right angles to the slope line (transversal stability):

   the wider part of 4-wheeled containers and the wheel's axle of 2-wheeled containers shall be parallel to the slope line.

b) Longitudinal stability:

   the wider part of 4-wheeled containers and the wheel's axle of 2-wheeled containers shall be in the right angle to the slope line.

c) Diagonal stability:

   the diagonal line of the container shall be parallel to the slope line.

The longitudinal stability test of 4-wheeled containers includes the brake test according to 4.9.4. In consideration of all test conditions the container shall neither tip nor move.

4.9 Pulling and rolling tests

4.9.1 General

The aim of these tests is to check the handling and immobilisation of the containers and to fulfil the safety and health requirements for the operators.

These tests shall include:

— pulling tests;

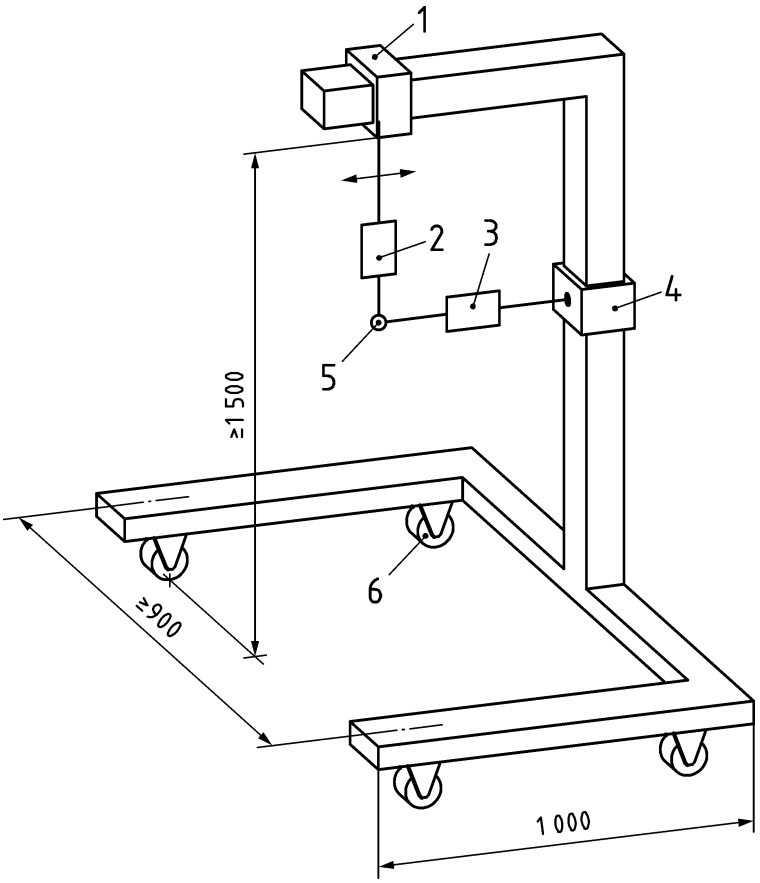
— wheels tests;

— brake tests.

4.9.2 Pulling tests

The strength required to start and maintain the container movement shall be measured (regarding the apparatus, see Figure 3).

Dimensions in millimetres



Key

1 adjuster

2 measuring head for handle lifting force
(20 % of container dead weight)

3 measuring head for pulling force in rigid and hinged fittings

4 adjuster for the handle height

5 handle of container
(2-wheeled container in tilted position)

6 swivel castors with direction block

NOTE By using the above testing tool the horizontally measured pulling force is ensured.

Figure 3 — Apparatus for measurement (Example of testing device of 2-wheeled container)

The pulling forces defined as horizontal forces in pulling direction are measured and the result shall be stated in the instructions for use.

In order to get comparable results all tests shall be carried out under the following conditions:

a) new container (loaded according to 4.5);

b) ground shall be a plane, smooth concrete horizontal surface (slope = 1° (one degree) maximum);

c) pulling force direction shall be horizontal ± 2° (two degrees) to all sides;

d) pulling speed shall be 0,1 m/s ± 0,005 m/s;

e) pulling distance shall be 3 m minimum;

f) temperature in the test area and of the tested container shall be T_1;

g) total tolerance range of measuring equipment shall be ± 3 % of the measured value;

h) preparation of the tested container before every test shall be:

1) 2-wheeled containers shall be in a tilted position where the strength for a handle is 20 % of the force (Newton), created by the container's total permissible mass (kilograms),

2) 4-wheeled containers shall have the wheels aligned in the pulling direction. The direction block, if fitted, shall be in operation;

i) tests shall be carried out 3 times.

