

මෙය රාජ්‍ය භාෂාවෙන් වෙනම මුද්‍රණය කර ඇත.

ශ්‍රී ලංකා ප්‍රමිති 306 : 1974
SRI LANKA STANDARD 306 : 1974
විෂව දශම වර්ග කිරීම UDC 669.14.41:669.586

උණු හිල්ලු ගැල්වනික වානේ
(තල හා රැළි) තහඩු පිලිබඳ පිරිවිතර

SPECIFICATION FOR HOT-DIPPED
GALVANISED STEEL SHEETS
(PLAIN AND CORRUGATED)

ලංකා ප්‍රමිති කාර්යාංශය
BUREAU OF CEYLON STANDARDS

**SPECIFICATION FOR HOT-DIPPED
GALVANISED STEEL SHEETS
(PLAIN AND CORRUGATED)**

S. L. S. 306 : 1974

Gr.4
~~XXXXXXXXXXXX~~

Copyright Reserved

**BUREAU OF CEYLON STANDARDS
53, DHARMAPALA MAWATHA,
COLOMBO 3.**

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This Standard does not purport to include all the necessary provisions of a contract.

**BUREAU OF CEYLON STANDARDS
53, DHARMAPALA MAWATHA,
COLOMBO-3.**

Telephone : 26055
26054
26051

Telegrams : "PRA MIKA"

**SRI LANKA STANDARD SPECIFICATION FOR
HOT-DIPPED GALVANISED STEEL SHEETS
(PLAIN AND CORRUGATED)**

FOREWORD

This Sri Lanka Standard has been prepared by the Drafting Committee on Galvanised Iron Sheets. It was approved by the Mechanical Engineering Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 31st October 1974.

In the preparation of this standard due consideration has been given to manufacturing practices prevalent in Sri Lanka in this field.

Galvanised steel sheets (plain and corrugated) covered by this standard are intended to be used for general building purposes, such as penelling and roofing, and could also be used for other general purposes.

The Standard values for dimensions and other requirements are given in both Metric (SI) and Imperial units. It should be noted that the Metric and Imperial values are not equivalent to each other. It is intended that the galvanised steel sheets industry will adopt the dimensions given in the metric system in due course.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value observed or calculated expressing the result of a test, or observation shall be rounded off in accordance with C. S. 102 : Ceylon Standard on Presentation of Numerical Values. The number of figures to be retained in the rounded off value shall be the same as that of the specified value in this standard.

Appendix D dealing with overlap of sheets at the sides, has been included to give guidance to the purchaser in calculating the number of sheets required for any particular coverage.

In the preparation of this standard, references has been made to the publications of British, Indian, Japanese and Australian Standards Institutions, and the assistant gained thereby is acknowledged.

PART 1 — GENERAL REQUIREMENTS

1. SCOPE

This standard covers the materials, profiles, dimensions and tolerances on dimensions, test methods, and method of sampling of hot dipped galvanised sheets — plain and corrugated.

2. TERMINOLOGY

For the purpose of this standard, the following definitions shall apply :

- 2.1 **Black Sheet**—Hot rolled steel sheet prior to pickling operation.
- 2.2 **Cold rolled sheet or coil**—Cold rolled sheet or coil prior to continuous galvanising process.
- 2.3 **Thickness of galvanised sheet**—Thickness of black or cold rolled sheet.
- 2.4 **Cover width of corrugated sheet**—Distance between the crowns of the outside corrugation.

3. MATERIAL

- 3.1 The steel sheets shall be rolled from good quality low carbon mild steel containing not less than 0.08 percent carbon, by any suitable process, which shall be free from cracks, pittings, blisters, laminations, twists, scales and other surface defects.
- 3.2 The sheets or coils required for galvanising shall in all cases be either annealed or normalised unless otherwise specified by the purchaser.
- 3.3 The ultimate tensile strength of the sheet or coil after annealing and before galvanising shall not be less than 390 MPa or 25.5 tonf/in².

4. MANUFACTURE

- 4.1 Galvanising shall be carried out by first pickling the black sheets or by pickling and/or cleaning the cold rolled sheets or coils in line, and then dipping them in a bath of molten zinc at a temperature suitable to produce a complete and uniformly adhesive coating of zinc.

