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Light gauge metal containers — Easy-open ends and peel-off ends — Classification and dimensions

Récipients métalliques légers — Ouvertures faciles et extrémités détachables — Classification et dimensions

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Foreword

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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

Metal cans are important packaging for the food industry, as they provide a long shelf life for food and beverage products. They are used for canning vegetables and meat, as well as beer and carbonated drinks. The pull tab for beverage cans was invented in 1959 and easy-open ends with the pull tab have been included with various types of metal cans since the 1960s. The easy-open end solves the problem of how to open the can and is convenient and instant, which is what customers demand. It also allows more products (e.g. soup, juice, coffee) to be stored in metal packaging. There are many advantages to using metal cans such as strength, good sealing capacity and easy storage, and they are a convenient way to transport seasonal food and beverages around the world.

A large number of easy-open ends and peel-off ends are produced every year, and they have become an important part of the can manufacture industry. Along with thinner and lighter demands for metal food packaging, softer aluminium peel-off ends have been developed for use in some food cans and powder cans. They have improved the convenience and safety of opening the metal cans.

Light gauge metal containers — Easy-open ends and peel-off ends — Classification and dimensions

1 Scope

This document specifies classification and the key dimensions of easy-open ends and peel-off ends.

This document is applicable to the manufacture and sale of easy-open ends and peel-off ends for food and beverages made of metal plates such as tin, 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
easy-open end
end comprised of a sheet metal made of aluminium alloy, electrolytic tinplate or electrolytic chromium/chromium oxide coated steel, with a score line, and a tab attached by rivet for easy opening

3.2
peel-off end
end comprised of a metal ring and a film, which film is heat sealed onto the ring