The test is passed if the maximum pulling forces according to Table 2 are not exceeded.

Table 2 — Maximum forces for sustained pulling (up to 1 700 l capacity)

Container	**Pulling force N max.**
2-wheeled	60
4-wheeled	285
Maximum forces (including initial force) ought to be no more than 300 N, according to some work regulations.	

4.9.3 Wheels testing

The functional qualities of the wheels over a given distance, at a defined speed, under load, with a periodical step shall be tested. It is a test specifically for the wheel.

The apparatus shall be a concrete surface horizontal circle with a diameter of 1,1 m.

The wheel is rolled in a circle. A step of 11,5 cm height is placed in the circle along a radius and allows the wheel to fall down after each 3,5 m run (1 turn). The wheel is loaded with loads according to Table 3. The test shall be carried out in turns of moving and rest.

Table 3 — Conditions for testing wheels (200 mm diameter)

Conditions	Wheels for 2-wheeled containers	Wheels for 4-wheeled containers
Number of wheels	2 consecutively	2 consecutively
Load per wheel	40 kg	65 kg
Cycles running time	1 min	5 min
Resting time	3 min	5 min
Total distance run	5 km	20 km
Equivalent time	1,5 h	–
Running speed	3,3 km/h	3,3 km/h
Checking of the wheel	at the end of the test	every 3 h

The test shall be carried out at temperature T_1.

After completing the test tyres and wheels shall remain functional.

After the test there shall be no permanent deformation or breakage, which disturbs handling, tilting, rolling. Castors shall move freely. The hub shall be fully intact with no loosening or breaking of rivets.

4.9.4 Brake tests

The container shall not roll on a gradient of 10° to the horizontal under all load conditions.

4.10 Lifting-tilting tests

4.10.1 General

This test checks that the container fits well on lifting devices in agreement with EN 1501-1:—[1]. The apparatus shall be a compatible standardized lifting device. All lifting attachments of the container shall be tested.

The container and the lifting device are on the same plane, on even ground. The test should be carried out under normal service conditions.

4.10.2 Lifting-tilting of the empty container

This is a preliminary test to be done after visual inspection of the container and before the other tests.

The test is carried out on an empty container successively with the lid closed.

A minimum of 5 lifting-tilting cycles should be completed without damage or misfunction.

After completing the tests no damage on any part of the containers, lid, etc, shall be visible with the naked eye. No hindering during the cycles is allowed. If unsuccessful, the test shall be stopped.

4.10.3 Lifting-tilting of the loaded container

The test shall be carried out on one sample under the following conditions:

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[1] Under preparation. Stage at the time of publication: FprEN 1501-1.

— test load shall conform to 4.5. A device to prevent the test load from being ejected during the test;

— test temperature T_1;

— at least 100 cycles shall be made.

After every 10 cycles a break of 5 min is planned.

After completing the test it shall be possible to safely position the container on the lifting device without lifting it by hand.

The container shall be locked safely when tilting, during the cycles.

After completing the test no permanent deformation or abnormal distortion of the container causing premature ageing and no changes in dimensions that would give handling and lifting difficulties shall appear.

4.11 Miscellaneous tests

4.11.1 Internal stress-cracking tests (for thermo plastics only)

The following procedure tests the level of internal stress, which can affect some moulded plastic parts. Cracks after this test mean use of inadequate material or bad processing conditions.

The test shall be carried out under the following conditions:

— tank large enough to include the whole container;

— water bath with 2 % to 3 % in volume a strong detergent, e.g. based of nonyl-phenol-ethoxilate with a number of ethylene oxide (EO) mol greater than or equal to 9;

— bath temperature of (70 ± 5)°C;

— duration of the bath shall be 48 h.

After the test the container shall be rinsed immediately and shall be checked visually only 6 h after the test.

After completing the test no cracks or tears in sensitive areas (containers and lids) where they could extend to bring the container out of use, e.g. front rim, handles, grip hinges, wheel junctions, hinges, injection points, reinforcing ribs, rib edges shall be visible.