5. MARKING

- 5.1 Each sheet shall be marked with the manufacturer's name, trade mark, thickness and the mass of zinc coating per unit area.

6. INSPECTION

- 6.1 The manufacturer shall provide the purchaser or his representative all reasonable facilities to satisfy that the sheets conform to the standard.

- 6.2 Inspections shall be made at the place of manufacture prior to despatch and shall be conducted as not to interfere with the operation of manufacture.

7 TEST CERTIFICATE

- 7.1 Where tests, as agreed between the purchaser and the supplier, have been performed by the manufacturer for the purpose of establishing compliance with this specification, the supplier shall provide a certificate showing such test results as may be required by agreement between the purchaser and the supplier.
- 7.2 Where a tensile test is required, the position of the tensile test piece in relation to the direction of rolling shall be indicated on the test certificate.

PART 2 — SPECIFIC REQUIREMENTS

SCHEDULE A — PLAIN SHEETS

8. THICKNESS OF SHEETS AND MASS OF ZINC COATING

Galvanised sheets shall have thickness and mass of zinc coating per unit area as given in Table 1 M or Table 1.

TABLE — 1 M
THICKNESS OF SHEETS AND MASS OF ZINC COATING
(UNIT : METRIC)

Thickness of Sheet mm	Mass of zinc coating per unit area g/m ²
0.20	185
0.25	185
0.32	215
0.36	215
0.45	245
0.56	305
0.71	305
0.85	380
1.25	380
1.60	380

TABLE I
THICKNESS OF SHEETS AND MASS OF ZINC COATING
(UNIT : IMPERIAL)

Thickness of Sheets	Mass of zinc coating per unit area oz/ft ²
B. W. G. No.	
35*	0.60
32	0.60
30	0.70
28	0.70
26	0.80
24	1.00
22	1.00
20	1.25
18	1.25
16	1.25

9. DIMENSIONS OF PLAIN SHEETS

9.1 The plain sheets shall conform to the dimensions given in Tables 2 M or 2.

TABLE 2 M

Length in m	Width in m
1.80	0.90 or 1.20
2.40	0.90 or 1.20

TABLE 2

Length in inches	Width in inches
72	36 or 48
96	36 or 48

9.2 The sheets may also be supplied in sizes other than specified above as per agreement between the purchaser and manufacturer.

9.3 The diagonal distances between the opposite corners of any sheet shall not differ by more than 20 mm or 0.8 inches.

* **Note:-** The thickness of sheet marked with an asterick refers to Unified Standard gauge.

10. TOLERANCES OF SHEETS AND COILS

- 10.1** No plain sheets shall be smaller in length than the specified dimensions. A maximum tolerance of plus 0.5 percent in length may be allowed.
- 10.2** The tolerances on the thickness of plain sheets and coil shall be as given in Table 3 M or 3.
- 10.2.1** The thickness measurement shall be made at any arbitrary point 50 mm or 2.0 in. from the side edge of the sheet.

TABLE 3 M — TOLERANCE ON THE THICKNESS OF PLAIN SHEET AND COIL (UNIT : METRIC)

Over mm	up to mm	Tolerance on Thickness \pm mm
—	0.45	0.05
0.45	0.56	0.08
0.56	0.71	0.09
0.71	1.25	0.10
1.25	above	0.15

TABLE 3 — TOLERANCE ON THICKNESS OF PLAIN SHEET AND COIL (UNIT : IMPERIAL)

over in.	up to in.	Tolerance on Thickness \pm in.
—	0.015	0.0020
0.015	0.019	0.0031
0.019	0.024	0.0035
0.024	0.049	0.0039
0.049	above	0.0059

SCHEDULE B — CORRUGATED SHEETS**11. FREEDOM FROM DEFECTS**

- 11.1** Galvanised corrugated sheets shall be free from twist or buckle and shall have uniform corrugations, true in depth and pitch and parallel to the sides of the sheets. The galvanised coating shall be clean, even and free from ungalvanised spots and defects.

S.L.S. 306 : 1974

11.2 The coating adherence shall be such that there is no flaking of the zinc coating by the corrugation of the sheets.

12. THICKNESS OF SHEETS AND MASS OF ZINC COATING

12.1 The sheets used for corrugating shall have the thickness and mass of coating as specified in Table 1 M or 1.

13. DIMENSIONS

The sheets shall be of the sizes as given in Tables 4M and 4.

