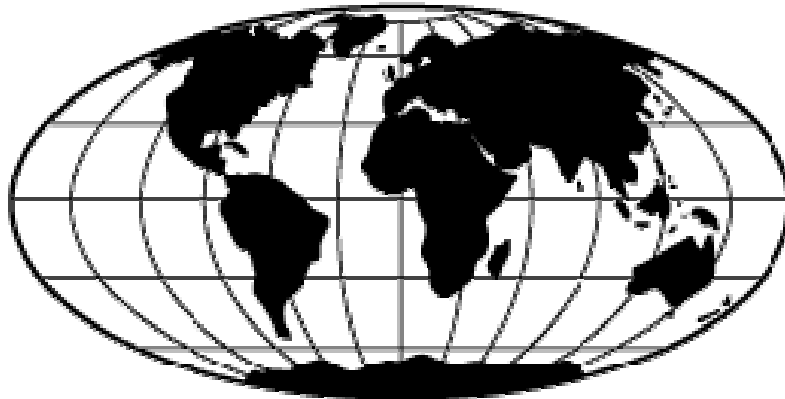


Alcoa Inc. Rigid Container Sheet

GLOBAL PRODUCT SPECIFICATIONS

Revised January 1, 2006



For:

- Alcoa Australia Rolled Products
- Alcoa European Mill Products
- Alcoa Rigid Packaging Division

Alcoa Proprietary Information

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Metric Version





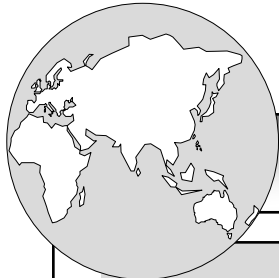
CHEMICAL COMPOSITION

| ALLOYS ⁽¹⁾ | | | | | | | | |
|-----------------------|---------------------|----------|-------------|-----------|---------|-----------|---------|----------|
| | 3104 ⁽²⁾ | 3105 | 5019A | 5042 | 5082 | 5182 | 5352 | 8011 |
| SILICON | 0.6 | 0.6 | 0.20 | 0.20 | 0.20 | 0.20 | --- | 0.50-0.9 |
| IRON | 0.8 | 0.7 | 0.35 | 0.35 | 0.35 | 0.35 | --- | 0.6-1.0 |
| COPPER | 0.05-0.25 | 0.30 | 0.15 | 0.15 | 0.15 | 0.15 | 0.10 | 0.10 |
| MANGANESE | 0.8-1.4 | 0.30-0.8 | 0.20 – 0.50 | 0.20-0.50 | 0.15 | 0.20-0.50 | 0.10 | 0.20 |
| MAGNESIUM | 0.8-1.3 | .20-8 | 4.4 – 5.4 | 3.0-4.0 | 4.0-5.0 | 4.0-5.0 | 2.2-2.8 | 0.05 |
| CHROMIUM | --- | 0.20 | 0.10 | 0.10 | 0.15 | 0.10 | 0.10 | 0.05 |
| ZINC | 0.25 | 0.40 | 0.25 | 0.25 | 0.25 | 0.25 | 0.10 | 0.10 |
| TITANIUM | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.08 |
| OTHER EACH | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| OTHER TOTAL | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.015 | 0.15 |

(1) % by weight

(2) 0.05 Ga. and 0.05 V





BODY STOCK

MECHANICAL PROPERTIES ⁽³⁾⁽⁴⁾

| Post Bake Yield Strength ⁽¹⁾⁽²⁾ | | As Shipped Properties | | |
|--|---------------|-----------------------|------------------|--------------------|
| <u>Typical Target</u> | <u>Range</u> | <u>UTS (min)</u> | <u>TYS (max)</u> | <u>Elong (min)</u> |
| 258 MPa | 243 – 274 MPa | 285 MPa | 310 MPa | 2 % |

- (1) PBYS Limits = +/- 10 MPa, 20 min. at 205 degree C, around the appropriate target
- (2) Appropriate Target to be determined during metal qualification at customers plant
- (3) Strengths may be adjusted to optimize performance
- (4) Additional strength levels available upon inquiry

EARING

Maximum percent earing : 4.0%. This is based on Alcoa 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.

