INTERNATIONAL STANDARD

ISO
19709-1

Transport packaging — Small load container systems —

Part 1:
Common requirements and test methods

Emballage de transport — Systèmes de transport de petites charges —

Partie 1: Exigences communes et méthodes d'essai

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Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 122, *Packaging*.

A list of all parts in the ISO 19709 series can be found on the ISO website.

Introduction

The exchange of goods between national and international partners is increasingly dependent upon "just-in-time" shipments, total quality requirements and across-the-border delivery organizations.

In order to rationalize the flow of products, it is necessary to use a restricted number of harmonized, standard, durable and reusable containers, which are coordinated in modular fashion with the modulus 1 200 × 800, 1 200 × 1 000 (1 219 × 1 016) and 1 100 × 1 100. These represent universally usable, poolable systems and are especially designed to meet customer and supplier needs, as well as the technical and environmental requirements of the logistic chain.

One of the main goals is to create and promote an overall open system for packaging and equipment for unit loads to facilitate free border crossing exchange of goods.

This leads to the condition of the more restricted use of standardized packages and unit loads as the main elements of the transportation and distribution of goods and unit loads, "the modular system".

This document specifies the elements of Small Load Container (SLC) modular systems which are designed to promote reusable primary and transport packaging to protect the environment.

It has to be recognized that a single overall system is unlikely to cover all aspects of distribution chain. For this reason, this document specifies different systems which are dependent on different specification requirements.

Handling and transportation technologies are taken into account by specifying different types of SLC systems.

These containers and the other system elements are designed for handling, storage and transport operations in order to meet the requirements of the transportation chain most efficiently.

This document is based on performance requirements and thus, does not include specific design features. However, it includes essential requirements to allow for third-party assessment and certification of the products if required.

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Transport packaging — Small load container systems —

Part 1:
Common requirements and test methods

1 Scope

This document specifies the essential characteristics and the common requirements and test methods for SLC systems used in the handling, transport and storage for the automotive industry. The application of such systems is described in Annex B.

These containers are based on the modular area 600 mm × 400 mm, 550 mm × 366 mm and 600 mm × 500 mm and subdivisions according to ISO 3394 and ISO 3676.

This document is designed to be read in conjunction with the particular part which specifies the chosen system.

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.

ISO 2234, *Packaging — Complete, filled transport packages and unit loads — Stacking tests using a static load*

ISO 2248, *Packaging — Complete, filled transport packages — Vertical impact test by dropping*

ISO 3676, *Packaging — Complete, filled transport packages and unit loads — Unit load dimensions*

IEC 61340-2-3, *Electrostatics — Part 2-3: Methods of test for determining the resistance and resistivity of solid materials used to avoid electrostatic charge accumulation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21067, ISO/TS 19709-2, ISO/TS 19709-3 and the following 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 http://www.iso.org/obp

3.1
ends
two shortest vertical walls of an *SLC* (3.5)

3.2
nominal load
recommended maximum mass of container contents, lowest safe load value for the specified support conditions, independent of the type of load (excluding concentrated loads)

[SOURCE: ISO 445:2013, 2.2, modified, "recommended maximum mass of container contents" added, Note 1 and Note 2 removed.]

3.3
nominal stacking load
recommended maximum mass applied to the top of the lowest *SLC* (3.5) in a stack

3.4
sides
two longest vertical walls of an *SLC* (3.5)

3.5
small load container
SLC
open-topped durable, reusable, rigid, rectangular modular container which can be handled manually and/or mechanically and is the central element of a SLC system

3.6
system
entity consisting of interdependent components

[SOURCE: ISO 3676:2012, 3.2]

4   Module capacity

These SLC systems are based on the area module 600 mm × 400 mm according to ISO 3394. They shall be compatible with the international standardized unit load sizes 1 200 mm × 800 mm and/or 1 200 mm × 1 000 mm according to ISO 3676.

NOTE   The SLC patterns identified for 1 000 × 1 200 will also be accommodated by a 1 016 × 1 219 pallet (North American standard GMA size). The ideal pallet size to transport the containers with an area module of 550 mm × 366 mm is 1 100 mm × 1 100 mm.

