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Steel refuse bins — Specification

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 505 was prepared by Technical Committee RSB/TC 047, *Steel, aluminium and related products*.

In the preparation of this standard, reference was made to the following document:

- 1) SANS 493:2009, *Steel refuse bins*

The assistance derived from the above source is hereby acknowledged with thanks.

Committee membership

The following organizations were represented on the Technical Committee on *Steel, aluminium and related products* (RSB/TC 047) in the preparation of this standard.

Chillington Rwanda Ltd

Eastern Hope Ltd

Herocean Ltd

Integrated Polytechnic Regional Centre (IPRC) — Kigali

Kabuye Sugar Works Ltd

Kamuru Trading Company Ltd

Madras Material Ltd

MANUMETAL Ltd

Real Contractors Ltd

Roofing Ltd

Rwanda Consumer's Rights Protection Organization (ADECOR)

Standards for Sustainability (SfS)

University of Rwanda—College of Science and Technology (UR-CST)

Rwanda Standards Board (RSB) – Secretariat

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Steel refuse bins — Specification

1 Scope

This Draft Rwanda Standard specifies requirements, sampling and test methods for steel refuse bins with removable lids and nominal capacities of 85 L and 57 L.

NOTE Requirements that must be specified by the purchaser are listed in Annex B.

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.

ASTM A653, *Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process*

RS ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods*

3 Terms and definitions

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

3.1

defective

bin or lid that fails in one or more respects to comply with the appropriate requirements of the specification

3.2

lot

at least 10 and not more than 8 000 items (each item comprising a bin complete with lid) or not more than 8 000 bins or lids (if these are supplied separately), of the same size, from one manufacturer, submitted at any one time for inspection and testing refuse household and other refuse, excluding hot ashes and live coals

4 Requirements

4.1 Materials requirements

4.1.1 Steel

All plates, hoops, handles, rivets, and weld metal used in the construction of bins and lids shall be of mild steel of the appropriate thickness specified.

4.1.2 Coating

Steel refuse bins and lids shall be coated to protect it from corrosion. When a zinc coating is used, its composition of the zinc used in the coating of the bins and lids shall be such as to allow the bins and lids to comply with the requirements of 4.3.6.

4.2 Size and dimensions

4.2.1 Size

The bins shall have a nominal capacity of 85 L or 57 L, as specified by the purchaser.

4.2.2 Bins and lids

The dimensions of finished bins and lids shall conform to the appropriate values given in Table 1.

Table 1 — Dimensions of bins and lids (with zinc coating), see Figure 1

1	2	3	4	5	6	7
Bin size	Bin dimensions			Lid dimensions		
	Top internal diameter	Bottom internal diameter	Internal depth	Internal diameter	Internal depth of skirt	Height of doming
L	A	B	C ^a	D ^b	E ^c	R, min.
85	455±4	394±4	610±7	495±6	40	13
57	428±4	362±4	460±7	483±6	45	13

^aMeasured vertically between the top of the bin and a point on the bottom 7 mm away from the side wall.
^bIf a closer fitting lid is required, a lid of the dimensions specified for the 57 L bin should be used.
^cMeasured at a position 15 mm away from the inner face of the skirt.

Dimensions in millimetres

1	2	3	4	5	6	7
Bin size	Bin dimensions			Lid dimensions		
	Top internal diameter	Bottom internal diameter	Internal depth	Internal diameter	Internal depth of skirt	Height of doming
L	A	B	C ^a	D ^b	E ^c	R, min
85	455 ± 4	394 ± 4	610 ± 7	495 ± 6	40	13
57	428 ± 4	362 ± 4	460 ± 7	483 ± 6	45	13
^a Measured vertically between the top of the bin and a point on the bottom 7 mm away from the side wall. ^b If a closer fitting lid is required for a 85 L bin, a lid of the dimensions specified for the 57 L bin should be used. ^c Measured at a position 15 mm away from the inner face of the skirt.						