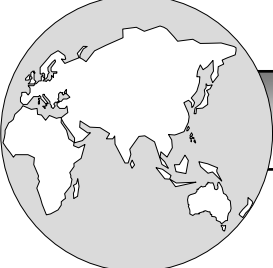
SURFACE

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

TOLERANCES

| | | |
|--|---|-------------|
| THICKNESS | 0.249 to 0.380mm | +/- 0.005mm |
| | 0.381 to 0.430mm | +/- 0.008mm |
| WIDTH ⁽⁵⁾ | 460 to 700mm | +1.0/-0.0mm |
| | 701 to 1100mm | +1.5/-0.0mm |
| | 1101 to 1905mm | +2.0/-0.0mm |
| FLATNESS, LATERAL BOW AND EDGE BURR | Suitable for feeding a cupping press. | |
| REOIL | +/- 50% around targets of 175 and 260 mg/m ² /side | |

(5) Width capabilities vary by mill



COATED COIL END STOCK

THICKNESS TOLERANCE ⁽¹⁾

0.200 - 0.330 mm +/- 0.005 mm
 0.331 - 0.380 mm +/- 0.008 mm

FLATNESS

Maximum edge wave or buckle height: 3 mm

MECHANICAL PROPERTIES ⁽²⁾ — (LONGITUDINAL)

| ALLOY/TEMPER | MIN. UTS MPa | TYS MPa | MIN. ELONG % |
|-----------------------------------|-----------------|------------|-----------------|
| Coated 5042-H48 | 310 | 269-317 | 4 |
| Coated 5182-H48 (>0.280 mm) | 355 | 310-355 | 5 |
| Coated 5182-H48 (0.231– 0.280 mm) | 360 | 320-350 | 6 |
| Coated 5182-H48 (0.200– 0.230 mm) | 365 | 330-362 | 5 |
| Coated 5182-H481 (0.213–0.244 mm) | 370 | 340-370 | 5 |
| Coated 5019A-H48 | 393 | 350-380 | 5 |

WIDTH TOLERANCE

| RANGE | TOLERANCE |
|-------------------|---------------|
| 90 mm – 150 mm | + 0.50 mm - 0 |
| 151 mm – 300 mm | + 0.80 mm - 0 |
| 301 mm – 600 mm | + 1.0 mm - 0 |
| 601 mm – 990 mm | +1.5 mm - 0 |
| 991 mm - 1,535 mm | + 3.0 mm - 0 |

COATING ⁽³⁾

| NOMINAL COATING WEIGHT g/m ² | TOLERANCE g/m ² |
|--|-------------------------------|
| 2.0 – 2.2 | +/- 0.5 |
| 2.3 - 4.5 | -0.8 + 1.6 |
| 4.6 - 6.0 | +/- 1.6 |
| 6.1 - 13.1 | +/- 2.3 |

EXTERNAL LUBRICANT

| NOMINAL LUBRICANT WEIGHT mg/m ² /side | TOLERANCE |
|---|-----------|
| 50 - 150 | +/- 50% |

(1) 99.7 % of measurements

(2) Additional strength levels available upon inquiry

(3) Target coating weight for colours is based on matching agreed standard colour samples



BARE COIL END STOCK

THICKNESS TOLERANCE⁽¹⁾

0.200 - 0.330 mm +/- 0.005 mm
0.331 - 0.380 mm +/- 0.008 mm

WIDTH TOLERANCE

< 991 mm + 1.50 mm - 0

MECHANICAL PROPERTIES (LONGITUDINAL)

| ALLOY/TEMPER | MIN. UTS MPa | TYS MPa | MIN. ELONG. % |
|-------------------------------|-----------------|------------|---------------------|
| 5182 -H19/-H39 ⁽²⁾ | 340 | 295-340 | 6 |
| 5042 -H19 ⁽²⁾ | 290 | 250-300 | 6 |
| 5042-H19 (as rolled) | 310-359 | 276-317 | 4 |

