

Packaging — Small Load Carrier Systems —

Part 3: Bond Stackable System (BSS)

The European Standard EN 13199-3:2000 has the status of a
British Standard

ICS 55.160; 55.180.40

National foreword

This British Standard is the official English language version of EN 13199-3:2000.
The UK participation in its preparation was entrusted by Technical Committee PKW/3, Distribution packaging, transport packaging and unit loads, to Subcommittee PKW/2/5, Rigid plastic packaging, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 37 and a back cover.
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Partie 3: Système à gerbage croisé (SGC)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 26, Packaging, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by January 2001, and conflicting national standards shall be withdrawn at the latest by January 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard is part of a series of standards for Small Load Carrier Systems (SLC Systems).

The other parts are entitled as follows:

- Part 1: Common requirements and test methods
- Part 2: Column stackable system (CSS)

Introduction

The Small Load Carrier (SLC) system specified in this part of EN 13199 was conceived for handling, storage and transport of goods and designed to meet the needs of automotive manufacturers and their suppliers.

As this system may be used for similar purposes in other fields of application, this part of EN 13199 only contains the main requirements necessary to define a non-restrictive common base.

The multi-functional design of its elements allow the Small Load Carrier system produced in accordance with this standard to meet the requirements of different manual, mechanical and automatic handling, transport and storage systems throughout the transportation chain. It is likely that this system of SLCs and accessories will frequently be used in a pool.

The special characteristic of the system specified in this part of EN 13199 is the self-securing mechanism of the unit load in the bonded stack. For this reason the system is called the bond stackable system (BSS). The key feature of the bond stackable system is the structure of the SLC base which permits the self-securing of loads on a pallet.

The BS system consists of the following elements:

- a) SLCs;
- b) tray;
- c) lids;
- d) covers;
- e) security plate;
- f) system pallets.

The use of the BS system with palletized loads is discussed in Annex C.

1 Scope

This part of the EN 13199 specifies the main characteristics and the testing of durable, re-usable parallelepipedic boxes and their accessories which form a bond stackable system designed to contain bulk or precisely located component loads up to a maximum useful load of 50 kg.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13199-1:2000

Packaging – Small Load Carrier Systems – Part 1: Common requirements and test methods

EN 20105-A02

Textiles – Tests for colour fastness – Part A02: Grey scale for assessing change in colour
(ISO 105-A02:1993)

EN ISO 75-1

Plastics – Determination of temperature of deflection under load – Part 1: General test method
(ISO 75-1:1993)

EN ISO 75-2

Plastics – Determination of temperature of deflection under load – Part 2: Plastics and ebonite
(ISO 75-2:1993)

EN ISO 527-1

Plastics – Determination of tensile properties – Part 1: General principles (ISO 527-1:1993 including
Corr. 1:1994)

EN ISO 527-2

Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
(ISO 527-2:1993 including Corr. 1:1994)

ISO 178

Plastics – Determination of flexural properties

ISO 179

Plastics – Determination of Charpy impact strength

ISO 180

Plastics – Determination of Izod impact strength

ISO 306

Plastics – Thermoplastic materials – Determination of Vicat Softening Temperature (VST)

ISO 1133

Plastics – Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of
thermoplastics

ISO 1183:1987

Plastics – Methods for determining the density and relative density of non-cellular plastics

ISO 2039-1

Plastics – Determination of hardness – Part 1: Ball indentation method

ISO 4892-1

Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance

ISO 4892-2

Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc sources

ISO 4892-3

Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps

ISO 4892-4

Plastics – Methods of exposure to laboratory light sources – Part 4: Open-flame carbon-arc lamps

ISO/DIS 8611-1:1997

Pallets for Materials Handling – Test methods

ISO/DIS 8611-2:1997

Pallets for Materials Handling – Performance requirements

ISO/DIS 8611-3:1997

Pallets for Materials Handling – Design rating and maximum working load

3 Terms and definitions

For the purposes of this standard, the following terms and definitions and those given in EN 13199-1:2000 apply:

3.1

BSS small load carrier

small Load Carrier (SLC) which has specific functional features which ensure inter-compatibility and self securing.

