Designation: B744/B744M – 15

Standard Specification for Aluminum Alloy Sheet for Corrugated Aluminum Pipe[1]

This standard is issued under the fixed designation B744/B744M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers aluminum alloy sheets used in the fabrication of corrugated aluminum pipe intended for use for storm water drainage, underdrains, culverts, and similar uses. The material is furnished corrugated in cut lengths, and uncorrugated in coils and cut lengths.

1.2 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate

B209M Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)

B666/B666M Practice for Identification Marking of Aluminum and Magnesium Products

2.2 *American National Standards:*[2]

H35.2 Dimensional Tolerances for Aluminum Mill Products

H35.2M Dimensional Tolerances for Aluminum Mill Products [Metric]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *fabricator, n*—the producer of the pipe.

3.1.2 *manufacturer, n*—the producer of the sheet.

3.1.3 *purchaser, n*—the purchaser of the finished pipe.

4. Ordering Information

4.1 Orders for materials under this specification shall include the following information:

4.1.1 Name of material (aluminum alloy sheet for corrugated aluminum pipe),

4.1.2 This specification designation (including number, year, and revision letter if applicable), as ASTM B744 – ____ for inch-pound units or ASTM B744M – ____ for SI units, and

4.1.3 Specified sheet thickness, using only those thicknesses listed in Table 1.

4.1.4 For sheet ordered in coils:

4.1.4.1 Sheet width,

4.1.4.2 Coil size requirements (specify maximum outside diameter (OD), acceptable inside diameter (ID), and maximum weight), and

4.1.4.3 Total quantity (mass).

4.1.5 For sheet ordered flat in cut lengths:

4.1.5.1 Sheet width and length,

4.1.5.2 Total quantity (mass or number of sheets), and

4.1.5.3 Maximum mass or number of sheets in a lift.

4.1.6 For sheet ordered corrugated:

4.1.6.1 Sheet width (overall) and length,

4.1.6.2 Corrugation size (pitch and depth) (see 8.4),

4.1.6.3 Total quantity (mass or number of sheets), and

4.1.6.4 Maximum mass or number of sheets in a lift.

4.2 Additionally, orders for materials under this specification shall include the following information when requested by the purchaser:

4.2.1 Whether certification is required.

NOTE 1—Typical ordering descriptions are as follows: (*1*) Aluminum alloy sheet for corrugated aluminum pipe, conforming to ASTM B744 – ____; 0.060-in. thickness; 1000 sheets, 25½ by 60 in., with 2⅔ by ½ in. corrugations; maximum 300 sheets per lift. (*2*) Aluminum alloy sheet for corrugated aluminum pipe, conforming to ASTM B744M – ____; 2.67 mm thickness by 760 mm width; 25 000 kg total; coils 1200 mm OD max, 600 mm ID min, 5000 kg max each coil; certified with test report.

5. Chemical Composition

5.1 The sheet material shall conform to the chemical composition limits in Specifications B209 [B209M].

[1] This specification is under the jurisdiction of ASTM Committee B07 on Light Metals and Alloys and is the direct responsibility of Subcommittee B07.08 on Corrugated Aluminum Pipe and Corrugated Aluminum Structural Plate.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

TABLE 1 Sheet Thickness[A]

Specified Thickness		Minimum Thickness	
in.	mm	in.	mm
0.048	1.22	0.045	1.14
0.060	1.52	0.057	1.44
0.075	1.91	0.072	1.82
0.105	2.67	0.101	2.55
0.135	3.43	0.130	3.29
0.164	4.17	0.158	3.99

[A] Thickness is measured at any point on the sheet not less than ⅜ in. or [10 mm] from an edge, and if corrugated, on the tangents of corrugations.

6. Mechanical Requirements

6.1 The sheet material shall conform to the requirements for mechanical properties specified in Specification B209 [B209M], when tested prior to corrugating or other fabrication.

NOTE 2—Sheet material tested after corrugating and other fabricating should conform to the specified tensile and yield strength requirements, but due to cold working, conformance to the elongation requirements may not be obtained.

7. General Requirements

7.1 Aluminum alloy sheets or coils supplied under this specification shall conform to the applicable requirements of Specification B209 [B209M] (as appropriate) for alclad alloy 3004-H34 for riveted pipe, and either alclad alloy 3004-H34 or alclad alloy 3004–H32 for helical pipe, but limited to only alclad alloy 3004-H32 for production of spiral rib pipe.