For containers with four wheels a test of segments is allowed with segments of approximately a quarter of a square meter. For the detergent test the following critical area should be sawed from the container and should be tested in accordance with 4.11.1:

— Wheel suspension (see area 1 in Figure 4): The wheel bracket is to be cut out from the bottom at a height of approx. 500 mm. All wheel suspensions including the screwed in fastening elements and the drain sleeve shall be tested.

— Frontal receiver (see area 2 in Figure 4): Both corner parts are to be checked. The area should be 300 mm x 300 mm large.

— Hinge area (see area 3 in Figure 4): Both corner parts are to be checked. The area should be 300 mm x 300 mm large.

— Lid (see area 4 in Figure 4): An area from the hinges to the injection points is to be tested.

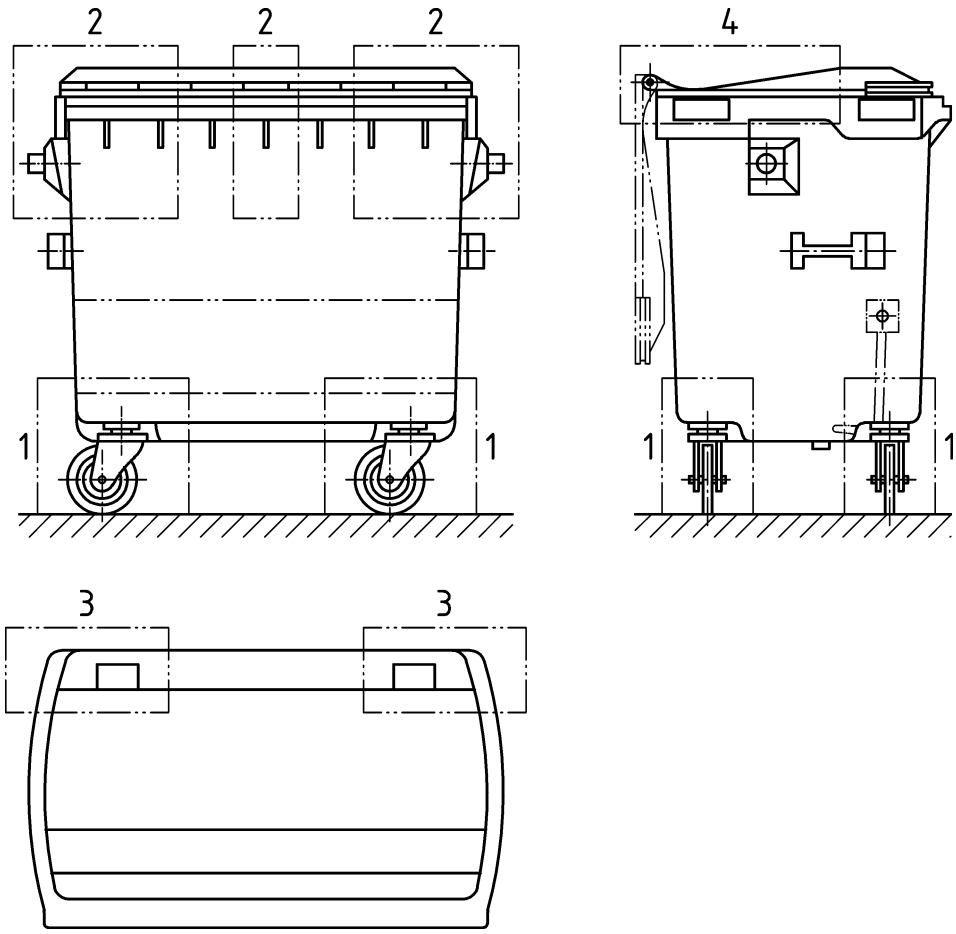

Figure 4 — Segments to be tested

4.11.2 Handle test

Lifting handles on 4-wheeled containers shall be tested.

Lifting handles and their junction with the container shall be strong enough to avoid damage or disconnecting when they are used to lift the container up the kerb.

The test shall be carried out under the following conditions:

— test temperature T_1;

— test load shall conform to 4.5;

— lifting height shall be minimum 50 mm;

— test frequency shall be 5 times per minute with a number of 1 000 liftings at least.

The container shall be lifted at least 50 mm by a 50 mm wide hook which is located around the middle of the handle, and afterwards is slowly moved down to the ground.

The test is carried out on one side of the container.

After the test there shall be no permanent deformation or breakage, which disturbs handling the container.