3.2

self-securing

design feature which allows the base of an SLC to interlock with a system pallet to ensure the stability of a stack of SLCs without the use of additional securing measures such as strapping, stretch or shrink wrapping.

3.3

special small load carrier

BSS small load carrier designed for special purpose application in a transportation chain, incorporating additional functional elements (e.g. inserts, holes, electro-conductive materials, etc.).

3.4

system pallet

modular sized pallet with specific functional features which interlock with the bond stackable SLCs to ensure self-securing.

4 Characteristics

The heights of the SLCs are determined in such a way that when used in combination with a 150 mm high pallet and a cover they form a nominal unit load height of 1 000 mm (see Annex C).

The bond stackable system is characterized by the following features:

- a) maximum load: 50 kg,
(for SLC 32.. : 30 kg);
- b) “load space” and “function space for handling” are clearly separated.
- c) smooth, flat internal SLC surfaces without undercuts permit rapid, reliable manual removal of the contents and mechanical/automatic filling and emptying.
- d) functional features – see clause 6

5 Dimensions, weights and applied loads

5.1 Small Load Carriers

5.1.1 Main dimensions and tolerances

When tested in accordance with A.1 and A.3, the main dimensions of SLCs shall be as given in Table 1.

The location height (see Figure 1 of EN 13199-1:2000) shall be 15 mm.

The stacking heights (see Figure 1 of EN 13199-1:2000) are overall heights minus location heights.

The location clearance shall ensure positive location when two SLCs are stacked. The total location clearance in length and width of two SLCs shall not exceed 4,8 mm.

To ensure the functioning of the BSS, the overall height (see Figure 1 of EN 13199-1:2000) of an individual SLC shall be one of the following:

147,5 mm
174 mm
213,75 mm
280 mm

NOTE: For the area base module 300 mm × 200 mm only the height ratios of 147,5 mm and 174 mm are applicable.

Table 1 – Main dimensions of SLCs (when tested in accordance with A.1 and A.3)

Type designation	Nominal dimensions l x w x h	Length			Width			Height			Tolerances
		outer	inner	tolerances	outer	inner	tolerances	overall	inner	inner useful height (F)	
6428	600 x 400 x 280	594	532	0 - 4,8	396	346	0 - 3,2	280	231	223	± 1
6421	600 x 400 x 213							213,75	164,75	156,75	
6417	600 x 400 x 174							174	125	117	
6414	600 x 400 x 147							147,5	98,5	90,5	
4328	400 x 300 x 280	396	334	0 - 3,2	297	247	0 - 2,4	280	236	228	± 1
4321	400 x 300 x 213							213,75	169,75	161,75	
4317	400 x 300 x 174							174	130	122	
4314	400 x 300 x 147							147,5	103,5	95,5	
3217	300 x 200 x 174	297	271 top 260,1 bottom	0 - 2,4	198	136	0 - 1,6	174	154	14,5	± 1
3214	300 x 200 x 147							147,5	127,5	120	

When tested in accordance with A, the volumes and weights of SLCs shall be as given in Table 2.

Table 2 - Volumes and weights of SLCs (when tested in accordance with annex A)

Types	Volume (dm ³)			Tare weights	Nominal load	Nominal stacking load (kg)
	outer	inner useful	%	± 1 % kg		
6428	65,9	41,1	62,3	4,4	50	600
6421	50,3	28,9	57,4	3,7		
6417	40,9	21,5	52,6	3,0		
6414	34,7	16,7	48,0	2,8		
4328	32,9	18,8	57,1	2,6		
4321	25,1	13,3	53,1	2,07		
4317	20,5	10,1	49,2	1,9		
4314	17,4	7,9	45,4	1,63	30	400
3217	10,2	5,3	51,6	0,82		
3214	8,7	4,3	49,8	0,72		