8. Dimensions and Tolerances

8.1 Sheet thickness shall conform to dimensions prescribed in Table 1.

8.2 The thickness of cladding shall be as specified in Specification B209 [B209M].

8.3 Permissible variations in flat width, length and squareness shall be in accordance with ANSI H35.2 [H35.2M].

8.4 Corrugations shall form smooth continuous curves and tangents. The dimensions of the corrugations shall be in accordance with Table 2.

8.5 Covering width of corrugated sheet shall be in accordance with Table 3. Covering width is the distance between the crests of the extreme corrugations. There is no established tolerance for overall width since the covering width and lip dimensions are the governing factors for the formed product. The lip dimension of corrugated sheet shall be in accordance with Table 4. This dimension is measured along the radial curvature from the crest of the corrugation to the edge of the sheet.

TABLE 3 Covering Width Tolerance For Corrugated Sheet

Covering Width, in. [mm]	Tolerance Over and Under in. [mm]
To 24 [610], inclusive	¼ [6.5]
Over 24 [610] to 36 [915], inclusive	⅜ [9.5]
Over 36 [915] to 48 [1220], inclusive	½ [13]

9. Sampling and Testing

9.1 Sampling and testing shall be according to Specification B209 [B209M]. The manufacturer shall make adequate tests and measurements to ensure that the material produced complies with this specification.

9.1.1 Test results including chemical composition, mechanical properties, and cladding thickness shall be maintained by the sheet manufacturer for seven years and shall be made available to the fabricator and purchaser upon request, for examination at the manufacturer's facility unless otherwise agreed upon.

9.2 The fabricator or the purchaser may make such tests as are necessary to determine the acceptability of the material or to verify the correctness of a certification.

9.3 Mechanical properties shall be determined on sheet prior to corrugating or other fabricating, except tests may be made after fabrication by the purchaser for tensile and yield strengths.

10. Rejection

10.1 Material tested by the purchaser and found not conforming to this specification may be rejected.

11. Certification

11.1 When specified in the purchase order or contract, a manufacturer's certification shall be furnished to the purchaser of the sheet (fabricator) or to the purchaser of the finished pipe stating that samples representing each lot have been tested and inspected in accordance with this specification and the requirements have been met. When specified in the purchase order or contract, a report of the mechanical test results and the chemical composition limits shall be furnished.

NOTE 3—As the identity of the sheet is not maintained from the original

TABLE 2 Corrugation Requirements

Nominal Size	Maximum Pitch[A]	Minimum Depth[B]	Inside Radius	
			Nominal	Minimum
B744—All values in in.				
2⅔ by ½	2⅞	0.48	11/16	0.5
3 by 1	3¼	0.95	9/16	0.5
B744M—All values in mm				
68 by 13	73	12	17	12
75 by 25	83	24	14	12

[A] Pitch is measured from crest to crest of corrugations, at 90° to the direction of the corrugations.
[B] Depth is measured as the vertical distance from a straightedge resting on the corrugation crests to the bottom of the intervening valley.

TABLE 4 Corrugated Sheet Lip Dimensions

Nominal Corrugation Size		Lip Dimension			
		Minimum		Maximum	
in.	mm	in.	mm	in.	mm
2⅔ by ½	68 by 13	¾	19	15⁄16	24
3 by 1	75 by 25	⅞	22	1⅛	28

ingot production, if numerical results are required by the purchaser, tests should be performed on the finished sheet.

12. Product Marking

12.1 Each corrugated sheet furnished for use in annular corrugated pipe shall be identified by the sheet manufacturer showing the following:

12.1.1 Name or trademark of sheet manufacturer,

12.1.2 Alloy and temper,

12.1.3 Specified thickness,

12.1.4 Date of corrugating by a six-digit number indicating in order the year, month, and day of the month, and

12.1.5 ASTM designation number.

12.2 Coils and cut-length flat sheets shall be similarly marked by the manufacturer (except 12.1.4) at 2 to 5-ft [0.6 to 1.5 m] intervals, or the information shall be included on a tag so that the fabricator can mark the sheet at the time of fabrication.

12.3 The marking shall be applied to the sheet by a permanent method such as coining in accordance with Practice B666/B666M.

13. Keywords

13.1 aluminum pipe; aluminum sheet; culvert

SUMMARY OF CHANGES

Committee B07 has identified the location of selected changes to this standard since the last issue (insert designation and year date) that may impact the use of this standard. (May 1, 2015.)

(1) Revised subsection 7.1