FLATNESS

Maximum edge wave or buckle height:
3 mm

Maximum "buckle height to length" ratio:
1%

SURFACE TREATMENT

A272 Conversion Treatment:
50 – 215 mg/m²/side

Diocetylsebacate (DOS)
8 +/- 4 mg/m²/side

(1) 99.7% of measurements

(2) Mechanical properties are after heating for 20 minutes at 205° C



TAB STOCK

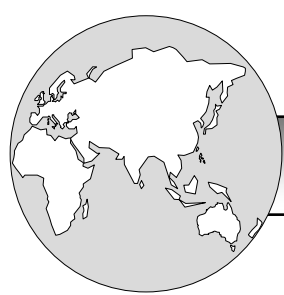
THICKNESS TOLERANCE ⁽¹⁾

0.220 - 0.330 mm +/- 0.005 mm
 0.331 - 0.500 mm +/- 0.008 mm

MECHANICAL PROPERTIES - BEVERAGE TAB ONLY (LONGITUDINAL)

| ALLOY/TEMPER | THICKNESS RANGE | MIN. UTS MPa | TYS MPa | MIN. ELONG. % |
|--|-----------------|-----------------|------------|---------------------|
| Bare 5182-H39 | 0.220-0.305 mm | 380 | 338 - 380 | 3 |
| TuffTab [®] (Bare 5182-H391) | 0.220-0.280 mm | 392 | 358 - 386 | 5 |
| Coated 5182-H48 | 0.220-0.318 mm | 358 | 317 - 352 | 5 |
| | 0.319-0.360 mm | 358 | 303 - 345 | 5 |
| Bare 5082-H19 | 0.220-0.318 mm | 358 | 330 min. | 2 |
| | 0.319-0.360 mm | 345 | 310 min. | 2 |
| Coated 5082-H48 | 0.220 -0.318 mm | 330 | 282 - 324 | 5 |
| Bare 5042-H19 | 0.220-0.318 mm | 345 | 317 min. | 2 |
| | 0.319-0.360 mm | 330 | 303 min. | 2 |
| Coated 5042-H48 | 0.220 -0.318 mm | 314 | 269 - 317 | 4 |

⁽¹⁾ 99.7% of measurements



TAB STOCK

(Continued)

| WIDTH TOLERANCE | |
|-----------------|------------------|
| <u>RANGE</u> | <u>TOLERANCE</u> |
| 18 - 76 mm | +/- 0.15 mm |
| 77 - 90 mm | +/- 0.20 mm |
| 91 - 150 mm | +/- 0.25 mm |

| COATING TOLERANCE ⁽²⁾ | |
|----------------------------------|-----------------------------|
| <u>NOMINAL COATING WEIGHT</u> | <u>TOLERANCE</u> |
| 2.0 - 3.0 g/m ² | +/- 0.8 g/m ² |
| 3.1 - 4.5 g/m ² | -0.8 + 1.6 g/m ² |

| MECHANICAL PROPERTIES - FOOD TAB ONLY (Longitudinal) | | | | |
|---|------------------------|---------------------|----------------|----------------------|
| <u>ALLOY/TEMPER</u> | <u>THICKNESS RANGE</u> | <u>MIN. UTS MPa</u> | <u>TYS MPa</u> | <u>MIN. % ELONG.</u> |
| Coated 5182-H48 | 0.300-0.318 mm | 358 | 317 - 352 | 5 |
| | 0.319-0.500 mm | 358 | 303 - 345 | 5 |
| Coated 5082-H48 | 0.319-0.500 mm | 330 | 275 - 320 | 5 |
| Coated 5042-H48 | 0.319-0.600 mm | 303 | 269 - 317 | 4 |

⁽²⁾ Target coating weight for colours is based on matching agreed standard colour samples



BARE FLAT END STOCK

(Supplied by Point Henry only)

| THICKNESS TOLERANCE ⁽¹⁾ |
|------------------------------------|
| 0.220 - 0.330 mm +/- 0.005 mm |
| 0.331 - 0.380 mm +/- 0.008 mm |

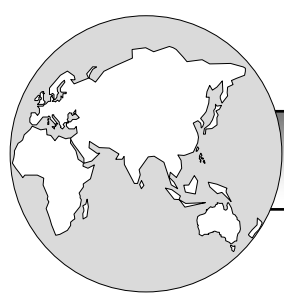
| SHEET TOLERANCES (SQUARE & SCROLL SHEET) | | |
|---|---------------|--------------|
| Width | < 991 mm | + 1.5 mm - 0 |
| Length | 600 – 1000 mm | +/- 0.25 mm |
| Squareness | — | +/- 0.25 mm |
| Heel (Location) Dimension | | +/- 0.25 mm |
| (Scroll Sheet Only) | | |

