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Mazdoor Kisan Shakti Sangathan

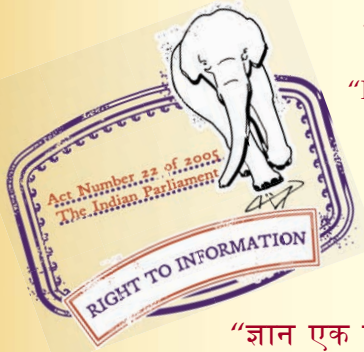
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8005 (1976): Classification of unit loads [TED 12: Freight Containers and Pallets]



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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

CLASSIFICATION OF UNIT LOADS

(First Reprint MAY 1983)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

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Indian Standard

CLASSIFICATION OF UNIT LOADS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 27 February 1976, after the draft finalized by the Pallets Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 This standard is prepared for the guidance of users of various types of materials handling equipment and also continuous mechanical handling equipment using unit load system of handling the various products.

0.3 The term 'unit loads' when used in handling includes all objects considered as units in transportation and, components which are specifically designed to interlink with one another to form a composite unit load.

0.3.1 It is consequently normal that the following are also considered as unit loads:

- a) Bulk materials, liquid or gaseous products located in containers or tanks;
- b) Cargo units made up with several unit loads assembled (strapped, wrapped or bundled, under retractable coating, instability, tied-up, nested, etc); and
- c) Packed bulk materials.

0.4 This standard is based on Doc : ISO/TC 101 (Secr-186) 290 ' Draft ISO proposal for continuous mechanical handling equipment — Classification of unit loads ', issued by the International Organization for Standardization (ISO).

1. SCOPE

1.1 This standard specifies the classification and symbolization of unit loads.

2. TERMINOLOGY

2.1 For the purpose of this standard, the terms as given in IS : 3971-1967* shall apply.

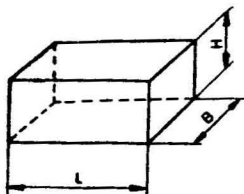
*Glossary of terms on pallets.

3. CLASSIFICATION

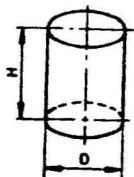
3.1 Classification According to Shape of Unit Loads

3.1.1 Basic Forms (Geometric)

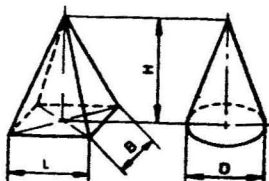
- a) Rectangular, cubic (for instance: parcels, cases, containers, sheets, bars) (see figure below).



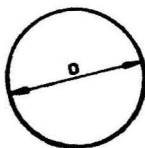
- b) Cylindrical (that is, drums, pulleys, disks, round bars, etc) (see figure below).



- c) Pyramidal, conical (see figure below).

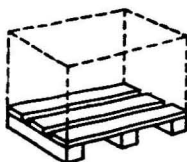


- d) Spherical (see figure below).

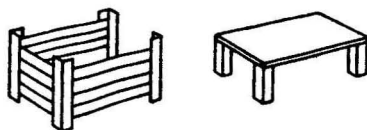


3.1.2 Typical or Usual Forms

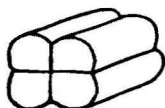
- a) Pallets [special form of 3.1.1(a)] as shown in the figure below.



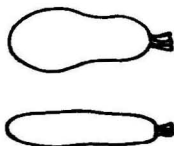
- b) Plate, containers, box-pallet on stands (see figure below).



- c) Bales.

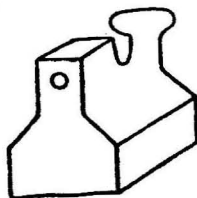


- d) Sacks.



3.1.3 Irregular Forms

- a) Irregular form with flat base (that is, assembly unit, irregular plates, etc) as shown in the figure below.



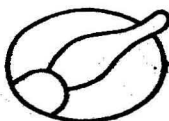
- b) Unit loads with flat base dimensions smaller than overall dimensions, for instance: conical tanks with projecting side parts, such as handle and rims; conveyed product wider than container, pallets, etc, as shown in the figure below.



- c) Unit loads on wheels, rollers, etc.



- d) Irregular and uneven.