4.11.3 Corrosion test

The container shall be resistant to corrosion due to the state of the art.

It is the task of the manufacturer to use surface treatments or materials which guarantee this performance.

Bodies and lids, hot dip galvanised after completion, and other hot dip galvanised parts shall meet the requirements of EN ISO 1461.

Zinc electro-plated parts shall meet the requirements of EN ISO 2081.

Weldless bodies, lids and parts made out of continuously hot-dip zinc coated steel sheets shall meet the requirements of EN 10142.

4.11.4 Weathering (for thermo plastics only)

Preparation of samples, conditions of exposures, sequence of exposures, test methods to measure performances of new and irradiated samples are defined in standards to be established by CEN/TC 249. In the meantime, ISO standards may be used (see Annex E).

The material tested shall contain all the components added to the basic plastic at the rate used to mould the container, stabilizer, pigments or colorants, and, if any, fillers, other plastic etc. These additives may influence the effects of weathering on the plastic.

The results of weathering on plastic containers shall include:

— ageing of the plastic material;

— changes in colour.

4.11.5 Test method for dome lid container (EN 840-3)

4.11.5.1 Equipment

— A child mannequin, recommended to be in compliance with an appropriate European Regulation[2]; size corresponding to 10 years old. The child mannequin is dressed with a thin sweatshirt made of at least 90 % cotton. The child mannequin is wearing the hood.

— A parallel piped-shaped plastic box (dimensions: length 600 mm x width 400 mm x height 320 mm).

4.11.5.2 Test method

The test described below shall be performed five times for each of the following three child mannequin positions in relation to the container rim:

— centre;

— left hand side;

— right hand side.

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[2] ECE R44: European Regulation N° 44 incl. amendment 1; *Uniform provisions concerning the approval of retaining devices for child occupants of power-driven vehicles ('child restraints systems')*.

The untested dome lid braked container is placed on a hard concrete plane with an inclination of 1° maximum to the horizontal.

Position the legs of the child mannequin on the plastic box, such that the head and arms are inside the container for the centre position and one arm inside the container for the lateral position. Close the lid manually until it stops without any unlocking. Remove the box by device at a speed of 0,5 m/s.

4.11.5.3 Acceptance criteria

In each of the three positions, in any sequence of the test, the child mannequin shall fall from the container when the plastic box is removed.

It is acceptable for the child mannequin's head to remain suspended for an amount of time not to exceed 2 s.

4.11.6 Sequence of the tests

The sequence of the tests on each sample are defined by Table 4.

Table 4 — Sequence of the tests

		2-wheeled containers					4-wheeled containers						
Subclause	Test	Sample 1		Sample 2		Other samples	Sample 1		Sample 2		Sample 3		Other samples
		plastic	metal	plastic	metal		plastic	metal	plastic	metal	plastic	metal	
4.2.1	General inspection	0	0	–	–	–	0	0	–	–	–	–	–
4.2.2.2	Measurement	1	1	–	–	–	1	1	–	–	–	–	–
4.7.2	Ball drop	–	–	1	–	–	–	–	1	–	–	–	–
4.7.3	Impact	–	–	–	–	–	8	8	–	–	–	–	–
4.7.4	Kerb run	–	–	–	–	–	9	9	–	–	–	–	–
4.7.5	Kerb drops	6	6	–	–	–	–	–	–	1	1	–	–
4.8	Stability	4	4	–	–	–	4	4	–	–	–	–	–
4.9.2	Pulling	2	2	–	–	–	2	2	–	–	–	–	–
4.9.3	Wheels	–	–	–	–	wheels sample	–	–	–	–	–	–	wheels sample
4.9.4	Brakes	–	–	–	–	–	5	5	–	–	–	–	–
4.10.2	Lifting empty	3	3	–	–	–	3	3	–	–	–	–	–
4.10.3	Lifting loaded	5	5	–	–	–	7	7	–	–	–	–	–
4.11.1	Internal stress	–	–	S	–	S	–	–	S	–	–	–	S
4.11.2	Handles	–	–	–	–	–	6	6	–	–	–	–	–
4.11.3	Corrosion	–	–	2	2	section	–	–	2	2	–	–	–
4.11.4	Weathering	–	–	–	–	S	–	–	–	–	–	–	S
4.11.5	Dome lid	-	-	-	-	-	1	1	-	-	-	-	-

S special new parts:
- for internal stress: on body and lid
- for weathering: on body and lid, or parts of them, or standardized samples

Testing unit:- for 2-wheeled containers 2 regular samples and 2 special ones are required;
- for 4-wheeled containers 3 regular samples and 2 special ones are required.

