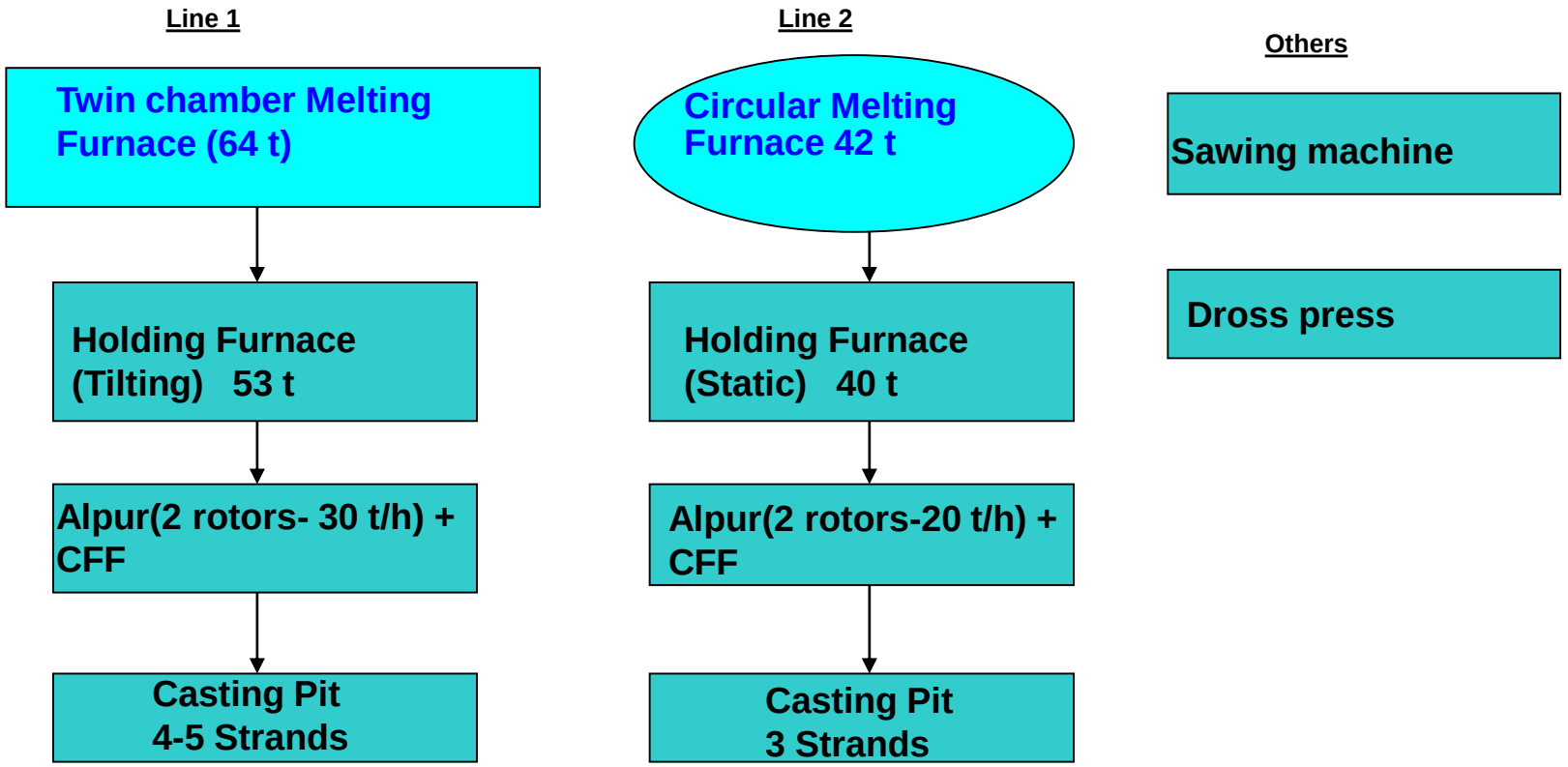
Slim Aluminium S.p.A.