4.2.3 Handles

The dimensions of the finished lid and bin handles shall conform to the values given in columns 5, 6, 8, 9, and 10 of Table 2. The cross-section of the grip portion of the bin handles shall be circular and that of the lid handles rectangular.

Table 2 — Dimensions of handles and of bins and lids (with zinc coating, see Figure 2)

Dimensions in millimetres

1	2	3	4	5	6	7	8	9	10
Bin size	Bin handles						Lid handles		
	Clear distance to top of bin H		Clearance between handle and side of bin I, min.	Length of straight portion of grip M, min.	Diameter of grip portion J, min.	Clearance between handle and top of lid F, min.	Length of straight portion of grip G, min.	Grip portion	
	max.	min.						Width K, min.	Thickness L, min.
85	185	178	50	100	8	30	95	19	2,0
57	140	133	50	100	8	30	95	19	2,0

4.2.4 Thickness of plates

The thicknesses of the plates (prior to zinc coating) used in the manufacture of the lid, the side, and bottom of bins, and for the bottom reinforcing hoops shall conform to the appropriate values given in Table 3.

Table 3 — Thickness of plate (prior to zinc coating)

1	2	3	4	5
Bin size	Plate thickness mm, min.			
	Bin side	Bin bottom	Bottom reinforcing hoop	Lid
L				
85	1,00	1,20	3,00	0,80
57	0,80	1,00	3,00	0,80

4.3 Construction

4.3.1 Upper part of the bin

The rim of bins shall have a bead, of external diameter $8 \text{ mm} \pm 2 \text{ mm}$ that is such that after the zinc coating has been applied, the width of the gap between the bead and the side of the bin does not exceed 1 mm. There shall be a projection rolled in the side of the bin below the bead, positioned and of the dimensions as shown in Figure 3. The handles shall be diametrically opposite to each other in a 15 mm interval.

4.3.2 Bottom (refer to Figure 4)

The radius of curvature of the bottom (where it meets the side) shall be at least 6 mm. The bottom shall have a reinforcing hoop whose ends are joined by welding. The hoop (and its attachment to the bin) shall be such that the lower edge of the hoop does not deviate from plane by more than 5 mm and that the clearance between the bottom of the bin and the plane of the lower edge of the hoop is at least 8 mm.

4.3.3 Seams

Seams shall be either welded or folded. There shall be one seam only in the side-wall and the seam between the side and bottom of the bin shall not extend above the upper edge of the bottom hoop by more than 13 mm (Refer to Figure 4).

4.3.4 Nesting

Each bin shall have a positive stop (such as afforded by the handles) that is such that when two bins of the same size are nested together and are then inverted, the inner bin falls out under its own weight.

4.3.5 Lids

The lid shall be made of one piece of sheet to which the handle is secured. The edge of the skirt shall have a bead, of external diameter $8 \text{ mm} \pm 2 \text{ mm}$ that is such that, after the zinc coating has been applied, the width of the gap between the bead and the surface of the skirt does not exceed 1 mm.

4.3.6 Workmanship

The internal surfaces of the bin shall not be corrugated and shall be free from surface irregularities of depth or height exceeding 2 mm (other than those caused by the markings required in terms of section 4, by rivet heads, by seams, and by the rolled projection specified in 4.3.1).

4.3.7 Finish

Each bin and lid shall be completely covered by a zinc coating that complies with the requirements of RS ISO 1461 and ASTM A653 for zinc coatings.

4.4 Strength

4.4.1 Rigidity of the bottom

After a bin has been tested in accordance with 6.2, the clearance between the bottom of the bin and the plane of the lower edge of the bottom reinforcing hoop shall be at least 8 mm.

4.4.2 Resistance to edge drops

After a bin has been tested in accordance with 6.3:

- a) when the sand is removed and the bin is half-filled with water, the rate of any leakage of the water shall not exceed half a litre in 2 min; and
- b) there shall be no fracture of weld or plate metal other than cracks in welds that extend across less than 10 % of the greatest length of the weld or across 3 mm, whichever is the lesser.