5 Test report

The test report shall include the following:

a) reference to this standard (EN 840-5);

b) name and place of the testing body;

c) testing date;

d) test conditions according to EN 840-5;

e) description of the tested containers (manufacturer, designation, others);

f) number of the containers tested (see 4.11.6);

g) type of testing equipments;

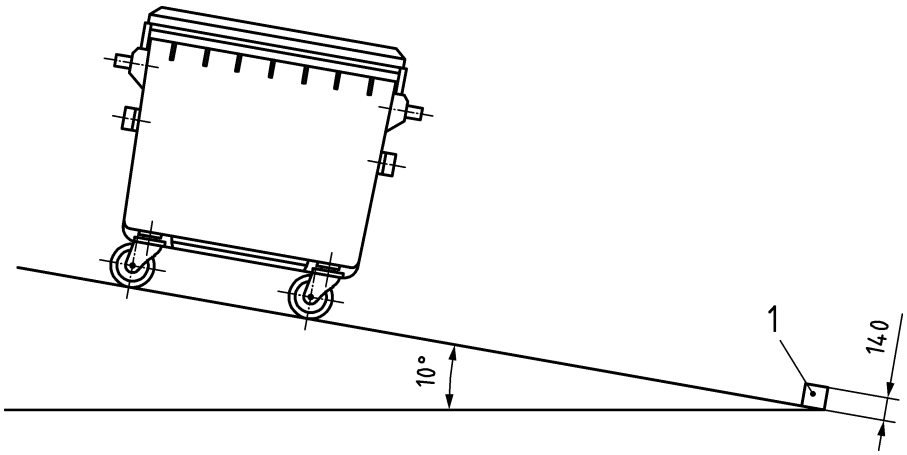
h) stipulated values mentioned in 4.7.2, 4.7.3, 4.7.4, 4.9.2 and the stipulated corrosion or/and weathering test for materials different from galvanised steel and polyethylene;

i) result on each test.

Annex A
(informative)

Slope and stop for “kerb travel” test

Dimensions in millimetres



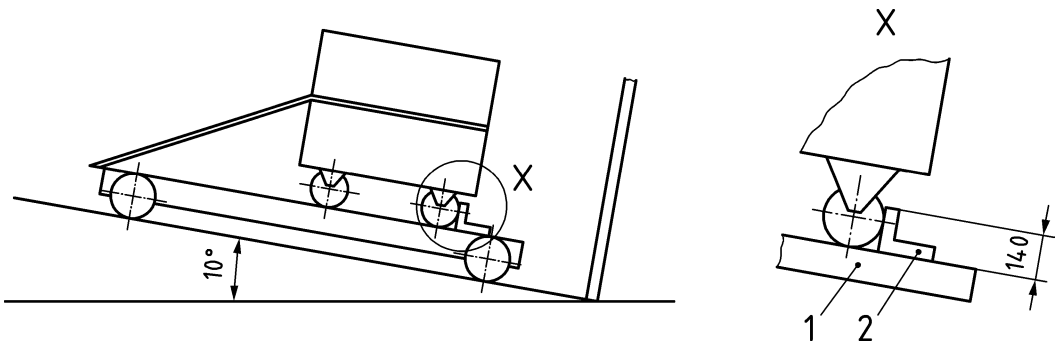
Key

1 stop

Run to be adjusted to reach an impact velocity of 1,85 m/s at stop.

Figure A.1 — Device for “kerb travel” test

Dimensions in millimetres



Key

1 trolley

2 steel angle

Figure A.2 — Other equipment for “kerb travel” test

Annex B
(informative)