Product presentation

04.01.2016

Casthouse overview: equipment



Rolling Slim -Main Productions Lines

Hot Rolling
- batch furnace (homogenizing)
- pusher furnace (preheating)
- hot mill (Duo)

Cold Rolling
- quarto SMS cold mill (new)
- intermediate mill, F0
- thin strip mill, F1
- intermediate + final annealing furnaces
- foil preparing mill, F2
- foil finishing mill, F3

Finishing
- stretching, heavy slitters, cut-to-length lines
- punching lines for circles
- medium gauge slitters
- medium gauge cut-to-length lines
- degreasing and slitting
- foil centre (separators + annealing furnaces)

Slim Aluminium : Production Lines – Products Hot Rolling

Batch Furnace
Pusher Furnace - **9.600 slabs/year = 97.400 tpy**

Hot Rolling
- **coil size: max. diameter 1900mm**
- **width up to 1760mm**
- **5052, 5251 & 5754 up to 1450mm**
- **max weight 12 tons**
- **typical thickness exit: 8 down to 5,5mm**

Slim Aluminium : Production Lines – Products Cold Rolling

New Cold Mill	**- maximum exit width**	**1750 mm**
	- minimum exit gauge	**0,20 mm**
Intermediate Mill Foil 0	**- maximum exit width**	**1750 mm**
	- capacity min. exit gauge	**0,15 mm**
Thin Strip Mill Foil 1	**- maximum exit width**	**1720 mm**
	- capacity min. exit gauge	**0,03 mm**
Preparing Mill Foil 2	**- maximum exit width**	**1680 mm**
	- capacity min. exit gauge	**0,012 mm**
Finishing Mill Foil 3	**- maximum exit width**	**1660 mm**
	- capacity min. exit gauge	**2x0,006 mm**

Slim Aluminium : Production Lines – Products Heavy Gauge Finishing Lines

Stretching	**- maximum entry width**	**1650 mm**
	- minimum exit width	**350 mm**
	- gauge range	**0,2 / 3,0 mm**
Heavy Gauge Slitter	**- maximum entry width**	**1650 mm**
	- minimum exit width	**34 mm**
	- gauge range	**0,5 / 3,0 mm**
Cut-to- Length Line	**- maximum exit width**	**1650 mm**
	- minimum exit width	**400 mm**
	- length range	**500 / 7000 mm**
	- gauge range	**0,8 / 3,0 mm**

Slim Aluminium : Production Lines - Products Punching Lines

Punching	**- numeric control type**	
161/201/202	**- max. diameter**	**625 mm**
	- thickness 0,8 ÷ 6 mm	
Punching	**- manual control type**	
100	**- max. diameter**	**360 mm**
	- thickness 0,8 ÷ 5 mm	

Slim Aluminium :Production Lines - Products Medium Gauge Slitters

Slitter CP1	**- maximum max exit width**	**1090 mm**
	- gauge range	**0,03 / 0,50 mm**
Line CP2	**- maximum max exit width**	**1660 mm**
	- gauge range	**0,10 / 0,5 mm**
Slitter CP3	**- maximum max exit width**	**1650 mm**
	- gauge range	**0,03 / 0,30 mm**
Slitter CP4	**- maximum max exit width**	**1700 mm**
	- gauge range	**0,05 / 0,30 mm**
Line Rasanta	**- maximum max exit width**	**1540 mm**
	- gauge range	**0,03 / 0,30 mm**

Chemical composition Slim Aluminium Alloys

Designation								
	A.A.	Slim						END USE
	1050	1050						General use
	-							
	1050	1054						Tube Finstock
	-							
	1050	1056						PTFE
	-							
	1050	1059						OX Guaranteed
	-							
	1200	1099						Deep Drawing - Finstock - Tagger Lids
	-							
	3103	3103						General Use
	3103	3001						Enamelling
	-							
	3003	3206						Chatods for electrolytic capacitors
	-							
	3005	3005						General Use
	-							
	3105	3105						Cap Stock
	-							
	3105	3106						Painting
	-							
	4006	4006						Enamelling
	4007Mod	4907						Enamelling