4.4.3 Strength of handles

When a bin is tested in accordance with 5.3, the handles may become bent but there shall be no fracture of a weld or tearing of the parent metal.

5 Test methods

5.1 Rigidity of the bottom

Measure the clearance between the bottom of the bin and the plane of the lower edge of the bottom reinforcing hoop. Load the bin with sand to the appropriate of the following masses:

Table 4 — Test methods for the rigidity of bin bottom

S/N	Bin size L	Gross mass kg
	85	90±1

	57	60±1
--	----	------

Secure the lid in place and drop the bin, in a vertical position from a height of 300 mm ± 10 mm, ten times onto a steel plate (of thickness at least 12 mm and width at least 500 mm) that is superimposed on a plane concrete slab of thickness at least 75 mm. Between drops make good sand lost during the previous drop. After ten drops re-measure the clearance between the bottom of the bin and the plane of the lower edge of the bottom hoop.

5.2 Resistance to edge drops

Re-load the bin as per 5.1 and so secure the lid on the bin so as to minimize the sand lost in the test. Raise the bin by one handle so that the lowest point of the bottom hoop is 1 050 mm ± 15 mm above the plate and allow the bin to drop, but prevent the bin from falling over onto either of its handles after contact with the plate. Repeat the drop using the other handle, and continue dropping the bin from alternate handles until a total of six drops has been made, making good, between drops, sand lost during the previous drop. Then remove the sand from the bin, examine it for compliance with 4.4.2(b) and fill it, to half its nominal capacity, with water and check for compliance with 4.4.2(a).

5.3 Test for strength of handles

5.3.1 Bin handles

After subjecting the bin to the tests given in 5.1 and 5.2, secure it (empty) in an upright position and so drop a flat-bottomed mass of 9 kg from a height of 300 mm ± 10 mm that it strikes the centre of the grip portion of one handle of the bin. Invert the bin and secure it in the upside-down position and drop the mass onto the same handle in a similar manner as before. Repeat the above drops until a total of 14 drops has been applied, 7 in each direction, to one handle. Repeat the test on the other bin handle, and then examine the bin and handles for compliance with 4.4.3.

5.3.2 Lid handles

Secure the lid, standing on the lower edge of its skirt, with the handle horizontal. Then, drop the mass used in 5.4.1 from the same height that it strikes the edge of the grip portion of the handle. Rotate the lid and repeat the drop onto the other edge of the grip of the handle. Repeat the above drops until a total of 8 drops has been applied, 4 to each edge of the handle, and then examine the handle and lid for compliance with 4.4.3.

5.3.3 Tests for zinc coating

After subjecting a bin to the tests given in 5.1, 5.2, and 5.3, cut specimens from the side and bottom of the bin and from the lid, and use the relevant methods given in RS ISO 1461 and ASTM A653 to test for compliance with 4.3.6.

6 Marking

Each steel refuse bin and lid shall be indelibly and legibly marked with the following information:

- a) trademark, name or symbol identifying the manufacturer;

- b) capacity in litres;
- c) steel grade used to manufacture the refuse bin; and
- d) dimensions.

7 Inspection, sampling and compliance

7.1 Inspection

Each item sampled in accordance with 7.2 and 7.3 shall be visually examined and measured for compliance with all the relevant requirements with which compliance is not assessed by testing.

NOTE Sampled item means bin and/or lid.

7.2 Sampling

Sampling plan (Table 5) shall be used for inspection and testing before acceptance or rejection of single lots (consignments). It shall also be used in cases of dispute.

The following sampling procedure shall be applied in determining whether a lot meets the requirements of the specification. The samples so taken shall be deemed to represent the lot for the respective properties.

From the lot taken at random, the number of items, or bins, or lids (as relevant), shown in columns 2 and 3 of Table 4 relative to the appropriate lot size shown in column 1.

