INTERNATIONAL STANDARD

ISO 24021-1

First edition
2022-08

Light gauge metal containers — Vocabulary and classification —

Part 1: Open-top cans and ends

Récipients métalliques légers — Vocabulaire et classification —

Partie 1: Boîtes serties à extrémité sertie

Reference number
ISO 24021-1:2022(E)

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Published in Switzerland

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Foreword

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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).

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For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 52, *Light gauge metal containers*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The definitions in this document have been drawn up with the objective of achieving a proper balance between precision and simplicity. This document has been developed to provide a unified standard set of terms and definitions of open-top cans and ends. Some terminology of open-top cans and ends in present use has developed through common usage and is not always logical. It has not, therefore, been possible to define certain terms in the form they are used in some countries. Because of the occasional conflicts between tradition and logic, some definitions inevitably represent a compromise.

The classification is a common technique that humans use to cope with the complexity of the world around us. Since there are many different possible application areas, there is no single classification system that will serve all needs. The method by which classifiers are defined depends upon the application area. In addition, the classifiers used within a particular application area might not be adequate for all situations.

This document has been developed to help prevent trade barriers and enhance communication.

Light gauge metal containers — Vocabulary and classification —

Part 1: Open-top cans and ends

1 Scope

This document defines terms and establishes a classification (see Annex A) for open-top metal cans and metal ends.

This document is applicable to open-top metal cans and metal ends for food and beverages made of metal plates such as tin or chromium-coated steel plates or aluminium alloy plates with a thickness of no more than 0,49 mm.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms related to raw and processed materials

3.1.1
tinplate
non-alloy, low carbon steel supplied in strip or sheet form that has been single or double cold reduced and coated on both surfaces with tin in a continuous electrolytic process

Note 1 to entry: Single-reduced tinplate is commonly supplied with a thickness of 0,15 mm up to and including 0,60 mm, double-reduced tinplate with a thickness of 0,14 mm up to and including 0,36 mm. Tinplate is supplied normally with a passivation treatment and a protective coating of oil and is suitable for varnishing (lacquering) or printing.

Note 2 to entry: Tinplate may also be obtained by hot dipping in a bath of molten tin.

[SOURCE: ISO 6929:2013, 1.3.4.2]

3.1.2
electrolytic tinplate
cold-reduced low-carbon steel sheet or coil coated on both surfaces with tin that is applied in a continuous electrolytic operation

[SOURCE: ISO 11949:2016, 3.2]

3.1.3
electrolytic chromium/chromium oxide-coated steel
cold-reduced low-carbon mild steel sheet or coil, electrolytically treated to produce on both surfaces a duplex film of metallic chromium adjacent to the steel substrate with a top layer of hydrated chromium oxide or hydroxide

[SOURCE: ISO 11950:2016, 3.2]

3.1.4
single cold-reduced
description of product in which the blackplate has been reduced to the desired thickness in a cold-reduction mill and subsequently annealed and temper rolled

[SOURCE: ISO 11949:2016, 3.4]

3.1.5
double cold-reduced
description of product in which the blackplate has had a second major reduction after annealing

[SOURCE: ISO 11949:2016, 3.5]

3.1.6
K plate
electrolytic tinplate, No. 50 or heavier tin coating, with good corrosion resistance

Note 1 to entry: The target value should meet the following requirements after four special tests, the pickling lag (PL), iron solution value (ISV), tin crystal size (TCS) and alloy-tin electrical coupling (ATC):

a) PLV ≤ 10 s;

b) TCS ≤ 9 grade;

c) ISV ≤ 20 μg;

d) ATC ≤ 0,12 μA/cm^2.

3.1.7
J plate
electrolytic tinplate, No. 50 or heavier tin coating, with good corrosion resistance

Note 1 to entry: The target value should meet the following requirements after three special tests, the pickling lag (PLV), iron solution value (ISV) and tin crystal size (TCS):

a) PL ≤ 10 s;

b) TCS ≤ 9 grade;

c) ISV ≤ 20 μg.