Chemical composition Slim Aluminium Alloys

Designation		
A.A.	**Slim**	**END USE**
5005	5005	General use
5005	5078	OX Guaranteed
5251	5251	General use
5052	5052	General use
5754	5754	General use
5657	5657	Cosmetics
5657	5658	Cosmetics
-	-	-
6082	6082	General use
8006	8006	Finstock
8006	8106	Foil
8011	1202	Cap Stock - Finstock - Tagger Lids
8079	8079	Finstock
8079	8078	Converter Foil

LIST OF THE PRODUCTS

- HouseHold Foil
- Converter Foil
- Liquid Packaging
- Semirigid Containers
- Containers (Pet food)
- Tagger Lids
- Cookware
- Capstock - Pharma
- Stucco Embossed
- General Engineering
- Paintstock
- Finstock
- Capacitor Foil
- Anodizing Quality
- Brigth Quality & Cosmetics Applications
- Automotive

SLIM ALUMINIUM

Household Foil

Product Applications

Food wrapping - Hairdresser

Our Clients

Cuki PROFESSIONAL

quickpack

CeDo

cotti srl

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 8006	➢ 8006L	➢ H0	➢ 0,009 0,020

Width range [mm]	Coil ID [mm]	Coil OD [mm]
➢ min. 120	➢ 150/152 iron core	➢ max 1000

Mechanical Properties (according to EN 546-2- tolerances according to EN 546-3)

Slim Aluminium Typical values

A.A. Alloy	Temper	R	Rp02	A100	HB	IE	OR%
➢ 8006	➢0	➢100		➢5			

Converter Foil

Product Applications

Flexible packaging - Insulation

Our Customers

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 8079	➢ 8079L	➢ 0	➢ 0,006 ÷ 0,030
➢ 8006	➢ 8006L	➢ 0	

Width range [mm]	Coil ID [mm]	Coil OD [mm]
➢ 120 ÷ 1616	➢ 150/152 iron core	➢ max 1000

Mechanical Properties according to EN 546-2 (tolerances according to EN 546-3)

Slim Aluminium Typical values

A.A. Alloy	Temper	R	Rp02	A100	HB	IE	OR%
➢ 8079	➢0	➢79		➢2,7			
➢ 8006	➢0	➢100		➢ 5			

Liquid packaging foil

Product Applications

Liquid packaging

Our Clients

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 8079	➢ 8079L	➢ O	➢ 0,006 ÷ 0,010

Width range [mm]	Coil ID [mm]	Coil OD [mm]
➢ 1100 ÷ 1616	➢ 150/152 iron core	➢ max 1000

Mechanical Properties according to EN 546-2 (tolerances according to EN 546-3)

Slim Aluminium Typical values

A.A. Alloy	Temper	R	Rp02	A100	HB	IE	OR%
➢ 8079	➢ O	➢ 79		➢ 2,7			

Semirigid Containers

Product Applications

Food trays

Our Clients

ICONT CONTENITORI PER ALIMENTI

Cuki PROFESSIONAL

COMITAL ALLUMINIO

SLIM ALUMINIUM

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 3005	➢ 3005 N	➢ O	➢ 0,05 ÷ 0,40
➢ 3103	➢ 3103 L	➢ H24	
➢ 8006	➢ 8006 K	➢ O H22	

Width range [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 34 ÷ 1500	➢ 150/152 iron or aluminium core	➢ max 1000	➢ 0,3

