

STANDARD FOR STORAGE UNITS WITH ROLLER SHUTTERS

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1. FOREWARD

This document has been prepared to introduce standards and standardisation in various industries with regard to the product to be discussed. This is a standardising document and aims to facilitate the manufacture of Storage Units with Roller Shutters supplied by various suppliers within the industry.

2. INTRODUCTION

Storage Units with Roller Shutters, referred to as Storage Units or Storage Bunkers, are used in various industries that require storage of merchandise and various equipment in a visually appealing unit with easy safe access. These Storage Units vary in size and are required to meet certain standards in order to be safe, hygienic and reliable.

3. SCOPE:

This standard specifies the requirements for the manufacture and testing of plastic Storage Units for use in various industries for storage of merchandise and equipment. The Storage Units will be used where appealing aesthetic and ease of use by humans is required.

This standard applies to storage bunkers with roller shutter doors, capacity 0.5m³ up to 6m³

The purpose of the standard is to define the material used, specific requirements, type tests and production quality controls.

Companies manufacturing to this standard must be certified to ISO 9001 or equivalent.

4. NORMATIVE REFERENCE

This standard incorporates dated or undated references from other publications. These 'normative' references subsequent amendments to, or revisions of, any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated reference the latest edition of the publication referred to applies.

ISO 1133	Plastics Determination of the Melt Flow Rate of Thermoplastics
ISO 1183	Plastics: Method of determining density
ISO R527	Determination of Tensile Properties
ISO 175	Plastics: Determination of the effects of liquid chemicals, including water
ISO 1872	Plastics: Test specimen preparation
EN 45020	General terms and their definition concerning standardisation and related activities

5. DEFINITIONS

Storage Unit with Roller Shutters; A plastic container with roller shutter doors providing access inside via the opening in the unit that retains its design shape for the purpose of storing merchandise and equipment without any external support other than elements incorporated in its design.

6. DESIGN REQUIREMENTS

- 6.1 The Storage Unit shall conform to the dimensions herein to facilitate the fitting onto forecourts or other areas with limited space.
- 6.2 The product shall be manufactured from UV stabilised, medium density polyethylene (Colour to be specified).
- 6.3 Any corners or edges on the product must be rounded to a minimum radius of 5mm.
- 6.4 Sufficient ribs and stiffeners shall be moulded into the product to generate strength and prevent warpage.
- 6.5 To provide easy access to the inside of the unit, a roller shutter with appropriate cross-section shall be used. The side of the shutter facing the inside of the storage unit shall be lined with water proof tape to minimize the chance of water ingress.
- 6.6 The Storage Unit will have 100mm x 3mm black PVC strips running on both sides from bottom front, over the top of the unit to bottom rear. These strips are to hold the roller shutter in its runners while going from open to closed position and vice-versa. Metal strips in this position are not advised.
- 6.7 The product shall have a steel support frame fitted inside, below top surface to provide support and permanent sizing for shutter travel
- 6.8 When required, the product must have galvanised steel support frame inside, along both sides to securely hold shelves. The frame must allow easy repositioning of the shelves at different heights.
- 6.9 The Storage Unit must allow the fitting of plastic coated steel structure to allow signage to be displayed and must be securely bolted to the top of the unit.
- 6.10 The product shall incorporate a drainage outlet & plug, moulded into the product and not just a cut hole, to allow for draining the product during washing and it shall include a cap to prevent dust or contamination ingress.

7. MATERIAL PROPERTIES

- 7.1 Raw materials (Medium Density Polyethylene)
The material must be determined in accordance with ISO 1183 method A or D. A single resin polymer shall have a density not less than 932kg/ m³ and not greater than 952kg/ m³.
- 7.2 Melt Flow Rate
The Melt Flow Rate is measured in accordance with ISO 1133 Section 4, must be a maximum of 7g/10min and a minimum 3g/10min. Test to be carried out on raw material.
- 7.3 Weather Resistance
The material and colouring used in the manufacture of the body shall be ultra violet light stabilised to a rating of 8 or greater.
- 7.4 Steel Frame
The steel frame shall be manufactured from 25 x 25 x 1.5mm box section bright mild steel to EN 10305-5. Or heavier section and must be Galvanised
- 7.5 Fabrication of Steel Frame
All welding of steel components to be completed by a certified welder in accordance with EN 287-1.
- 7.6 Roller shutters shall follow the following criteria and reflect a resemblance to the specifications in Annex 2,
- 7.7 Handles shall follow specification given in Annex 3