| MECHANICAL PROPERTIES ^(2, 3) (LONGITUDINAL) | | | |
|--|-----------------|------------|------------------|
| ALLOY/TEMPER | MIN. UTS MPa | TYS MPa | MIN. ELONG. % |
| 5182-H19/-H39 | 340 | 295 - 340 | 6 |
| 5042-H19 | 290 | 250 - 300 | 6 |

| FLATNESS | |
|---|------|
| Maximum edge wave or buckle height | 3 mm |
| Maximum “buckle height to length” ratio | 1% |

| SURFACE TREATMENT | |
|---------------------------|----------------------------------|
| A272 Conversion Treatment | 50 - 215 mg/m ² /side |
| Diocetylsebacate (DOS) | 8 +/- 4 mg/m ² /side |

- (1) 99.7 % of Measurements
- (2) Properties based on heating for 20 minutes at 205° C.
- (3) Other alloys available on inquiry



FOOD END AND BODY STOCK

THICKNESS TOLERANCE ⁽¹⁾

0.180 - 0.330 mm +/- 0.005 mm
 0.331 - 0.380 mm +/- 0.008 mm

FLATNESS

Maximum edge wave or buckle height: 3.0 mm
 Maximum "buckle-height-to-length" ratio
 (bare only): 1%

MECHANICAL PROPERTIES ⁽²⁾ (LONGITUDINAL)

| ALLOY/TEMPER | MIN. UTS MPa | TYS MPa | MIN. ELONG. % |
|----------------------------|-----------------|------------|------------------|
| Full Panel EOE | | | |
| Bare 5042-H19 (as rolled) | 345 | 317 min | 2 |
| Bare 5042-H19 (after bake) | 290 | 250-300 | 6 |
| Coated 5042-H48 | 310-359 | 269 - 317 | 4 |
| Draw/Redraw Body | | | |
| Bare 5042-H24 (after bake) | 250-310 | 200-240 | 4 |
| Bare 5042-H26 (after bake) | 296-338 | 255-296 | 4 |
| Coated 5042-H48 | 310-360 | 269-317 | 4 |
| Coated 5042-H2E69 | 303-345 | 269-317 | 5 |
| Coated 5042-H2E72 | 290-331 | 255-296 | 4-12 |

WIDTH TOLERANCE

| RANGE | TOLERANCE |
|-------------------|---------------|
| 90 mm – 150 mm | + 0.50 mm - 0 |
| 151 mm – 300 mm | + 0.80 mm - 0 |
| 301 mm – 600 mm | + 1.0 mm - 0 |
| 601 mm – 990 mm | + 1.5 mm - 0 |
| 991 mm – 1,535 mm | + 3.0 mm - 0 |

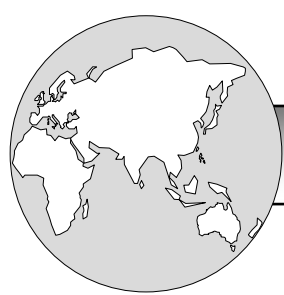
COATING TOLERANCE ⁽³⁾

| NOMINAL COATING WEIGHT g/m ² | TOLERANCE g/m ² |
|---|-------------------------------|
| 2.3 – 2.9 | +/- 0.8 |
| 3.0 – 4.5 | -0.8 + 1.6 |
| 4.6 – 6.0 | +/- 1.6 |
| 6.1 – 13.1 | +/- 2.3 |

(1) 99.7% of measurements

(2) After-Bake mechanical properties are after heating for 20 minutes at 205°C

(3) Target coating weight for colours is based on matching agreed standard colour samples



FOOD END AND BODY STOCK

(Continued)

SURFACE TREATMENT (BARE ONLY)

A272 Conversion Treatment
75-215 mg/m²/side

Dioctylsebacate (DOS)
8 +/- 4 mg/m²/side

EXTERNAL LUBRICANT (COATED)

NOMINAL LUBRICANT

WEIGHT mg/m²

65 - 170

TOLERANCE

+/- 50%

ALCOA
PROPRIETARY

Page 7 A
Revised Date:
January 1, 2006





CLOSURE SHEET

THICKNESS TOLERANCE⁽¹⁾

0.200 – 0.254 mm +/- 0.005 mm

WIDTH TOLERANCE⁽²⁾ (Coil)