Mechanical Properties *according to EN 683-2 (tolerances according to EN 683-3)*

Slim Aluminium Typical values

Alloy	Temper	R	Rp02	A50	HB	IE	OR%
➢ 3005	➢ 0	➢ 138	➢ 58	➢15	➢ 0,0	➢ 0,0	➢ 0,0
➢ 3103	➢ H24	➢ 153	➢ 140	➢17	➢ 0,0	➢ 0,0	➢ 0,0
➢ 8006	➢ H22	➢ 125	➢ 89	➢ 26	➢ 0,0	➢ 0,0	➢ 0,0
➢ 8006	➢ 0	➢ 117	➢ 61	➢ 28	➢ 0,0	➢ 0,0	➢ 0,0

Containers

Product Applications

Pet Food – Espresso capsules

Our Clients

Serbia

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 1200A	➢ 1200-R	➢ O	➢ 0,05 ÷ 0,20
➢ 3005	➢ 3005 N	➢ O	
➢ 8011A	➢ 8911 G	➢ O	
➢ 8006	➢ 8006 K	➢ O	

Width range [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 1100 ÷ 1500	➢ 150/152 iron core	➢ max 1000	➢ 0,3

Mechanical Properties according to EN 683-2 (tolerances according to EN 683-3)

Slim Aluminium Typical values

Alloy	Temper	R	Rp02	A50	HB	IE	OR%
➢ 1200A	➢ 0	➢ 86	➢ 32	➢ 22	➢ 0,0	➢ 0,0	➢ 0,0
➢ 3005	➢ 0	➢ 138	➢ 58	➢ 15	➢ 0,0	➢ 0,0	➢ 0,0
➢ 8011A	➢ 0	➢ 100	➢ 35	➢ 20	➢ 0,0	➢ 0,0	➢ 0,0
➢ 8006	➢ 0	➢ 117	➢ 61	➢ 28	➢ 0,0	➢ 0,0	➢ 0,0

Tagger Lid

Product Applications

Packaging of powdered foodstuffs

Our Clients

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 1200A	➢ 1200-R	➢ O	➢ 0,05 ÷ 0,20
➢ 8011A	➢ 8911 G	➢ O	

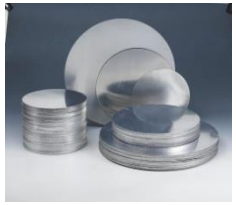
Width range [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 1100 ÷ 1500	➢ 150/152 iron core	➢ max 1000	➢ 0,3

Mechanical Properties according to EN 683-2 (tolerances according to EN 683-3)

Slim Aluminium Typical values

Alloy	Temper	R	Rp02	A50	HB	IE	OR%
➢ 1200A	➢ 0	➢ 86	➢ 32	➢ 22	➢ 0,0	➢ 0,0	➢ 0,0
➢ 8011A	➢ 0	➢ 100	➢ 35	➢ 20	➢ 0,0	➢ 0,0	➢ 0,0

Cookware



Product Applications

Pots, pans, etc. for enamelling, PTFE, anodising

Our main Customers

PENTOLE AGNELLI
PROFESSIONAL COOKWARE
MADE IN ITALY

tvs

Tefal

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]	Diameter range [mm]	Blanks dimension [mm]
➢ 1050	➢ 1050P	➢ 0-H18	➢ 0,8 ÷ 6	➢ 120 ÷ 625 (more than 625mm to be discussed in case of request)	➢ min 400x400 (lower dimension to be discussed upon request)
➢ 1200	➢ 1200R	➢ 0			
➢ 3103	➢ 3103L/3103K	➢ 0			
➢ 4006	➢ 4006-D	➢ 0			
➢ 4007mod	➢ 4907-D	➢ 0			➢Different shapes can be agreed
➢ 5005	➢ 5005-H/L	➢ 0			
➢ 5251	➢ 5251-J	➢ 0			