3.1.8
aluminium alloy
alloy with a mass fraction of aluminium greater than 50 %

3.1.9
coated tinplate
tinplate (3.1.1) strip or sheet coated with lacquer and cured at high temperature to form a film

3.1.10
coated tin free steel
electrolytic chromium (3.1.3) strip or sheet coated with lacquer and cured at high temperature to form a film

3.1.11
coated aluminium alloy
aluminium alloy (3.1.8) strip or sheet coated with lacquer and cured at high temperature to form a film

3.1.12
aluminium foil
very thin aluminium coil, strip or sheet made of aluminium and *aluminium alloy* (3.1.8) plate and strip after rolling

3.1.13
laminated steel
composite material with dual properties of organic polymer material and metal material formed by gluing a layer of polymer film on the surface of a *tinplate* (3.1.1) or chrome-plated steel sheet through the melting method

3.1.14
laminated aluminium
composite material with dual properties of organic polymer material and metal material formed by gluing a layer of polymer film on the surface of the *aluminium alloy* (3.1.8) sheet by melting

3.1.15
compound
sealing material formulated with latex or rubber, filler and tackifier

Note 1 to entry: The material is poured into the round ditch of the can lid in a slope shape inclined to the centre of the can lid. After forming a double crimp, it is filled in the gap at the bottom of the lid groove and squeezed on the first and second layers of the outer side of the crimp. The gap between the metal plates serves as a seal.

3.1.16
sealing gasket
plastic or rubber ring/pad with a certain thickness attached to the inner surface of the metal cap

3.2 Terms related to manufacturing technique

3.2.1
can body
principal part of the container (usually the side wall formed by the largest part of a single piece), which has a round, square or other shape

3.2.2
resistance welding
welding with pressure in which the heat necessary for welding is produced by resistance to an electrical current flowing through the welding zone

[SOURCE: ISO/TR 25901-3:2016, 2.2.1.7.1]

3.2.3
flanging
upper edge of the can that is flared out at right angles to the vertical axis of the can

3.2.4
roll-forming
cylinder formed by the can body plate after the rounding device, which has a gap of 4 mm to 6 mm on the side of the cylinder and is parallel along the length of the cylinder

3.2.5
necking
punching method for reducing the diameter of the open top of a cylindrical blank

3.2.6
embossing
printing process that uses a concave and convexity mould to form printed material deformation under a certain pressure to form a pattern on the surface

3.2.7
drawing
processing method that uses the extensibility of metal materials by drawing die to put a blank or semi-finished product of a certain shape into a mould to form an open hollow can

3.2.8
ink-jet printing
process of marking product information on can ends or labels with a printer

3.2.9
sealing of metal can
process in which semi-finished products are put into metal cans and sealed with a can-sealing machine

3.2.10
seaming roll
main part on a can seamer with two small round wheels with different curvatures around that forms the double-seam structure, in which the first roller is to roll the can *cover hook* (3.2.19) under the can body flange and roll them together, and the second roller is to press the first roller tightly, so that the curling is tightly combined with each other, and the sealant is filled inside the forming gap between the can body and the *cover hook* (3.2.19)

3.2.11
seaming rail
sealing accessory part of the high-speed sealing machine, which replaces the roller, forms a double seam and meets the sealing requirements

3.2.12
seaming chuck
part of the can sealing machine that can be embedded in the countersunk part of the can cover and support the combined part of the can cover and the can body with the peripheral side to resist the pressure of the sealing roller

3.2.13
base plate
part that lifts the can lid and the can body upward when the can sealing machine is running, so that the pressure head is embedded in the can lids, and the can body is stabilized to avoid sliding, so as to facilitate the formation of double curling and meet the sealing requirements

3.2.14
double seam
sealing structure formed by the operation of the first roller and the second roller to make the flanging of the can body and the hook of the cover (bottom) overlap each other and press tightly, which is composed of three layers of top (bottom) cover thickness and two layers of can body thickness