8. STORAGE UNIT

- 8.1 Capacity and Tolerance
The stated capacity should be given in m³ +20% -10%
- 8.2 Visual inspection
On visual inspection of the trolley there should be no bubbles, blisters, or other defects that could cause a hole or fracture, there should be no sharp edges or corners on the body of the product which could cause injury.
- 8.3 Wall thickness
The minimum wall thickness on any point of the sides, top or base shall not be less than 5mm +/- 10%.
- 8.4 Load capacity
The Shutters shall be designed and tested to give a minimum load capacity of 50kg.
- 8.5 The Shelves shall be design and tested to give a minimum load capacity of 200kg. The load capacity shall be tested on the product.
- 8.6 The Storage Units shall be sized as per Annex 1 +/- 5%.
- 8.7 The shutters should be manufactured from double skinned aluminium extrusion foam filled to give additional strength. As per Annex 2

9. TESTING

9.1 Roller Shutter

- a) Load test of a roller shutter shall be carried out once off to define the correct cross-section. Slats assembled together to make up max 470mm height, shall be supported at both ends at a distance which equals the maximum width of the opening of the storage unit on which the shutter will be used. A load of 50kg (490N) shall be applied on top of the shutters, midway between the supports. The shutter shall not collapse or experience any plastic deformation.
- b) Performance test of the shutter shall be carried out once off to determine if the chosen shutter can be operated with acceptable amount of force. The chosen shutter in its full width and length shall be assembled on to the corresponding storage unit. Its performance shall be tested by measuring the maximum amount of force required to operate the shutter during the whole range of movement from fully closed to fully open position and vice-versa. The force required to operate the shutter shall not exceed 170N at any time.
- c) Water Ingress shall be tested by spraying water from a hose at a distance of 500mm at a rate of 10l/min for 2 minutes. The test should be performed with the shutter in fully closed position, aiming at the middle of the shutter, at the highest point of the storage unit's opening. At the end of the test there should be no significant penetration of water inside of the storage unit

- 9.2 Shelf load capacity test shall be carried out by assembling the storage unit to its finished state with shutter, all frames and a shelf. A load weighting 200kg should be evenly spread out across the whole area of a single shelf and left for 2 hours. After the test there should be no visible deformation to any part of the storage unit. The shelf should be able to be easily removed and put back in. The shutter should perform as outlined in 9.1.b.

9.3 Test frequency

- a) Shutter test is a type test and shall be completed once at the initial stage of the product.
- b) Shelf load capacity is a type test and shall be completed once at the initial stage of the product.
- c) Capacity: As defined in 8.1, is a calculation that is completed once.
- d) Visual inspection: Every storage unit.
- e) (Wall thickness: product randomly selected from production run every 3 months shall be tested; samples taken from a grid of 24 locations spread over the 6 faces of the storage unit shall be tested.

10. FINISHING OF METAL PARTS

All metal parts shall be protected as follows.

Frame: Galvanised or cadmium plated.

Fixings: Aluminium, Cadmium Plated, Zinc Plated, Galvanised or Stainless steel.

The metal frame shall be made from 25 x 25 x 1.5mm mild steel box section, or heavier.

11. Fittings and Optional Extras

- 11.1 There shall be an option for shelves with supporting framework placed inside of the storage units.
- 11.2 Shutters and their handles will match the specifications and drawings as per Annex 2
- 11.3 Optional signage panel shall be made available to the customer
- 11.4 The manufacturer should supply locks to enable the locking of each unit as an optional extra.

12. MARKINGS:

The following information should be marked on each storage unit:

- Year of Manufacture.
- Standard number.
- Name of manufacturer.
- Quality checked and signed.
- Product code.