TABLE 4M

DIMENSIONS OF CORRUGATED SHEETS (UNIT : METRIC)

Length in m	Cover width in m
1.80	0.60
2.10	0.60
2.40	0.60
2.70	0.60
3.00	0.60

**TABLE 4 — DIMENSIONS OF CORRUGATED SHEETS
(UNIT : IMPERIAL)**

Length in inches	Cover width in inches
72	24
84	24
96	24
108	24
120	24

13.2 The sheets may also be supplied in sizes and/or corrugations other than specified above as per agreement between the purchaser and the manufacturer.

13.3 Corrugation—The nominal depth of corrugation shall be 18 mm or 0.7 in and shall have a nominal pitch of 75 mm or 3.0 in.

14. TOLERANCES ON DIMENSIONS

14.1 No sheet shall be smaller in length than the specified dimension. A maximum tolerance of plus 0.5 percent in length may be allowed.

14.2 The diagonal distances between the opposite corners of any sheet shall not differ by more than 20 mm or 0.8 in.

- 14.3 The tolerance on cover width shall be ± 5 mm or 0.2 inches.
- 14.4 Tolerance on the thickness shall be as for plain sheets in Tables 4M or 4.
- 14.5 **The tolerance on corrugations** — The corrugations shall be subject to the following tolerance.
- On depth ± 1.5 mm or 0.06 in.
 - On pitch ± 2.0 mm or 0.08 in.
- On overall width after corrugation ± 15 mm or 0.6 in.
- 14.5.1 The depth of corrugation shall be the average value of measurements at 3 points.
- 14.5.2 The pitch of corrugation shall be applicable to the average value of 5 pitches for corrugated sheets.

15. SAMPLING

Representative samples shall be drawn and their criteria for conformity shall be determined in accordance with Appendix E.

APPENDIX A

BENDING TEST

- A—1 **Test Sample**—Test samples shall be drawn in accordance with Appendix E.
- A—2 The test pieces shall have a width of 75 mm to 125 mm of suitable length, and unless specified, two test pieces shall be taken from the test sheet cut parallel to the rolling direction, where of the size of the sheet permits. The test pieces shall be cut from within the boundary formed by lines 50 mm from the sides and 100 mm from the ends of the sheet.
- A—3 The process of the bending shall as a rule, be in the direction at right angles to the rolling of the base sheet.
- A—4 **Test**—The test piece shall be bent at room temperature over a radius of $2T$ (where T is the thickness of the material) until the two legs of the test sample are parallel to each other. The test piece shall be deemed to pass the test if the outer convex surface is free from flaking of the coating. (Flaking of the coating within 6 mm from the edge of the test piece, shall be disregarded).

NOTE—Crasing or roughening of the zinc coating shall not be a cause for rejection.

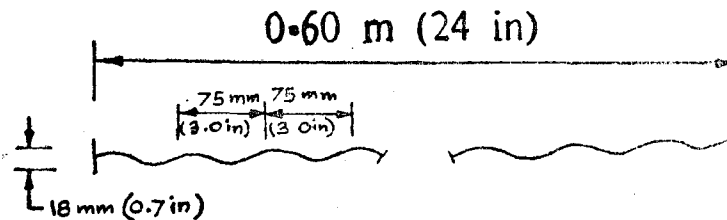
APPENDIX B

COATING TEST

- B—1 Mass of zinc coating**—The mass of coating shall be the total mass of zinc on both sides of the sheet before corrugating, expressed as g/m^2 of the flat sheet.
- B—2 Test Samples**—Test samples shall be drawn in accordance with Appendix E. The preparation of the test pieces shall be carried out in accordance with C. S. 121—1971*
- B—3 Determination of mass of zinc coating**—The test for determining the mass of zinc coating on galvanised steel sheets shall be carried out in accordance with C. S. 121 — 1971*

APPENDIX C

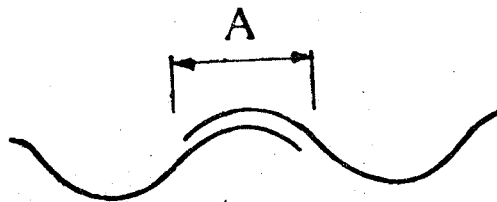
- C—1 Profile and cover width**—Sheets shall possess the profile and have the cover width shown below :—



APPENDIX D

OVERLAP OF CORRUGATED SHEETS AT SIDES.