4 Classification

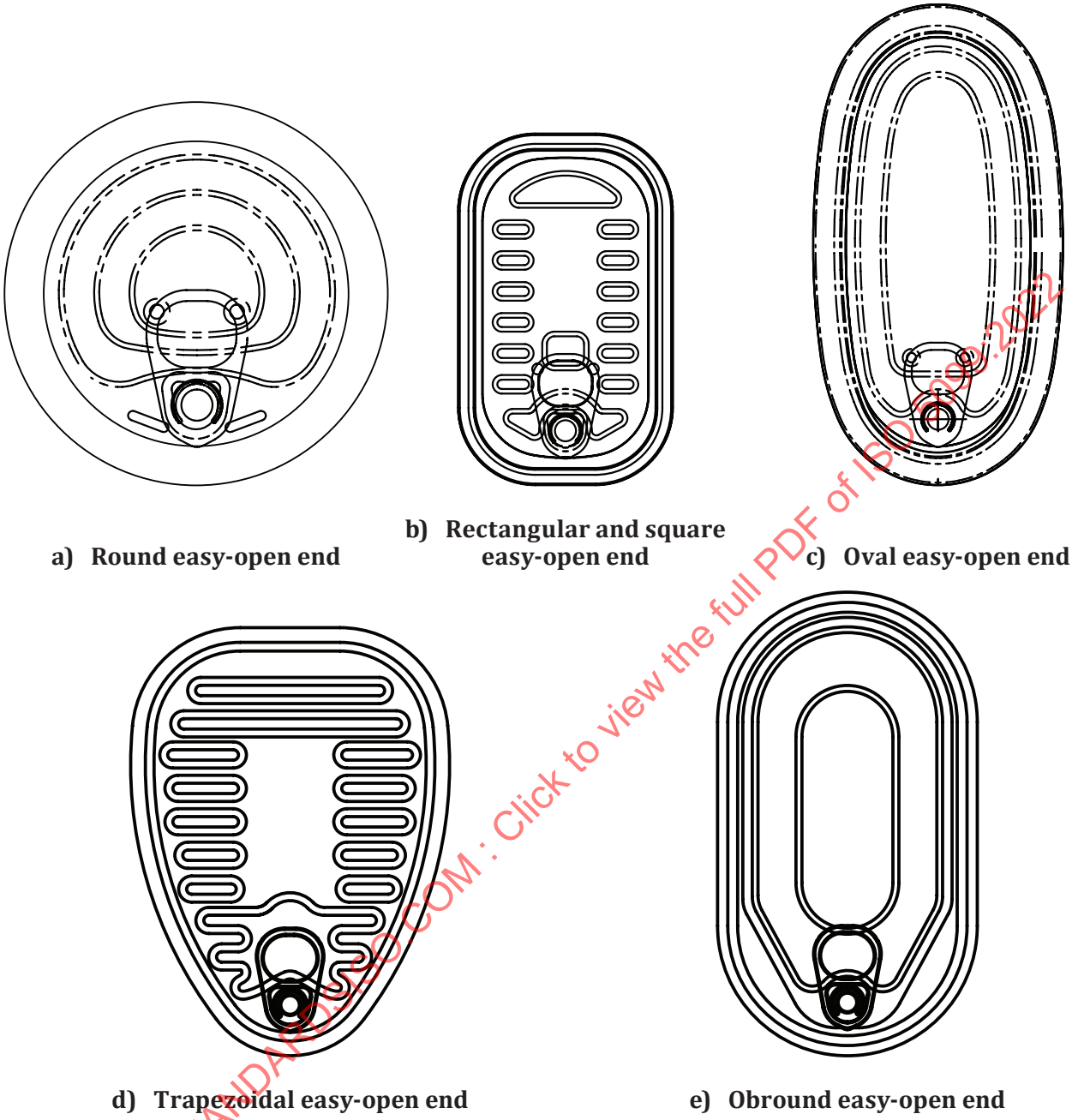
4.1 Easy-open ends

Easy-open ends comprise:

a) round easy-open ends, see Figure 1 a) for a top view, which comprise:
   1) round easy-open ends for food cans;
   2) round easy-open ends for beverage cans;
   3) round easy-open ends for solid food cans;

b) non-round easy-open ends, which comprise:
   1) rectangular and square easy-open ends, see Figure 1 b) for a top view;
   2) oval easy-open ends, see Figure 1 c) for a top view;
   3) trapezoidal easy-open ends, see Figure 1 d) for a top view;

4) obround easy-open ends, see Figure 1 e) for a top view.



a) Round easy-open end

b) Rectangular and square easy-open end

c) Oval easy-open end

d) Trapezoidal easy-open end

e) Obround easy-open end

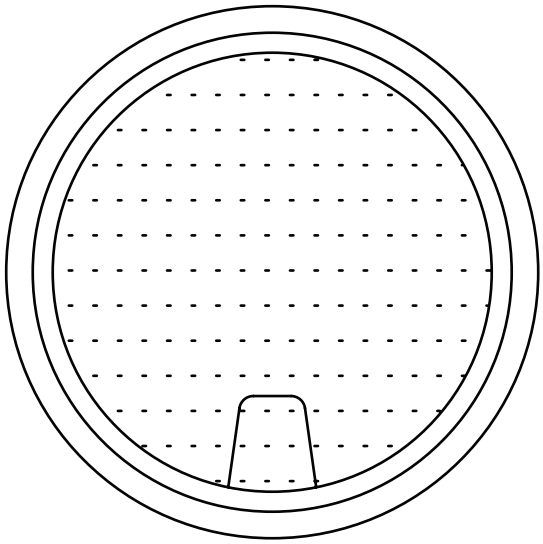
Figure 1 — Easy-open ends

4.2 Peel-off ends

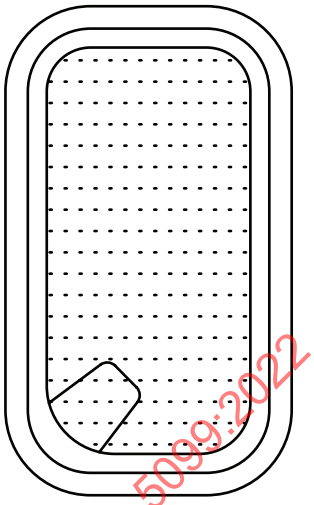
Peel-off ends comprise:

a) round peel-off ends, see Figure 2 a) for a top view;

b) rectangular and square peel-off ends, see Figure 2 b) for a top view.



a) Round peel-off end



b) Rectangular and square peel-off end

Figure 2 — Peel-off ends

5 Designation

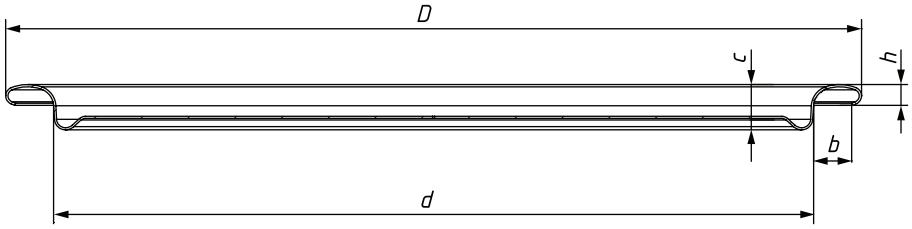
Easy-open ends and peel-off ends should be designated as follows:

— with the code letter:
  — “R” for round easy-open ends;
  — “Re” for rectangular and square easy-open ends;
  — “Ov” for oval easy-open ends;
  — “Tr” for trapezoidal easy-open ends;
  — “O” for obround easy-open ends;
  — “Rp” for round peel-off ends;
  — “Rep” for rectangular and square peel-off ends;

6 Dimensions

6.1 Key dimensions

See Figure 3 for key dimensions of easy-open ends and peel-off ends.