The plan view dimensions of the system elements specified shall be subdivisions or multiples of the area module with the following nominal sizes, for example:

— 300 mm × 200 mm, 400 mm × 300 mm, 600 mm × 400 mm;

— 550 mm × 366 mm, 366 mm × 275 mm, 366 mm × 183 mm;

— 600 mm × 500 mm, 500 mm × 300 mm, 300 mm × 250 mm.

Carrying handles and label frames are separated. Exceptions are BSS-SLC and CSS-SLC with height 147,5 mm, for which the label frame on the end face is integrated in the carrying handle.

5   SLC system elements designation

— SLC is an open container (with footprint up to 600 mm × 400 mm) for receiving bulk goods and components.

— CSS-SLC is an adaptation or system extension to meet the requirements of new supply chains (see Figure 1). Features are single-walled SLC design, rigid, filling mass up to 20 kg and flat base (see ISO/TS 19709-2).
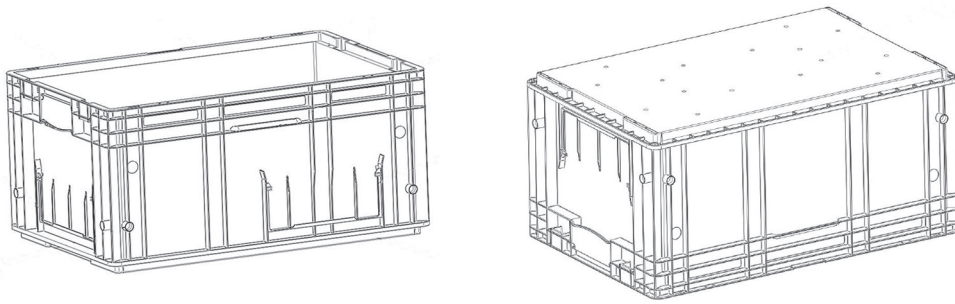
Figure 1 — View of a CSS-SLC 6280

EXAMPLE   6280 SLC means a SLC with the following dimensions: length 600 mm, width 400 mm and height 280 mm.

— BSS-SLC is an adaptation or system extension to meet the requirements of new supply chains (see Figure 2). Features are single-walled SLC design, rigid, filling mass up to 20 kg and composite base (see ISO/TS 19709-3).

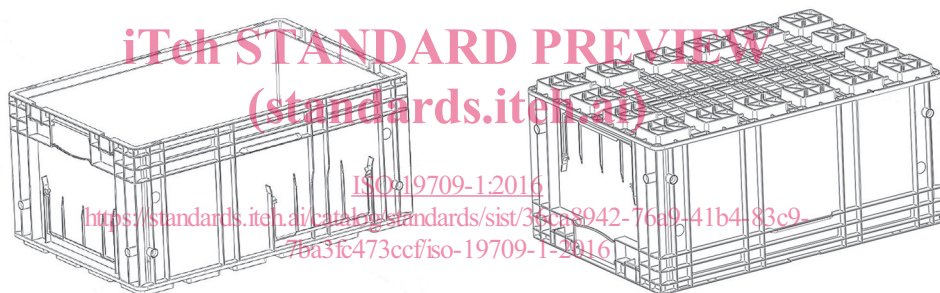**Figure 2 — View of a BSS-SLC 6429**

EXAMPLE   6429 SLC means a SLC with the following dimensions: length 600 mm, width 400 mm and height 280 mm.

6   Loads

The maximum loads per SLC may not exceed 20 kg.

7   Requirements

7.1   Quality conditions

The SLC system elements shall have uniform, matte colouring and smooth surfaces that are free of foreign objects, cavities, cracks, webbing and other defects. Minor shallow, processing-related unevenness and pockmarks are permissible if they do not impair fitness for use. Test methods to determine fitness for purpose of SLCs shall be conducted in accordance with Annex A.

7.2   Stack stability

There shall be no risk of stacked SLC units collapsing when operated either in unit loads or single stack columns. This applies both to static and dynamic situations.