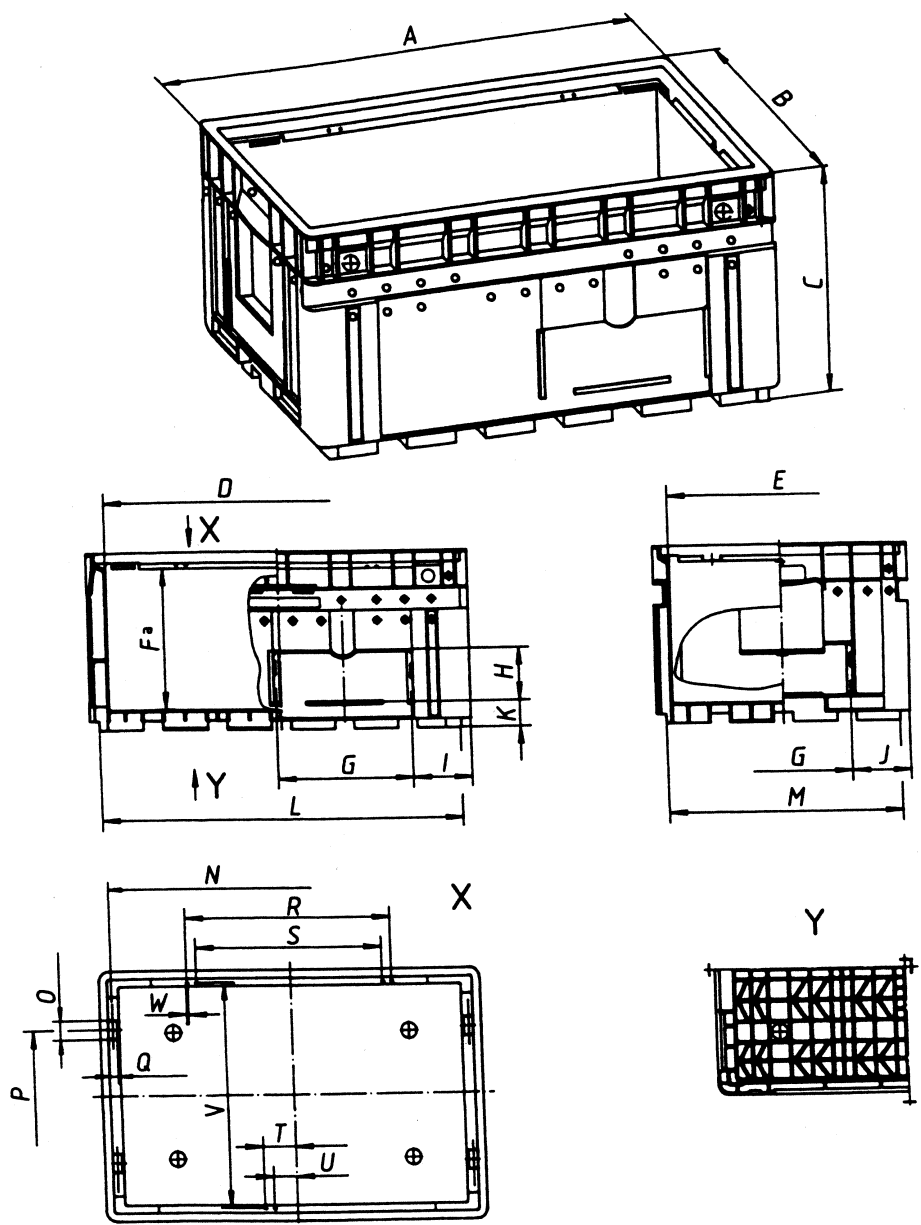
When tested in accordance with A.2, the maximum base deflection on an SLC shall be as given in Table 3.

Table 3 - Maximum base deflection on an SLC (when tested in accordance with A.2)

Base in mm	Upwards	Downwards
600 × 400	4	1
400 × 300	3	1
300 × 200	2	0

5.1.2 Detailed dimensions for SLCs

Detailed dimensions for SLCs shall be as given in Figures 1, 2 and 3.



^a usable inner height

SLC designation	Dimension (in mm)																				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
6414	594	396	147,5	532	346	90,5	212	82	92	92	65,5	564	366	553	30	211	15	312	282	50	35
6417	594	396	174	532	346	117	212	82	92	92	92	564	366	553	30	211	15	312	282	50	35
6421	594	396	213,75	532	346	156,75	212	82	92	92	131,75	564	366	553	30	211	15	312	282	50	35
6428	594	396	280	532	346	223	212	83	92	92	41,5	564	366	553	30	211	15	312	282	50	35

Figure 1 – SLC 6414, SLC 6417, SLC 6421 and SLC 6428