3.2 Classification According to Position and Centre of Gravity (Stability) of the Load

3.2.1 Position of Load with Respect to Direction of Transportation

- a) Length of load parallel,
- b) Length of load perpendicular, and
- c) Length of load angled.

Note:

L = length = overall dimension of base surface,

B = width = overall dimension of base surface perpendicular to the axis of the length,

H = height = overall dimension above base, and

M = mass.

3.2.2 Position of Centre of Gravity with Respect to Base of Load

- a) $D < B/2$
 - b) $D > B/2$
 - c) $D > L/2$
- } mention, if possible, tilting angle.

- d) The centre of gravity does not comply with the geometric centre of base.
- e) The centre of gravity may move in case of container with liquid, dry sand, etc.

3.3 Classification According to Mass per Unit (m)

- a) 0 $< m <$ 2.5 kg
- b) 2.5 $< m <$ 20 kg
- c) 20 $< m <$ 50 kg
- d) 50 $< m <$ 125 kg
- e) 125 $< m <$ 500 kg
- f) 500 $< m <$ 1 500 kg
- g) 1 500 $< m <$ 5 000 kg
- h) $m >$ 5 000 kg

3.4 Classification According to Volume per Unit (v)

- a) 0 $< v <$ 10 cm³
- b) 10 $< v <$ 100 cm³
- c) 100 $< v <$ 1 000 cm³
- d) 1 $< v <$ 10 dm³
- e) 10 $< v <$ 100 dm³
- f) 100 $< v <$ 1 000 dm³
- g) 1 $< v <$ 10 m³
- h) $v >$ 10 m³.

3.5 Type of Material in Contact with Conveying Systems — See Note under 3.8.2.

- a) Metal;
- b) Wood;
- c) Paper cardboard;
- d) Textiles;
- e) Rubber, plastics and similar materials;
- f) Glass, porcelain ceramics and similar materials; and
- g) Other materials.

3.6 Shape and Properties of Base Surface of Unit Load — See Note under 3.8.2.

3.6.1 Geometric Properties

- a) Flat;

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- b) Rounded, concave;
- c) Rounded convex;
- d) Warped, dented, irregular, uneven;
- e) With circular rim;
- f) With grooves, ribs, mouldings parallel to direction of travel;
- g) With grooves, ribs, mouldings, perpendicular to direction of travel;
- h) With grooves, ribs, mouldings oblique to direction of travel;
- j) With projecting parts, nails, screws, splinters, etc; and
- k) Other shapes.

3.6.2 Physical Properties

- a) Smooth, slippery;
- b) Rough, not slippery;
- c) Deformable, soft, flexible;
- d) Durable, hard, firm, robust, non-deformable;
- e) Elastic, rebounding; and
- f) Other remarkable properties.

3.7 Specific Properties of Unit Loads — See Note under 3.8.2.

3.7.1 Preponderant Physical Properties

- a) Abrasive;
- b) Corrosive, aggressive;
- c) Dust emitting;
- d) Damp, wet;
- e) Greasy, oily;
- f) Hot (over 100°C);
- g) Cold (under -5°C);
- h) Fragile, disintegrating [see also 3.8.1 (a) to (e)]; and
- j) With cutting, sharp, hard edges.

3.7.2 Other (that is, Chemical) Properties

- a) Easily inflammable;
- b) Explosive;
- c) Hygroscopic;
- d) Sticky;

- e) Toxic;
- f) Obnoxious;
- g) Radioactive, radiating;
- h) Generates static electricity;
- j) Conveyed product modified (shape, weight and consistency) during transport for instance due to hardening, drying up, etc; and
- k) Other remarkable properties.

3.8 Unit Loads Specially Sensitive — See Note under 3.8.2.

3.8.1 *Preponderant Mechanical Influences*

- a) Pressure;
- b) Shock, falling;
- c) Vibration;
- d) Change of position, overturning, tilting, etc;
- e) Acceleration, deceleration; and
- f) Air turbulence.

3.8.2 *Other Influences*

- a) Cold;
- b) Heat;
- c) Light, sunrays;
- d) Radiation;
- e) Damp, water (not resistant to damp);
- f) Drying up;
- g) Impurities, pollution; and
- h) Ageing, alternation.

NOTE — Unit load may have a combination of several properties of the same section as described in 3.5 to 3.8.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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