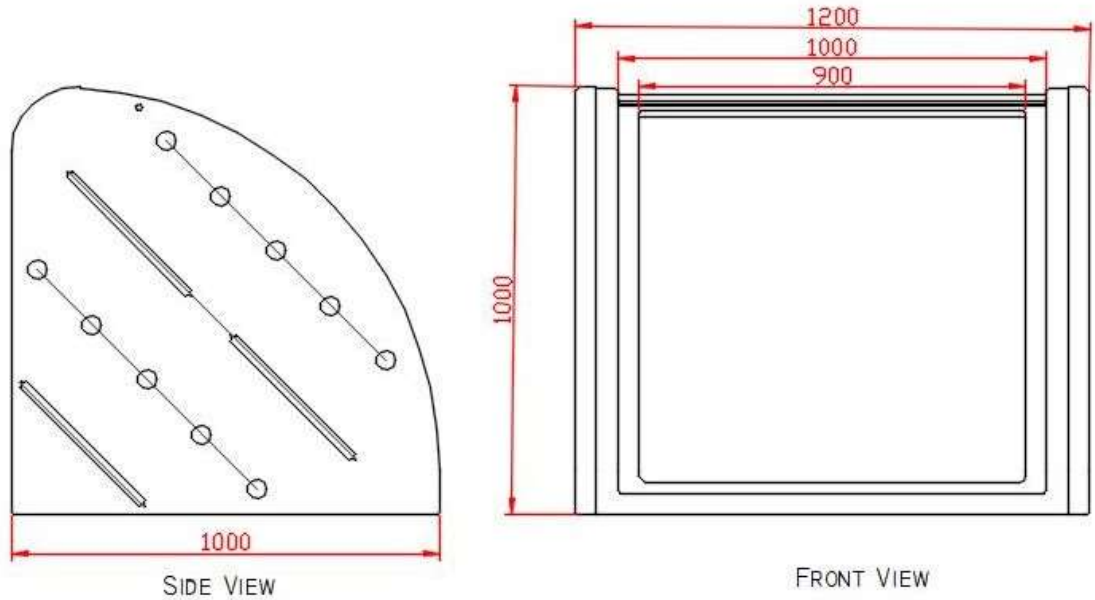
13. PRODUCTION AND QUALITY CONTROL

The tests described in chapter 9 of this standard shall be carried out at the frequency indicated above during production, quality control, and records maintained within a quality system. This system should be audited and certified by a Certified External Authority in accordance with CEN regulator EN 45020.