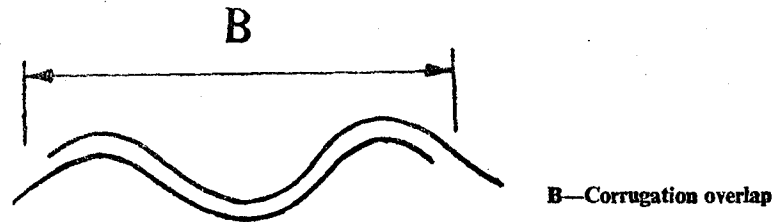
- D—1 Corrugation overlap**—This overlap is as shown in Fig. 1. The sheets have the edge corrugations turned downwards.



A—Corrugation overlap

*C. S. 121 — 1971 — Method of testing weight, thickness, and uniformity of coating on hot dipped galvanised articles.

D—2 Corrugation overlap—This overlap is as shown in Fig. 2. The sheets have both edges turned downwards.



APPENDIX E

E—1 Scale of sampling

E.1.1 Lot—In any consignment all the galvanised sheets of the same thickness and manufactured under essentially the same conditions shall be grouped together to constitute a lot.

E.1.2 Defective Sheet—A sheet failing in one or more of requirements specified in this standard shall be called a defective sheet.

E.1.3 Samples shall be selected at random and tested for each lot for ascertaining the conformity of the galvanised sheets to the requirement of this specification.

E.1.4 In order to ensure the randomness of selection of these sheets random number tables shall be used. In case the tables are not available, the following procedure shall be adopted. Starting from any sheet count them as 1,2,3 upto r and so on. Every r th sheet thus counted shall be chosen, r being the integral part of L/N where L is the total number of sheets in the lot and N is the sample size.

E—2 Criterion for conformity

The actual number of sheets to be selected from a lot shall be in accordance with the Table E 1 where N_1 is the size of the first sample. If the number of defectives found in this sample is less than or equal to C_1 the lot shall be considered as conforming to the requirement of the standard. If the number of defectives is equal or greater than C_2 the lot shall be considered as not

S.L.S. 306 : 1974

conforming to the standard. If the number of defectives in the 1st sample lies between C_1 and C_2 , a further sample of N_2 sheets shall be taken and tested. If the number of defectives in the two samples combined (i.e. in $N_1 + N_2$) is less than C_2 the lot shall be considered as conforming to the requirements of the standard, otherwise the lot shall be considered as not conforming to the requirements of the standard.

TABLE E 1
SAMPLING PLAN

Lot size	First Sample N_1	Second Sample N_2	$N_1 + N_2$	Acceptance No. C_1	Rejection No. C_2
Upto 200	2	2	4	0	2
201 — 500	3	3	6	0	3
501 and above	5	5	10	1	3

BUREAU OF CEYLON STANDARDS

The Bureau of Ceylon Standards (BCS) is the national standards organisation of Sri Lanka and was established by the Hon. Minister of Industries and Fisheries, as provided for by the Bureau of Ceylon Standards Act. No. 38 of 1964.

The principal objects of the Bureau as set out in the Act are to promote standards in industry and commerce, prepare national Standard Specifications and Codes of Practice and operate a Standardisation Marks Scheme and provide testing facilities, as the need arises.

The Bureau is financed by Government grants and the sale of its publications. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The detailed preparation of Standard Specifications is done by Drafting Committees composed of experts in each particular field assisted by permanent officers of the Bureau. These Committees are appointed by Divisional Committees, which are appointed by the Council. All members of the Drafting and Divisional Committees render their services in an honorary capacity. In preparing the Standard Specifications, the Bureau endeavours to ensure adequate representation of all view points.

In the International field the Bureau represents Sri Lanka in the International Organisation for Standardisation (ISO) and will participate in such fields of Standardisation as are of special interest to Sri Lanka.