Mechanical Properties *according to EN 485-2 (tolerances according to EN 851)*

Slim Aluminium Typical values

Alloy	Temper	R	Rp02	A50	HB	IE	OR%
➢ 1050	➢ H18	➢ 145	➢ 136	➢ 8	➢ 41,3	➢ 0,0	➢ 0,0
➢ 1050	➢ 0	➢ 77	➢ 28	➢ 43	➢ 20,7	➢ 0,0	➢ 0,0
➢ 1200	➢ 0	➢ 88	➢ 35	➢ 43	➢ 23,4	➢ 0,0	➢ 2,8
➢ 3103	➢ 0	➢ 105	➢ 44	➢ 41	➢ 27,3	➢ 0,0	➢ 1,1

Mechanical Properties *according to EN 485-2 (tolerances according to EN 851)*

Slim Aluminium Typical values

Alloy	Temper	R	Rp02	A50	HB	IE	OR%
4006	0	98	43	43	26,7	0,0	0,8
4007mod	0	121	51	37	32,1	0,0	0,9
5005	0	113	44	28	30,9	0,0	3,0
5251	0	199	111	21	53,5	0,0	0,9

Capstock

Pharma

Product Applications

Caps and closures

Pharma products

Our Clients

Pelliconi group

ASTRO

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 8011A	➢ 8911G*	➢ H14-H16	➢ 0,17 ÷ 0,4
➢ 3105A	➢ 3105H**	➢ H14-H16	

Coil Width range [mm]	Sheet width [mm]	Sheet length [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 30 ÷ 1600	➢ 400 ÷ 1250	➢ 500 ÷ 2480	➢ 406/498 paper core	➢ max 1800	➢ 0,3

Mechanical Properties according to EN 541 (tolerances according to EN 541)

Slim Aluminium Typical values

Alloy	Temper	R	Rp02	A50	HB	IE	OR%***
➢ 8011A	➢ H14	➢ 143	➢ 138	➢ 3	➢ 0,0	➢ 0,0	➢ 0,9
➢ 3105A	➢ H14	➢ 171	➢ 166	➢ 3	➢ 0,0	➢ 0,0	➢ 1,3

* For high caps

** Recommended for high pressure closures

*** Max earing 3% (with special agreement 2%)

Stucco Embossed

Product Applications

White Industries, Freezer cabinets, roofing, etc.

Our Clients

Whirlpool

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 1050	➢ 1050M	➢ H19	➢ 0,26 ÷ 2,0
➢ 3105	➢ 3105J	➢ H29	

Thickness range [mm]	Coil Width range [mm]	Sheet width [mm]	Sheet length [mm]	Coil ID [mm]	Coil OD [mm]
➢ 0,26 ÷ 0,50	➢ 30 ÷ 1600	➢ 400 ÷ 1250	➢ 500 ÷ 2480	➢ 406/498 paper core	➢ max 1800
➢ 0,51 ÷ 0,79	➢ 34 ÷ 1600			➢ 406/498 paper core	➢ max 1800
➢ 0,8 ÷ 2,0	➢ 34 ÷ 1600	➢ 400 ÷ 1600	➢ 400 ÷ 6000	➢ 406/498 paper core	➢ max 1800

Mechanical Properties *according to EN 485-2 (tolerances according to EN 485-4)*

Slim Aluminium Typical values

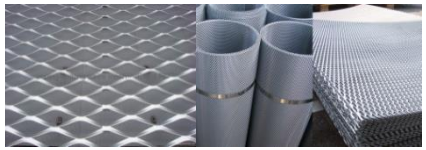
A.A. Alloy	Temper	R	Rp02	A100	HB	IE	OR%
➢ 1050	➢ H19	➢155	➢ 0	➢ 3	➢ 0,0	➢ 0,0	➢ 0,0
➢ 3105	➢ H29	➢191	➢ 0	➢ 4	➢ 0,0	➢ 0,0	➢ 0,0