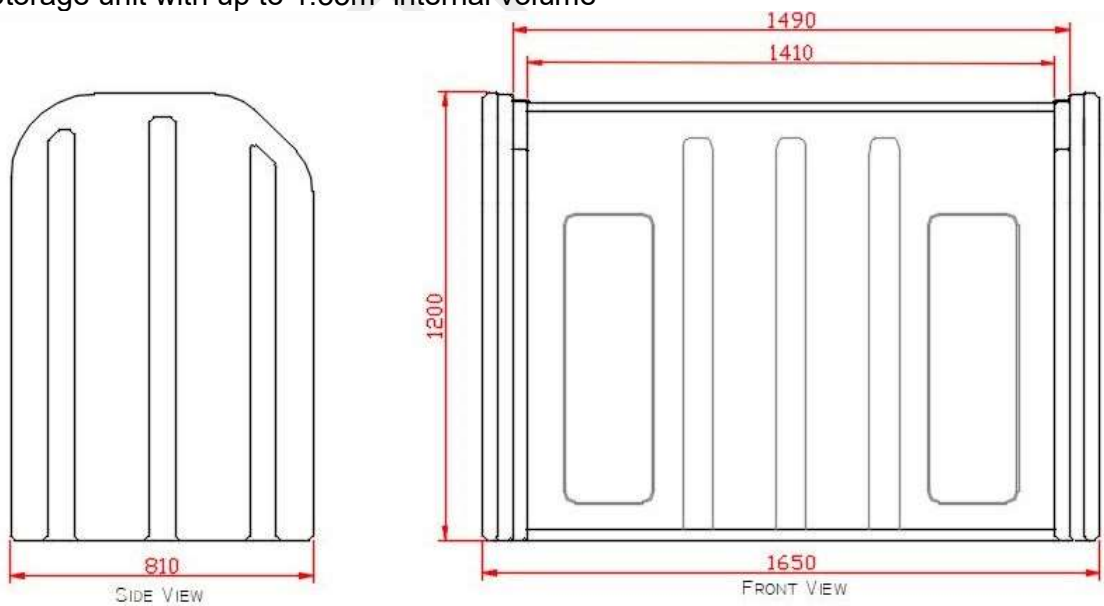
Annex 1

Overall dimensions of the storage units

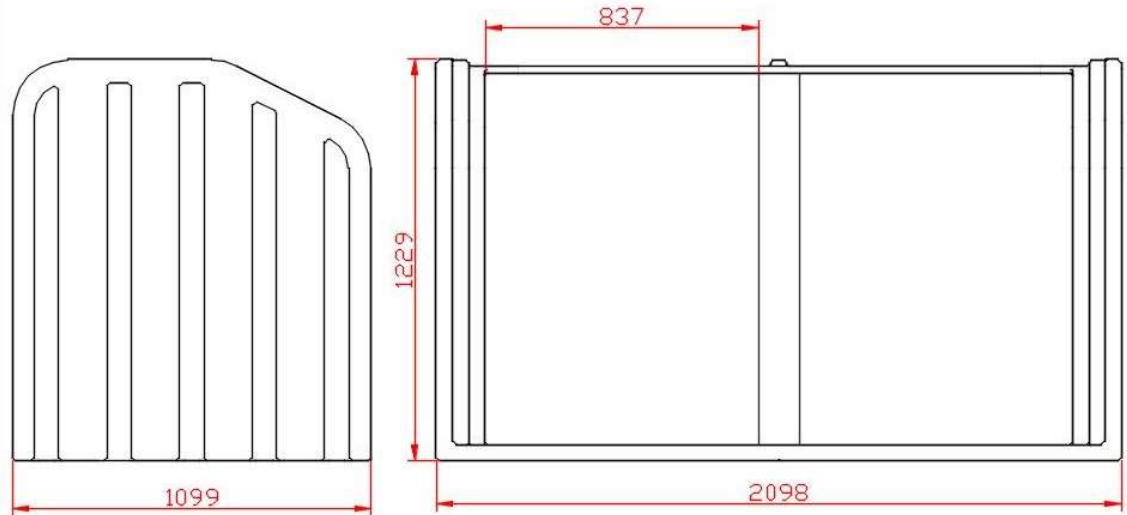
1. Storage unit with up to 0.9m^3 internal volume



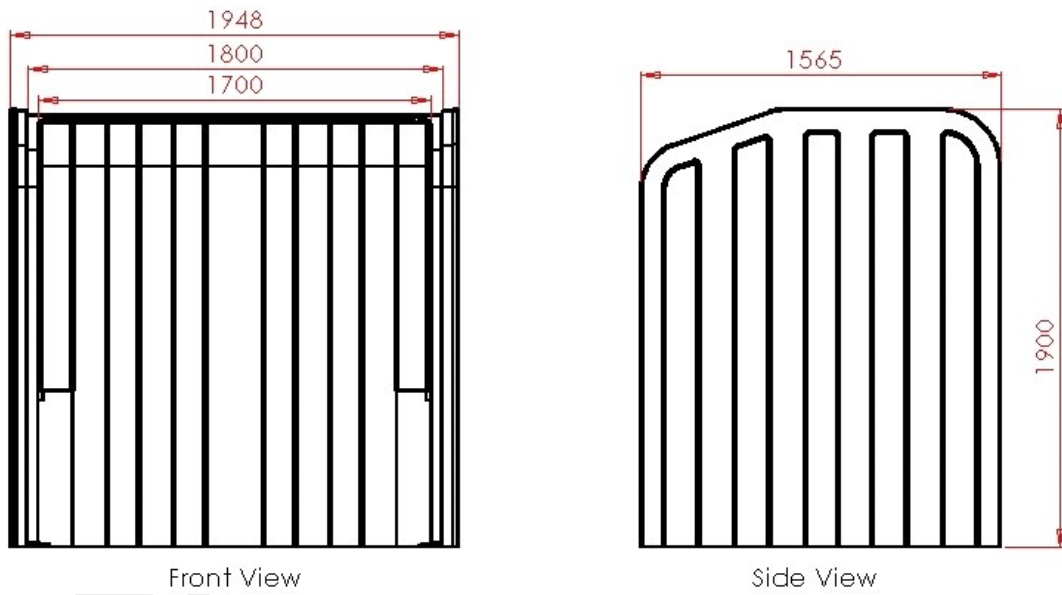
2. Storage unit with up to 1.35m^3 internal volume