Apparatus for kerb fall test

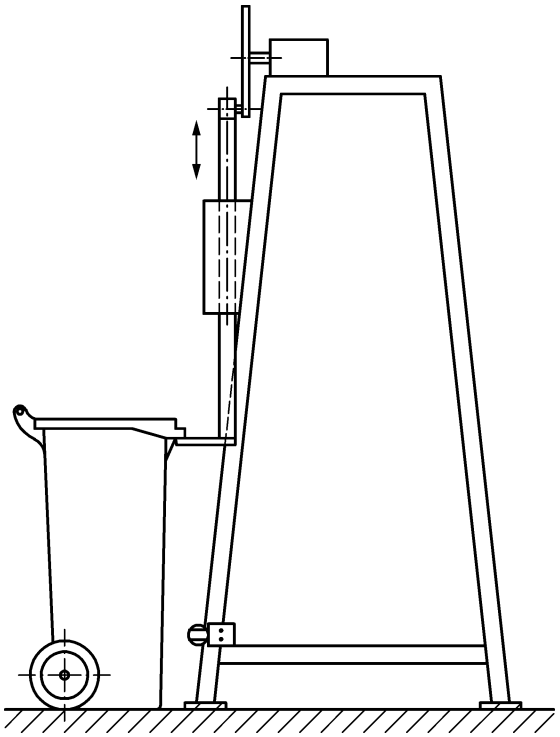


Figure B.1 — Apparatus for kerb fall test, 2-wheeled container

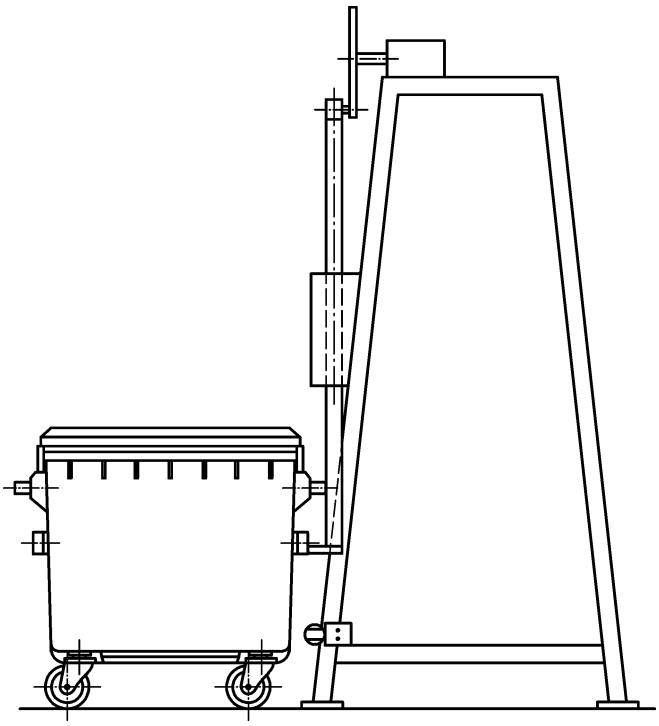
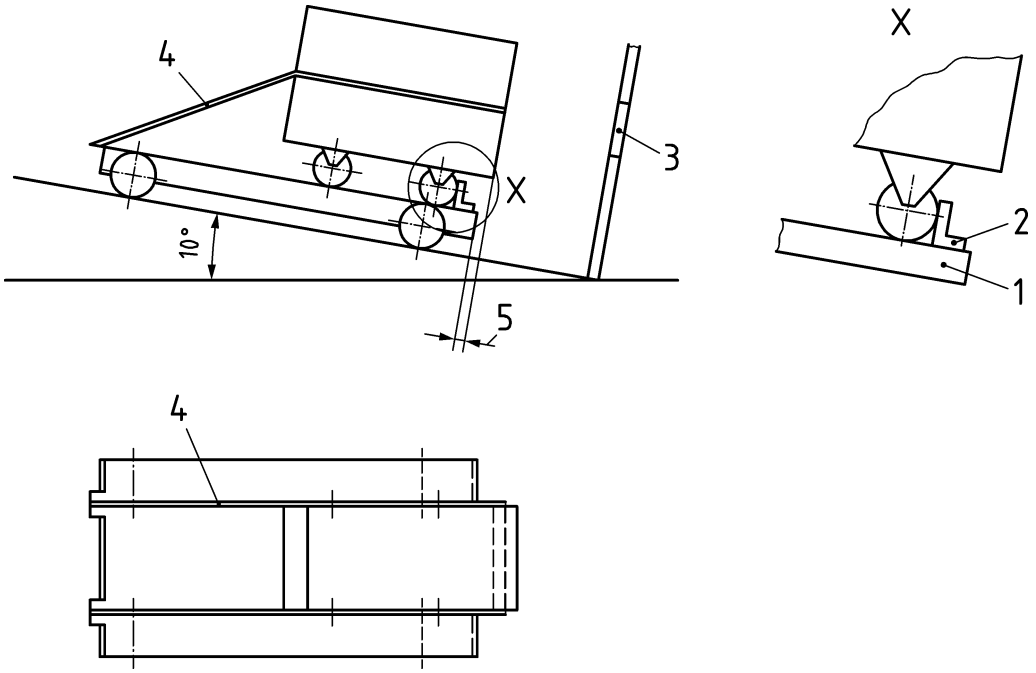