Key

d can/nominal diameter

NOTE For non-round easy-open ends and peel-off ends, d_1 is the long axis of the can diameter and d_2 is the short axis of the can diameter.

D curl diameter

c countersink depth

h curl height

b curl opening

Figure 3 — Key dimensions of easy-open ends and peel-off ends

6.2 Dimensions of easy-open ends

6.2.1 Round easy-open ends

6.2.1.1 Round easy-open ends for food cans

The recommended dimensions and tolerance of round easy-open ends for food cans are given in Table 1.

Table 1 — Recommended dimensions and tolerance of round easy-open ends for food cans

End size	Can diameter (d)/mm	Curl diameter (D)/mm	Curl height (h)/mm	Countersink depth (c)/mm	Curl opening (b)/mm
R200	49,50 ± 0,10	±0,10	±0,13	±0,13	≥ 3,10
R202	52,30 ± 0,10	±0,10	±0,13	±0,13	≥ 3,10
R209	62,50 ± 0,10	±0,15	±0,13	±0,13	≥ 3,10
R211	65,30 ± 0,10	±0,15	±0,13	±0,13	≥ 3,10
R214	69,90 ± 0,10	±0,15	±0,13	±0,13	≥ 3,10
R300	72,90 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R303	77,60 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R305	80,30 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R307	83,30 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R309	86,70 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R315	95,50 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R401	98,90 ± 0,20	±0,20	±0,13	±0,13	≥ 3,30
R403	102,40 ± 0,20	±0,20	±0,13	±0,13	≥ 3,30
R404	105,10 ± 0,20	±0,20	±0,13	±0,13	≥ 3,30
R603	153,40 ± 0,20	±0,20	±0,13	±0,13	≥ 3,50

6.2.1.2 Round easy-open ends for beverage cans

6.2.1.2.1 Round easy-open ends for two-piece beverage cans

The recommended dimensions and tolerance of round easy-open ends for two-piece beverage cans are given in Table 2.

Table 2 — Recommended dimensions and tolerance of round easy-open ends for two-piece beverage cans

End size	Can diameter (d)/mm	Curl diameter (D)/mm	Curl height (h)/mm	Countersink depth (c)/mm	Curl opening (b)/mm
R200	49,50 ± 0,10	±0,25	±0,25	±0,25	≥ 2,62
R202	52,30 ± 0,10	±0,25	±0,25	±0,25	≥ 2,62
R206	57,00 ± 0,10	±0,25	±0,25	±0,25	≥ 2,62

6.2.1.2.2 Round easy-open ends for three-piece beverage cans

The recommended dimensions and tolerance of round easy-open ends for three-piece beverage cans are given in Table 3.

Table 3 — Recommended dimensions and tolerance of round easy-open ends for three-piece beverage cans

End size	Can diameter (d)/mm	Curl diameter (D)/mm	Curl height (h)/mm	Countersink depth (c)/mm	Curl opening (b)/mm
R113	46,30 ± 0,10	±0,10	±0,13	±0,13	≥ 2,50
R200	49,50 ± 0,10	±0,10	±0,13	±0,13	≥ 3,07
R202	52,30 ± 0,10	±0,10	±0,13	±0,13	≥ 3,07
R206	57,00 ± 0,10	±0,10	±0,13	±0,13	≥ 2,72
R209	62,50 ± 0,10	±0,10	±0,13	±0,13	≥ 3,07

6.2.1.3 Round easy-open ends for solid food cans

The recommended dimensions and tolerance of round easy-open ends for solid food cans are given in Table 4.

Table 4 — Recommended dimensions and tolerance of round easy-open ends for solid food cans

End size	Can diameter (d)/mm	Curl diameter (D)/mm	Curl height (h)/mm	Countersink depth (c)/mm	Curl opening (b)/mm
R211	65,30 ± 0,10	±0,15	±0,13	±0,13	≥ 3,10
R300	72,90 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R307	83,30 ± 0,15	±0,15	±0,13	±0,13	≥ 3,30
R401	98,90 ± 0,20	±0,20	±0,13	±0,13	≥ 3,30
R502	126,50 ± 0,20	±0,20	±0,13	±0,13	≥ 3,50
R603	153,40 ± 0,20	±0,20	±0,13	±0,13	≥ 3,50

6.2.2 Non-round easy-open ends

The recommended dimensions and tolerance of non-round easy-open ends are given in Table 5.