Rolled Aluminum Can Sheet Products

| Global Product Specifications



KAISER ALUMINUM WARRICK



Imperial Units Version

Revised October 14, 2026

Proprietary Information

Any reproduction or distribution of the contents of this document in whole or in part is prohibited unless authorized in writing by Kaiser Aluminum Warrick Operations.

Controlled Version

Please refer to the Warrick Operations Controlled Document System for the controlled copy of this document.

Table of Contents

Chemical Composition	4
Body Stock - Bare	5
Bottle Stock	6
Closure Sheet	7
Beverage / Food End - Bare	8
Beer / Beverage End - Coated	9
Food End and Body Stock - Coated	10
Tab Stock	11
Coil - General	12
Regulatory Information	13

Chemical Composition

Alloys[1]

	3104[2]	3105	5042	5182	5352
Silicon	0.6	0.6	0.20	0.20	-
Iron	0.8	0.7	0.35	0.35	-
Copper	0.05 - 0.25	0.30	0.15	0.15	0.10
Manganese	0.8 - 1.4	0.3 - 0.8	0.20 - 0.50	0.20 - 0.50	0.10
Magnesium	0.8 - 1.3	0.2 - 0.8	3.0 - 4.0	4.0 - 5.0	2.2 - 2.8
Chromium	-	0.20	0.10	0.10	0.10
Zinc	0.25	0.40	0.25	0.25	0.10
Titanium	0.10	0.10	0.10	0.10	0.10
Other Each	0.05	0.05	0.05	0.05	0.05
Other Total	0.15	0.15	0.15	0.15	0.15

[1] Aluminum Association limits: % by weight

[2] 0.05 Ga. and 0.05 V

Body Stock - Bare

Alloy - Temper

3104-H19

Mechanical Properties

As Shipped Yield Strength			Baked Yield Strenth[1]
Typical Target[2]	Range	Min. Elong.	Typical Min.
40.0 ksi	37.0 - 43.0 ksi	4.0%	35.0 ksi

[1]Baked Yield Strength based on 20 min. at 400° F

[2] Additional strength targets available upon inquiry

Earing

Maximum percent earing: 4.0%. This is based on Kaiser Aluminum Warrick free draw mini-die test. The free draw is designed to allow metal movement under limited constraints. Production tooling should generally yield lower earing results depending on clearances, standoffs, gaps, or draw reductions.

Surface

Supplied as mill finish, with appropriate reoils, and as such is not degreased.

Tolerances

Thickness	0.0100 in - 0.0130 in (+/- 0.0002 in) > 0.0130 in - 0.0200 in (+/- 0.0003 in)
Width	20 - 61.125 in (+/- 0.031 in or +0.0625 / -0 in)
Flatness, Lateral Bow, and Edge Burr	Suitable for feeding a cupping press.
Reoil	+/- 50% around targets of 16 and 25 mg/ft2/side

Bottle Stock

Alloy - Temper

3104-H26

Mechanical Properties

Strength levels available upon inquiry.

Earing

Maximum percent earing: 4.0%. This is based on Kaiser Aluminum Warrick free draw mini-die test. The free draw is designed to allow metal movement under limited constraints. Production tooling should generally yield lower earing results depending on clearances, standoffs, gaps, or draw reductions.

Surface

Supplied as mill finish, with appropriate reoils, and as such is not degreased.

Tolerances

Thickness	> 0.0130 in - 0.0200 in (+/- 0.0003 in) > 0.0200 in (+/- 0.0004 in)
Width	> 43.3 in (+/- 0.031 in OR +0.0625 in / -0 in)
Reoil	+/- 50% around targets of 16 and 25 mg/ft2/side

Closure Sheet

Thickness Tolerance[1]

0.0078 in – 0.0095 in (+/- 0.0002 in)

Width Tolerance

< 39 in (+ 0.062 in / – 0 in)

Mechanical Properties[2] (Longitudinal)

Alloy/Temper	UTS (ksi)	TYS (ksi)	Min. Elong. (%)	Earing (%)
3105-H19[3]	34 - 37.5	31 - 37.5	1.0	4 max
3105-H25[3]	24 - 32	20 - 28	2.0	4 max
5352-H26	38 - 43	34 - 38	2.0	4 max

Flatness

Maximum edge wave or buckle height	0.125 in
Maximum "buckle height to length" ratio	1%

Surface Treatment

A272 Conversion Treatment (Optional):	5 - 20 mg/ft^2/side
Dioctylsebacate (DOS)	0.8 (+/- 0.4) mg/ft^2/side

[1] 99.7% of measurements, thickness measured on bare sheet
[2] Other strength levels subject to inquiry
[3] May be sold as CH14 in the USA

Beverage / Food End - Bare

Thickness Tolerance[1]

0.0078 in – 0.0129 in (+/- 0.0002 in)
0.0130 in – 0.0150 in (+/- 0.0003 in)

Width Tolerance

< 39 in (+ 0.062 in – 0 in)

Mechanical Properties (Longitudinal)