< 991 mm + 1.50 mm - 0

MECHANICAL PROPERTIES⁽²⁾ (LONGITUDINAL)

| ALLOY/TEMPER | UTS Mpa | TYS Mpa | MIN. % ELONG. | EARING % |
|--------------------------------------|------------|------------|------------------|-------------|
| 3105-H19 ⁽³⁾ | 235-275 | 215-260 | 1.0 min | |
| 3105-H16 (After Bake) ⁽⁴⁾ | 150-190 | 120-170 | 3.0 min | 3% Max |
| 5352-H19 | 285 min | 270 min | 1.0 min | |
| 8011-H14 (After Bake) ⁽⁴⁾ | 110-150 | 90-130 | 3.0 min | 3% Max |

SHEET TOLERANCES (Square & Scroll Sheet)

| | | |
|--|---------------|-------------|
| Width | < 991 mm | 1.5 mm - 0 |
| Length | 600 – 1000 mm | +/- 0.25 mm |
| Squareness | — | +/- 0.25 mm |
| Heel (Location) Dimension (Scroll Sheet Only) | | +/- 0.25 mm |

SURFACE TREATMENT

A272 Conversion Treatment
(Optional)
50 – 215 mg/m²/side

Diocetylsebacate (DOS)
8 +/- 4 mg/m²/side

FLATNESS

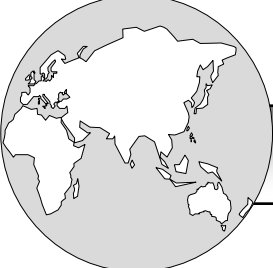
| | |
|---|------|
| Maximum edge wave or buckle height | 3 mm |
| Maximum “buckle height to length” ratio | 1% |

(1) 99.7% of measurements

(2) Other strength levels subject to inquiry, not all products available from all plants

(3) May be sold as CH14 in the USA

(4) After-Bake mechanical properties are after heating for 20 minutes at 205 °C

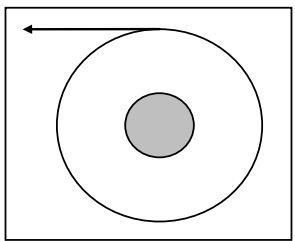


COIL - GENERAL

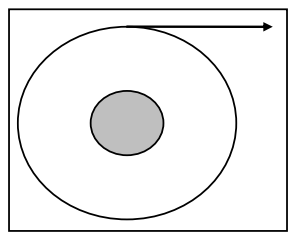
COIL UNWIND DIRECTION

Top view as coil sits eye to sky on pallet

Coil unwinds counterclockwise



Coil unwinds clockwise



COIL DIMENSIONS - INSIDE DIAMETER

For all products — 405 mm

EDGE BURR

For all products — +/- 0.05 mm

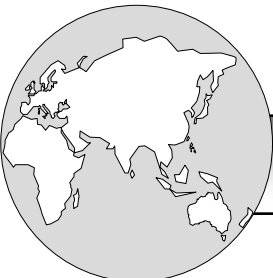
DENSITY - kg/mm³x10⁻⁶

(APPROXIMATE)

| ALLOY | |
|-----------|------|
| 3104 | 2.72 |
| 3105/CH14 | 2.72 |
| 5019A | 2.65 |
| 5042 | 2.67 |
| 5082 | 2.65 |
| 5182 | 2.65 |
| 5352 | 2.65 |
| 8011 | 2.72 |

CONVERSION FACTORS

| | |
|--|---|
| 1 mm = 0.03937 inch | 1 inch = 25.4 mm |
| 1 MPa = 0.145 ksi | 1 ksi = 6.895 MPa |
| 1 gram/meter ² = 0.645 mg/inch ² | 1 mg/inch ² = 1.55 gram/meter ² |
| 1 mg/meter ² = 0.093 mg/foot ² | 1 mg/foot ² = 10.75 mg/meter 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 Alcoa representative to determine which product is suitable for your intended use.
- All RPD packaging materials comply with the requirements of the CONEG model legislation [and the applicable provisions of European Council Directive 94/62/EC], 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).
- Based on our present knowledge, these products do not contain materials known to the State of California to be carcinogenic or reproductive hazards at levels which would warrant labeling under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
- Epoxy Coatings on RPD end stock for food contact comply with 2002/16/EC
- 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.