When tested in accordance with A.2.2:

a)   the stack formed by the three SLCs shall keep its stability during and after the test;

b)   the deflection over the height of the stack under load is defined as the average value of the reduction between the first and second measurement and shall be less than 2 % of the height;

c)   the residual deflection over the height of the stack is defined as the average value of the reduction between the first and third measurement and shall be less than 1 % of the height.

7.3   Base deflection in the condition as delivered

The following specified dimensional tolerances for base deflection shall be maintained and apply for (23 ± 2) °C (see Figure 3 and Table 1). These apply while empty, as delivered from the manufacturer, before use.
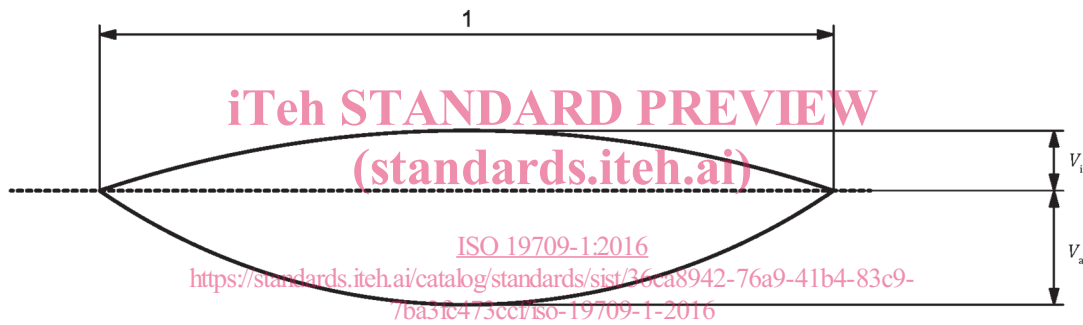
Key

1   long side

V_i inward deflection

V_a outward deflection

Figure 3 — Base deflection using the example CSS-SLC, 400 mm × 300 mm

Table 1 — Base deflection condition on delivery

Dimension in millimetres

	Modulus 600 × 400 550 × 366 600 × 500		Modulus 400 × 300 366 × 275 500 × 300		Modulus 300 × 200 366 × 183 300 × 250	
	V_a	V_i	V_a	V_i	V_a	V_i
BSS-SLC	1	4	1	3	0	5
CSS-SLC	0	7	0	5	0	5
NOTE In each case, the measuring point is the middle of the container base.						

8   Material

The material used shall be recoverable.

The user and the supplier shall agree that the operating temperature and the resistance to chemicals, e.g. acids, oils, coolants, brake fluids, and especially to washing agents, are compatible with the element material specified.

The SLC manufacturer shall ensure that any colouring agent used is compatible with the raw material.

NOTE   Information on the use of colour as a means of identification is given in ISO/TS 19709-2 and ISO/TS 19709-3.

SLC manufacturers pledge to use only polypropylene copolymers for all SLC system elements in order to maintain consistent quality. The use of foamed plastics is prohibited.

This document does not cover test conditions for raw materials. However, the finished SLCs shall fulfil the quality and test requirements set out in this document.

The colour tolerances in delivered condition are checked by colour measurements. See ISO/TS 19709-2 and ISO/TS 19709-3 for details.

All plastics shall be UV-stabilized. See Annex C for details.

SLCs shall be able to withstand washing processes and cleaning agentsin accordance with the details provided in Annex C.

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9   Marking and labelling

9.1   Marking

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The following data is engraved on BSS-SLC and CSS-SLC tools during manufacturing (see Table 2). In Table 2 and Table 3:

— "n" means numeric;

— "an" means alphanumeric;

— "n4" means numeric with a 4 digit range;

— "MMYY" means a two-digit month, followed immediately by a two-digit year.

Table 2 — Label on BSS-SLC and CSS-SLC during manufacturing

Data content	Format	Arrangement
BSS-SLC type no.	n4 e.g. 6429	On both long sides
CSS-SLC type no.	n4 e.g. 6280	On both long sides
Tare mass	n3 expressed in kilograms format: x,xx kg, e.g. 2,97 kg	On both long sides
NOTE 1 The recycling symbol according to ISO 14021:2016, 5.10.2.1 relates only to the SLC, not to the content of the SLC.		
NOTE 2 If unique labelling is required, ISO/IEC 15459-5 can be used.		