NOTE The sample for testing may be taken from the inspection sample after it has been inspected.

7.3 Compliance

The lot shall be deemed to comply with the requirements of this specification, if after inspection and testing of the samples taken in accordance with 7.2, the numbers of defectives found do not exceed the corresponding acceptance numbers shown in columns 4 and 5 respectively of Table 5.

Table 5 — Lot size and sample size

1	2	3	4	5
Lot size items, bins, or lids ^a	Sample size items, bins, or lids ^a		Acceptance number	
	For inspection	For testing	For inspection	For testing
10 – 65	2	1	0	0
66 – 110	3	2	0	0
111 – 180	5	2	0	0
181 – 300	7	3	1	1
301 – 500	10	3	1	1
501 – 800	15	3	1	1
801 – 1 300	25	4	2	1
1 301 – 3 200	35	4	2	1
3 201 – 8 000	50	5	3	2

^a As relevant.

8 Order information

The following information shall be specified in the order or contract for steel refuse bins:

- a) the size (refer 4.2.1); and
- b) marking requirements (refer to 6).

Annex A
(informative)

Illustration of refuse bins designs

A.1 Designs

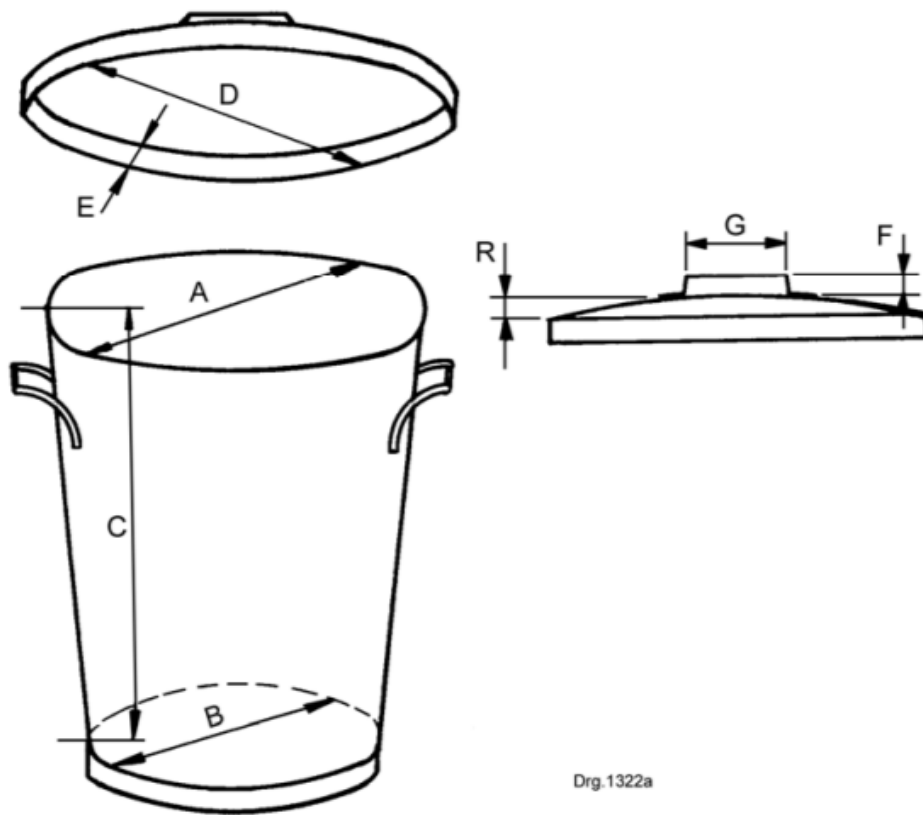
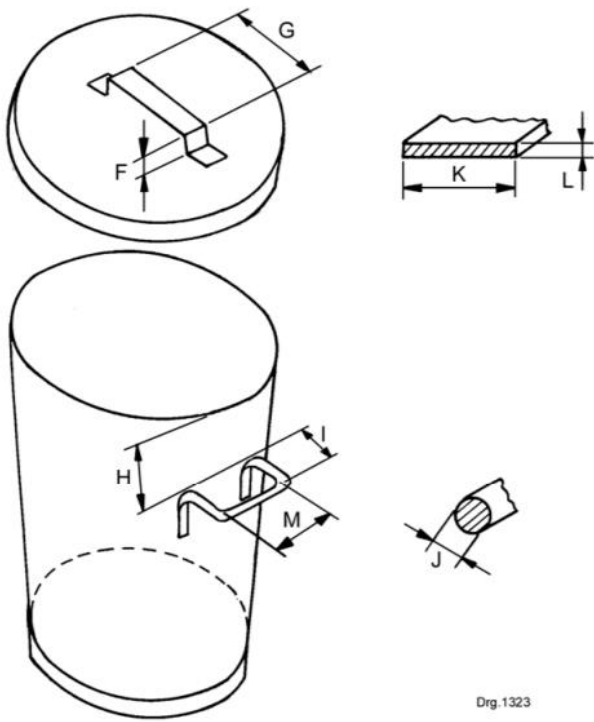