SLIM ALUMINIUM

G.E. application








Product Applications

Building, metal mesh, suitcase, parabola, road sign, industial box, iron etc……

Our main Customers

CLIMAVENETA SUSTAINABLE COMFORT Le bon sens

Fils

GIBERTINI MADE IN ITALY

GROUPE SEB

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 1050A	➢ 1050M	➢ O, H1x, H2x, H3x	➢ 0,2 ÷ 3,0
➢ 1200A	➢ 1200R		
➢ 3003	➢ 3003R		
➢ 3005	➢ 3005N		
➢ 3105	➢ 3105J		
➢ 5005	➢ 5005H		
➢ 5052	➢ 5052G		
➢ 5251	➢ 5251J		
➢ 5754	➢ 5754G		
➢ 6082	➢ 6082D		
➢ 8006	➢ 8006K		
➢ 8011A	➢ 8911D		
➢ 8079	➢ 8079L		

Thickness range [mm]	Coil Width range [mm]	Sheet width [mm]	Sheet length [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 0,2 ÷ 0,50	➢ 30 ÷ 1600	➢ 400 ÷ 1250	➢ 500 ÷ 2530	➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,51 ÷ 0,79	➢ 34 ÷ 1600			➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,8 ÷ 2,0	➢ 34 ÷ 1600	➢ 400 ÷ 1600	➢ 400 ÷ 6000	➢ 406/498 paper core	➢ max 1800	➢ 0,3

Mechanical Properties *according to EN 485-2 (tolerances according to EN 485-4)*

SLIM ALUMINIUM

Paintstock

Product Applications

Building (roofing and siding), etc.

Our Clients

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢ 3103 ➢ 3105 ➢ 3003 ➢ 3005 ➢ 5005	➢ 3103L ➢ 3105J ➢ 3003R ➢ 3005N ➢ 5005H	➢ O, H1x, H2x	➢ 0,2 ÷ 3,0

Thickness range [mm]	Coil Width range [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 0,2 ÷ 0,50	➢ 30 ÷ 1500	➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,51 ÷ 0,79	➢ 34 ÷ 1500	➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,8 ÷ 3,0	➢ 34 ÷ 1600	➢ 406/498 paper core	➢ max 1800	➢ 0,3

Mechanical Properties *according to EN 485-2 (tolerances according to EN 485-4)*

Flexible Tubes

Finstock

Product Applications

Heat exchangers

Flexible Tubes

Our Clients

DENSO

BEHR

SEST

PRODUKT

LUVATA

RIVACOLD

SLIM ALUMINIUM

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢1050A	➢ 1050M	➢ O, H1x, H2x	➢ 0,05 ÷ 0,50
➢1200A	➢ 1200R		
➢ 3003	➢ 3003R		
➢ 5754	➢ 5754G		
➢ 8006	➢ 8006K		
➢ 8079	➢ 8079P		
➢ 8011A	➢ 8911G		

➢Coil Width range [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 30 ÷ 1600	➢ 150/152 iron or aluminium core (406mm paper core on request for thickness >0,2mm)	➢ max 1200	➢ 0,3

Mechanical Properties (tolerances according to EN 683-2)

Slim Aluminium Typical values

A.A. Alloy	Temper	R	Rp02	A100	HB	IE	OR%
1050	H19	185	175	5	0,0	0,0	0,0
8006	0	118	60	30	0,0	8,8	0,0
8006*	0	112	55	33	0,0	9,2	0,0
8006	H19	235	218	4	0,0	0,0	0,0
8006	H22	125	89	28	0,0	8,4	0,0
8006	H24	134	125	21	0,0	7,4	0,0
8079	H19	217	205	4	0,0	0,0	0,0

*** Special cycle for high deformation**

Capacitor Foil

Product Applications

Capacitors for electronical applications

Our Clients

BECROMAL
ALUMINIUM FOIL FOR ELECTROLYTIC CAPACITORS

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]	Width range [mm]
➢ 9999	➢ 1199	➢ H1x, O	➢ 0,07- 0,20	➢ 200 - 1500
➢ 3003	➢ 3003R	➢ H19		