Alloy/Temper	Min. UTS (ksi)	TYS (ksi)	Min. Elong. (%)
5182-H19/-H39[2]	49.0	42.5 - 49.5	6
5042-H19[2]	42.0	36.0 - 43.5	6
5182-H19 (as rolled)	50.0	46 min	2

Flatness

Maximum edge wave or buckle height	0.125 in
Maximum "buckle height to length" ratio	1%

Surface Treatment

A272 Conversion Treatment (Optional):	5 - 20 mg/ft^2/side
Dioctylsebacate (DOS)	0.8 (+/- 0.4) mg/ft^2/side

[1] 99.7% of measurements, thickness measured on bare sheet

[2] Mechanical properties are after heating for 20 minutes at 400° F

Beer / Beverage End - Coated

Thickness Tolerance[1]

0.0078 in – 0.0129 in (+/- 0.0002 in)
0.0130 in – 0.0150 in (+/- 0.0003 in)

Flatness

Maximum edge wave or buckle height	0.125 in

Coated Mechanical Properties[2] (Longitudinal)

Alloy/Temper	Min. UTS	TYS	Min. Elong.
5042-H48	49.0 ksi	42.5 - 49.5 ksi	4%
5182-H48 (Standard Strength)			
0.0078 in - 0.0090 in	53.0 ksi	48.0 - 52.5 ksi	5%
0.0091 in - 0.0096 in	52.5 ksi	47.5 - 52.0 ksi	5%
0.0097 in - 0.0110 in	52.0 ksi	46.5 - 52.0 ksi	6%
> 0.0110 in	51.5 ksi	45.0 - 51.5 ksi	5%
5182-H28 (High Strength)			
0.0082 in - 0.0089 in	54.0 ksi	49.5 - 53.5 ksi	5%
0.0090 in - 0.0098 in	54.0 ksi	48.5 - 52.5 ksi	5%

Width Tolerance

Target Width	Tolerance
3.500 in - 6.000 in	+ 0.020 in / - 0 in
6.001 in - 12.000 in	+ 0.031 in / - 0 in
12.000 in - 24.000 in	+ 0.039 in / - 0 in
24.001 in - 39.000 in	+ 0.062 in / - 0 in
39.001 in - 60.500 in	+ 0.125 in / - 0 in

Coating Tolerance[3]

Target Coating Weight (mg/in²)	Tolerance (mg/in²)
1.3 - 1.4	+/- 0.3
1.5 - 3.0	+1.0 / -0.5
3.1 - 3.9	+/- 1.0
4.0 - 8.5	+/- 1.5

External Lubricant

Target Lubricant Weight (mg/ft²/side)	Tolerance
6 - 12	+/- 50%

By inquiry only, for widths > 55 in and gauges between 0.0060 in and 0.0090 in (inclusive), Warrick supplied CES can have a gauge tolerance of +/- 0.00015 in.

[1] 99.7% of measurements, thickness measured on bare sheet
[2] Additional strength levels available upon inquiry
[3] Target coating weight for colors is based on matching agreed standard color samples

Food End and Body Stock - Coated

Thickness Tolerance[1]

0.0080 in – 0.0129 in (+/- 0.0002 in)
0.0130 in – 0.0150 in (+/- 0.0003 in)

Flatness

Max edge wave or buckle height	0.125 in
Max "buckle-height-to-length" ratio (bare only)	1%

Mechanical Properties (Longitudinal)

Alloy/Temper	UTS (ksi)	TYS (ksi)	Min. Elong. (%)
Full Panel EOE			
Coated 5042-H48	45.0 - 52.0	40.0 - 46.0	4
Draw/Redraw Body			
Coated 5042-H48/-H19	45.0 - 52.0	40.0 - 46.0	4
Coated 5042-H2E69	44.0 - 50.0	40.0 - 46.0	5
Coated 5042-H2E72	43.0 - 49.0	37.0 - 43.0	4-12
Coated 5352-H48/-H19	36.0 - 42.0	33.0 - 39.0	4
Coated 5352-H2E77	31.0 - 37.0	26.0 - 32.0	5
Coated 5352-H25	29.0 - 35.0	23.0 - 29.0	6

Width Tolerance

Target Width	Tolerance
3.500 in - 6.000 in	+ 0.020 in / - 0 in
6.001 in - 12.000 in	+ 0.031 in / - 0 in
12.000 in - 24.000 in	+ 0.039 in / - 0 in
24.001 in - 39.000 in	+ 0.062 in / - 0 in
39.001 in - 60.500 in	+ 0.125 in / - 0 in

Coating Tolerance[2]

Target Coating Weight (mg/in²)	Tolerance (mg/in²)
1.5 - 1.9	+/- 0.5
2.0 - 2.9	+1.0 / -0.5
3.0 - 3.9	+/- 1.0
4.0 - 11.0	+/- 1.5

External Lubricant (Coated)

Target Lubricant Weight (mg/ft²/side)	Tolerance
6 - 16	+/- 50%

Surface Treatment (Bare Only)