Figure 1 — Illustration of designs of bins and lids

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ments

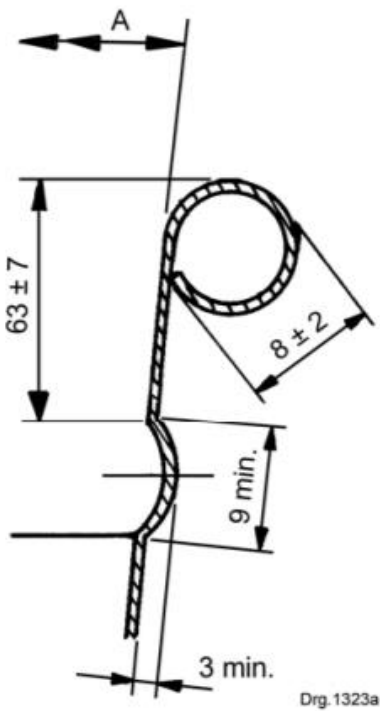


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Figure 2

lic comments

Dimensions in millimetres



Drg.1323a

Figure 3

Dimensions in millimetres

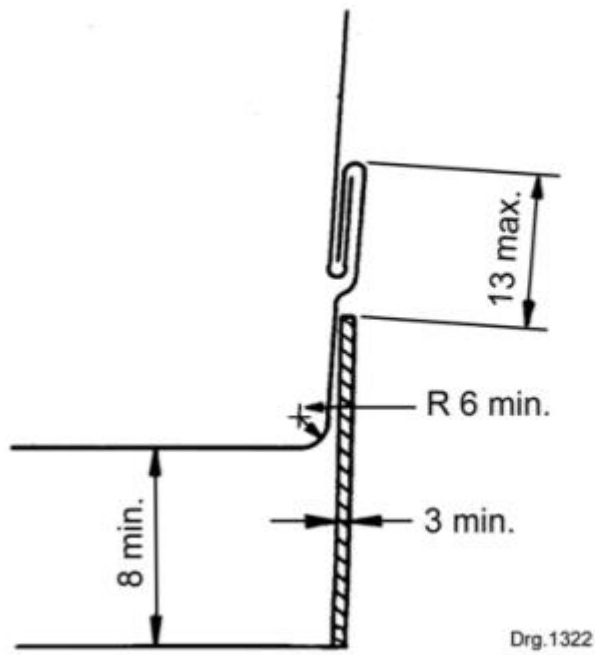


Figure 4

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Annex B
(normative)

Notes to purchasers

The following requirements shall be specified in tender invitations, order or contract:

- a) the size (see 4.2.1); and
- b) when relevant, the additional markings (see 6).

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Bibliography

[1] SANS 32/EN 10240 *Internal and/or external protective coatings for steel tubes – Specification for hot dip galvanized coatings applied in automatic plants*

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