Figure B.2 — Apparatus for kerb fall test, 4-wheeled container

Annex C
(informative)

Apparatus for lateral impact test on inclined plane

Suggested precautions taken to avoid accidental tipping from trolley during the lateral impact test on inclined plane.



Key

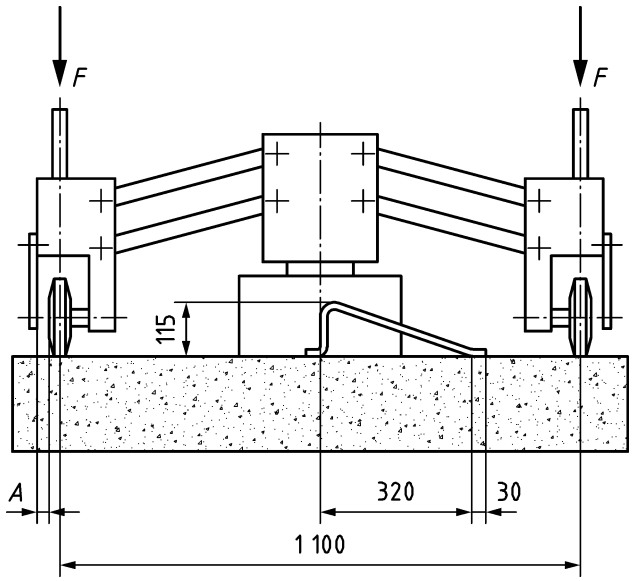
1 trolley
2 steel angle
3 hole to allow the trunnion to pass through
4 ties
5 overhang

Figure C.1 — Apparatus for lateral impact test on inclined plane

Annex D
(informative)

Wheel Test

Dimensions in millimetres



Key

A space between the wheel (the swivel castor) and a security part

Figure D.1 — Apparatus for wheel test

The concrete floor has a thickness of ≥ 200 mm.

The surface has a size of at least 1 300 mm x 1 300 mm.

"*A*" is the space between the wheel (the swivel castor) and a security part, which makes sure that the wheel does not completely fall down from the axle, and that the swivel castor cannot turn around more than 10 mm.

A = 10 mm for swivel castor (4 wheeled container).

A = 25 mm for wheels (2 wheeled container).

Annex E
(informative)

Weathering tests

Weathering tests can be carried out as:

a) outdoor weathering:

   1) exposure of containers and samples (according to EN ISO 4892-2),

   2) in an area giving, at least, the radiation foreseen in use. (For instance total 0,8 MWs/cm^2 in 3 years is 64 kLy: Northern Europe);

b) artificial (accelerated) weathering test

   (xenotest - according to EN ISO 4892-2).

Though correlation between the results with “natural” and “artificial” experiences is difficult; 2 000 h of xenon-arc radiation is needed to have roughly a total irradiation of 0,8 MWs/cm^2.

Result:

After testing with specimen of 3 mm thickness, the value of the impact tensible strength should not be below 50 % of the initial value. The determination of the tensile-impact strength should be effected on sample-type 3 according to EN ISO 8256.

To estimate the resistance of the colour to bleaching according to EN ISO 105-B02, the colour contrast should not exceed level four.

Bibliography

[1] EN ISO 105-B02, *Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light: Xenon arc fading lamp test (ISO 105-B02)*

[2] EN ISO 4892-2, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2)*

[3] EN ISO 8256, *Plastics - Determination of tensile-impact strength (ISO 8256)*

[4] Regulation No 44 of the Economic Commission for Europe of the United Nations (UN/ECE) — *Uniform provisions concerning the approval of restraining devices for child occupants of power-driven vehicles ('Child Restraint Systems')*

[5] EN 1501-1:—, *Refuse collection vehicles — General requirements and safety requirements — Part 1: Rear loaded refuse collection vehicles*