A272 Conversion Treatment	7 - 20 mg/ft²/side
Dioctylsebacate (DOS)	0.8 (+/- 0.4) mg/ft²/side

[1] 99.7% of measurements, thickness measured on bare sheet

[2] Target coating weight for colors is based on matching agreed standard color samples

Tab Stock

Thickness Tolerance[1]

0.0087 in – 0.0129 in (+/- 0.0002 in)
0.0130 in – 0.0200 in (+/- 0.0003 in)
> 0.0200 in (+/- 0.0004 in)

Mechanical Properties - Beer/Beverage Tab Only (Longitudinal)

Alloy/Temper	Ordered Thickness	Min. UTS (ksi)	TYS (ksi)	Min. Elong. (%)
Bare 5182-H39	0.0087 in - 0.0120 in	55	49.0 - 55.0	3
TuffTab® (Bare 5182-H391)	0.0087 in - 0.0110 in	57	52.0 - 56.0	5
Coated 5182-H48	0.0087 in - 0.0125 in	52	46.0 - 51.0	5
	0.0126 in - 0.0140 in	52	44.0 - 50.0	5
Bare 5042-H19	0.0087 in - 0.0125 in	48.5	43.5 min	2
	0.0126 in - 0.0220 in	47.00	42.0 min	2
Coated 5042-H48	0.0087 in - 0.0125 in	45.5	39.0 - 46.0	4

Mechanical Properties - Food Tab Only (Longitudinal)

Alloy/Temper	Ordered Thickness	Min. UTS (ksi)	TYS (ksi)	Min. Elong. (%)
Coated 5182-H48	0.0087 in - 0.0125 in	52.0	46.0 - 51.0	5
	0.0126 in - 0.0220 in	52.0	44.0 - 50.0	5
Coated 5042-H48	0.0126 in - 0.0220 in	45.5	39.0 - 46.0	4

Width Tolerance

Target Width	Tolerance
0.70 in - 3.500 in	+/- 0.008 in
3.501 in - 5.900 in	+/- 0.010 in

Coating Tolerance[2]

Target Coating Weight (mg/in²)	Tolerance (mg/in²)
1.3 - 1.9	+/- 0.5
2.0 - 3.0	+1.0 / -0.5

[1] 99.7% of measurements, thickness measured on bare sheet

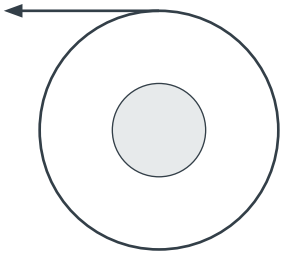
[2] Target coating weight for colors is based on matching agreed standard color samples

Coil - General

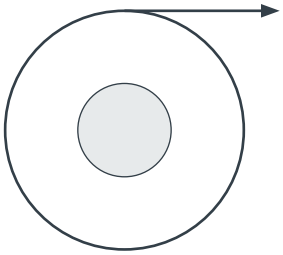
Coil Unwind Direction

Top view as coil sits eye-to-sky on pallet

Coil unwinds counterclockwise



Coil unwinds clockwise



Coil Dimension - Inside Diameter

For all products	16 in

Edge Burr

For all products	+/- 0.002 in

Density - Approximate

Alloy	Density (lb/in^3)
3104	0.098
3105/CH14	0.098
5042	0.096
5182	0.096
5352	0.096

Conversion Factors

1 mm = 0.03937 in	1 in = 25.4 mm
1 MPa = 0.145 ksi	1 ksi = 6.895 MPa
1 gram/m^2 = 0.645 mg/in^2	1 mg/in^2 = 1.55 g/m^2
1 mg/m^2 = 0.093 mg/ft^2	1 mg/ft^2 = 10.75 mg/m^2

Regulatory Information

- The products referenced in this document are suitable for many food packaging and food contact uses and comply with various FDA food packaging regulations. Consult your Kaiser Aluminum Warrick Operations representative to determine which product is suitable for your intended use.
- All packaging materials comply with the requirements of the CONEG model legislation regarding the presence of lead, mercury, hexavalent chromium and cadmium. Specifically:
    - None of the four metals are added intentionally.
    - The total concentration of incidental amounts of the four metals is below 100 parts per million (ppm).
- Regarding California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): Consult your Kaiser Aluminum Warrick Operations representative to determine which product is suitable for your intended use.
- Commercially available spectrochemical standards, traceable to the National Institute of Standards and Technology (NIST) and appropriate to the alloy supplied, are used to standardize and verify the accuracy of compositional analysis.
- Conflict Minerals: Kaiser Aluminum Warrick Operations complies with Rule 13p-1 (the "Rule") under the Securities Exchange Act of 1934 (the "Act") (17 CFR 240.13p-1) adopted by the Securities and Exchange Commission (the "Commission") on August 22, 2012, to determine whether columbite-tantalite (coltan), cassiterite, gold, wolframite and/or the related derivatives tantalum, tin and tungsten ("conflict minerals") or purchased products or processes containing conflict minerals, were necessary to the functionality or production of products manufactured or contracted to be manufactured.