3.2.15
seam thickness
maximum external dimension measured across or perpendicular to the body and cover hook

3.2.16
seam height
seam length
seam width
maximum external dimension of a seam measured parallel to the body and end hook

3.2.17
countersink depth
distance from the top radius of the double seam to the bottom of the countersink radius

3.2.18
body hook
folding over of the body flange into an interlocking hook

3.2.19
cover hook
hook formed from the cover curl extending from the radius to an opposite (180°) radius

3.2.20
tab
ring-shaped or other shaped structure which is staked with the ends for easy opening

3.2.21
score
tear line pre-pressed or scored on the *easy-open ends* (3.5.22) for easy opening

3.2.22
rivet
fixed part of the *easy-open ends* (3.5.22) to rivet the retaining piece (pull ring)

3.2.23
curl
extreme edge of the can end which is turned inward when the double seam is formed to become the end hook

3.2.24
score repairing
repairing process at the score area of the end where the coating is destroyed during the formation of the score

3.3 Terms related to quality

3.3.1
length of overlap
actual overlap
measurement of how much the *body hook* (3.2.18) overlaps the *cover hook* (3.2.19)

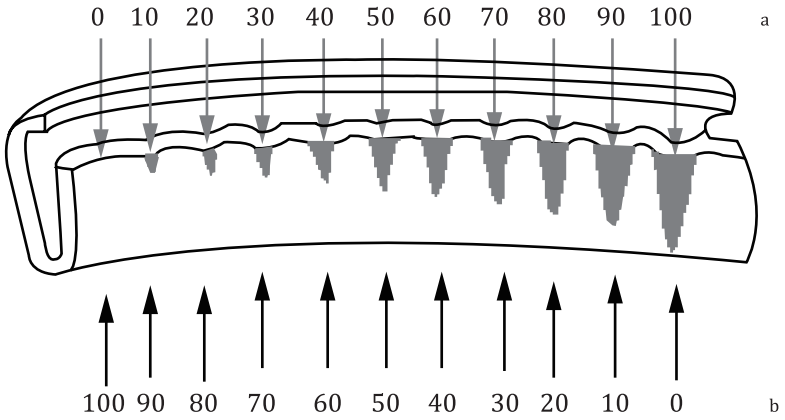
3.3.2
seam gap
place between the top of the body hook radius and the underside of the seaming panel

3.3.3
rate of overlap
percentage of overlap
ratio of the *length of overlap* (3.3.1) relative to the internal seam length, expressed as a percentage

3.3.4
wrinkle rating
WR
degree of waviness occurring in the *cover hook* (3.2.19) from which the degree of double seam tightness is determined

Note 1 to entry: Wrinkles are not included in the sealing process. The marks left after the wrinkles are rolled and smoothed.

Note 2 to entry: See Figure 1.



a Wrinkles.

b Tightness.

Figure 1 — Wrinkles and tightness

3.3.5
tightness rating
TR
measure of the degree of wrinkle left on the end hook on the completed double seam

Note 1 to entry: See Figure 1.

3.3.6
juncture rating
JR
percentage of the *cover hook* (3.2.19) metal available for overlap when it is interlocked with a *body hook* (3.2.18)

3.3.7
cover hook butting
CHB
percentage of the can *cover hook* (3.2.19) at the overlap of the seam to the theoretical *cover hook* (3.2.19) length

3.3.8
body hook butting
BHB
percentage of the can *body hook* (3.2.18) at the overlap of the seam to the theoretical *body hook* (3.2.18) length

3.3.9
ridge
continuous impression around the inside periphery of the can body in the double seam area formed by the seaming roll pressure

3.3.10
enamel rate value
ERV
evaluation of the undesired metal exposure by checking the integrity of the coating using current value

3.3.11
splash
spikes of metal extending from the weld due to excessive heating at the site of the spatter