3. Storage unit with up to 3.0m³ internal volume



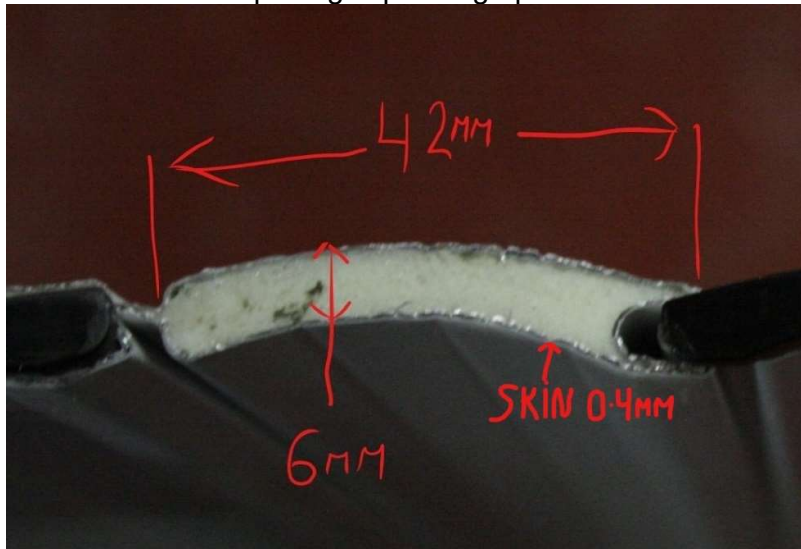
4. Storage unit with up to 6m³ internal volume



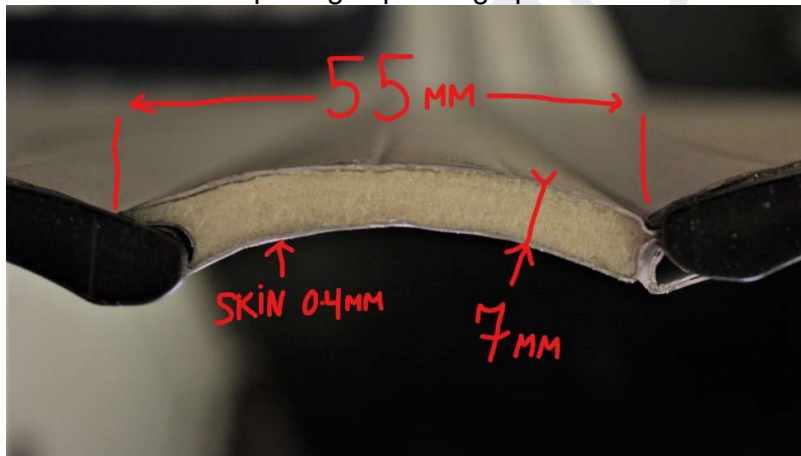
Annex 2

Roller shutter cross-section.

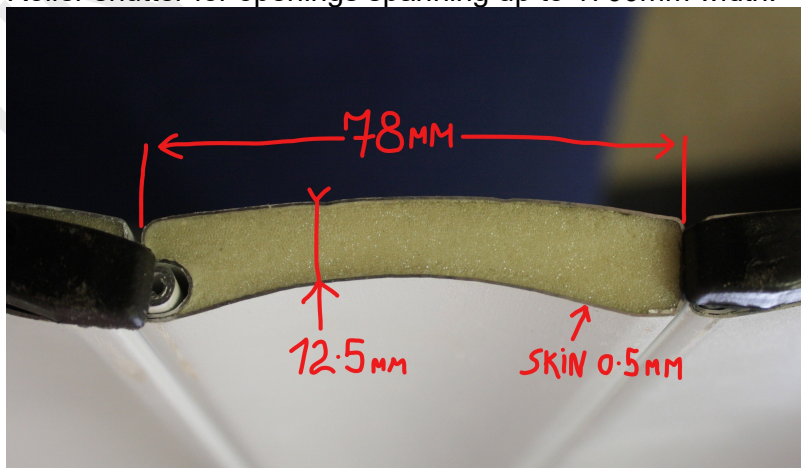
1. Roller shutter for openings spanning up to 900mm width.



2. Roller shutter for openings spanning up to 1410mm width.



3. Roller shutter for openings spanning up to 1700mm width.



Annex 3

Handle Specification