Anodizing Quality

Product Applications

Structures and architectural categories of all types
Appliances
Food preparation equipment
Furniture

Our Clients

GABS

Metall Service Menziken
klöckner & co multi metal distribution

häuselmann metall
Einer für alle — Metalle

stürmsfs

NIEMET

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]	Width range [mm]
➢ 5005	➢ 5005L	➢ H12*-H14 H16-H24 H34	➢ 0,50 – 3,0	➢ 400-1500

Thickness range [mm]	Coil Width range [mm]	Sheet width [mm]	Sheet length [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 0,2 ÷ 0,50	➢ 30 ÷ 1500	➢ 400 ÷ 1250	➢ 500 ÷ 2480	➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,51 ÷ 0,79	➢ 34 ÷ 1500			➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,8 ÷ 2,0	➢ 34 ÷ 1600	➢ 400 ÷ 1600	➢ 400 ÷ 6000	➢ 406/498 paper core	➢ max 1800	➢ 0,3

SLIM ALUMINIUM

Mechanical Properties according to EN 485-2 (tolerances according to EN 485-4)

Slim Aluminium Typical values

A.A. Alloy	Temper	R	Rp02	A50	HB	IE	OR%
5005-L	H12*	137	131	9	4,23	0	0
5005-L	H14	156	148	5	45,0	0,0	0,0
5005-L	H16	184	178	5	52,5	0,0	0,0
5005-L	H24	164	150	9	48,4	0,0	0,0
5005-L	H34	158	145	5	45,0	0,0	0,0

* Special temper for bending

Bright Quality & Cosmetics

Product Applications

Lightning, cosmetics, furniture, etc.

Our Clients

alespri Grupo Industrial

THOMAS GROUP

seidel living design

amcor

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]	Width range [mm]
1050A	1050M	H19	0,1-0,4	100-1500
3103	3103L	H2x – H3x	0,3-1,0	30-1500
5657	5657D	H2x - H3x	0,3-1,0	30-1500

Mechanical Properties *according to EN 485-2 (tolerances according to EN 485-4)*

Slim Aluminium Typical values

A.A. Alloy	Temper	R	Rp02	A50
1050	H19	181	173	6
3103	H24	165	158	9
5657	H24	155	135	9
5657	H26	173	155	7

Automotive

Product Applications

Details of cars, trucks, busses, train etc.

Our Clients

ArcelorMittal

carcoustics

SAG Motion Group SAG FRANCE S.A.S.

Visa Manufacturing Solutions Soluzioni in movimento

STAMPAGGIO LAMIERE A FREDDO LASTRATURA E ASSEMBLAGGIO DI PARTICOLARI PER L'INDUSTRIA AUTOMOBILISTICA TAGLIO TUBO A CNC SALDATURE AD ULTRASUONI DI

SLIM ALUMINIUM

Product Specifications

A.A. Alloy	H.A. Alloy	Temper	Thickness range [mm]
➢1050A ➢ 5005 ➢ 5052 ➢ 5754 ➢ 6082	➢ 1050M ➢ 5005H ➢ 5052G ➢ 5754G ➢ 6082D	➢ O, H1x, H2x, H3x	➢ 0,2 ÷ 3,0

Thickness range [mm]	Coil Width range [mm]	Sheet width [mm]	Sheet length [mm]	Coil ID [mm]	Coil OD [mm]	Roughness µm
➢ 0,2 ÷ 0,50	➢ 34 ÷ 1600	➢ 400 ÷ 1250	➢ 500 ÷ 2480	➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,51 ÷ 0,79	➢ 34 ÷ 1600			➢ 406/498 paper core	➢ max 1800	➢ 0,3
➢ 0,8 ÷ 3,0	➢ 34 ÷ 1600	➢ 400 ÷ 1600	➢ 400 ÷ 6000	➢ 406/498 paper core	➢ max 1800	➢ 0,3

Mechanical Properties *according to EN 485-2 (tolerances according to EN 485-4)*