General Information

Among the main outstanding features in the production of billets, the following could be mentioned:

On-line Liquid Metal Treatment

The on-line refining system, based on the injection of tiny bubbles of inert gas (Argon) in molten metal and filtration through a ceramic foam filter (CFF), provides a high degree of efficiency in hydrogen degassing and inclusions removal from hot aluminium.

Casting Technology

Air-assisted casting increases billet quality providing an extremely smooth surface, minimum segregation shell thickness, uniform fine grain structure and minimum dendritic spacing.

As a result of this, our customers can expect superior extrusions every time; higher extrusion speeds, reduced break-out pressure, longer die life, more consistent as-extruded surfaces, better consistent anodising response and improvement in mechanical properties.

Continuous Homogenisation Treatment

Continuous homogenisation process of the 6000 alloy series is carried out in a continuous heat treatment station consisting of a heating chamber, a holding chamber and a forced air cooling chamber.

The temperature is controlled for each log, one by one, by means of sting thermocouples, of the contact type. Throughout the process the temperature is measured four times: at the entrance and exit of the holding chamber, and in two positions during the cooling of each log. The data are continuously stored so that temperature and the homogenisation time as well as the cooling speed of each log are available. In this way, information traceability is assured.

Furthermore, the temperature control in the different chambers is performed both as a function of the billet temperature and the hot air temperature. As a result of this, a highly reproducible thermal control of each log is ensured, the dispersion being less than 5° C within the homogenisation of each cast.

High performance in the process guarantees a constant metallurgic quality of aluminium billets, with excellent extrudability and uniform final properties.

Aluar Designation and Chemical Composition (*)

All values are expressed in %

PRODUCT DESIGNATION	Al Min	Fe Min. Max.	Si Min. Max.	Cu Min. Max.	Zn Min. Max.	Ti Min. Max.	V Min. Max.	Ga Min. Max.	Mg Min. Max.	Mn Min. Max.(4)	Cr Min. Max.
AA 6063/E BILLETS (1)	Rest	0.14 0.20	0.38 0.46	0.030	0.050	0.030	-----	0.020	0.45 0.60	0.02 0.04	0.010
AA 6060/A BILLETS (2)	Rest	0.15 0.25	0.38 0.45	0.030	-----	0.050	-----	-----	0.35 0.45	0.05	0.030
AA 6063/M (!) BILLETS (1)	Rest	0.14 0.22	0.30 0.38	0.030	0.050	0.030	-----	0.020	0.45 0.55	0.02 0.04	0.010
AA 6061/A BILLETS (1)	Rest	0.14 0.30	0.55 0.65	0.25 0.35	0.050	0.030	-----	0.020	0.85 1.00	0.05	0.06 0.14
AA 6463/A BILLETS (1)	Rest	0.06 0.14	0.35 0.44	0.10 0.20	0.050	0.030	-----	0.020	0.45 0.60	0.01 0.03	0.010
AA 1050/B (#) BILLETS (3)	99,50	0.12 0.30	0.07 0.20	0.050	0.050	0.030	0.050	-----	0.050	0.050	----

(*) Other compositions may be available upon request.

(1) Others: max. 0.01% (each), Others: max. 0.030% (total)

(2) Others: max. 0.030% (each), Others: max. 0.10 % (total)

(3) Fe + Si max. 0.45%
Others: max. 0.030% (each), Others: max. 0.15 % (total)

(4) After adding Mn to alloys, a significant improvement is obtained in the internal structure of the billets.

(!) Typical range of SiMg2 + Si (excess) = 0.76 to 0.82 %
Typical value of SiMg2 + Si (excess) = 0.80 %

(#) Fe + Si , ≤ 0.45 %

Table of Equivalence

ALUAR DESIGNATION	ISO	AA/ASTM	CEN
AA-6063/E	AlMgSi	6063	EN AW-6063 EN AW-Al Mg 0.7Si
AA-6463/A	AlMgSi	6463	EN AW-6463 EN AW-Al Mg 0.7Si
AA-6063/M	AlMgSi	6063	EN AW-6063 EN AW-Al Mg 0.7Si
AA-6060/A	AlMgSi	6060	EN AW-6060 EN AW-Al MgSi
AA-6061/A	AlMg1SiCu	6061	EN AW-6061 EN AW-Al Mg1SiCu
AA-1050/B	Al-99.5	1050	EN AW-1050 EN AW-Al 99.5

Dimension Tolerance

Diameters:

Diameter	6 in. (152 mm):	± 0.04 in. (+ 1.0 mm - 1.0 mm)
Diameter	6.7 in. (170 mm):	+ 0.02 - 0.08 in. (+ 0.5 mm - 2.0 mm)
Diameter	7 in. (178 mm):	+ 0.02 - 0.04 in. (+ 0.5 mm - 1.0 mm)
Diameter	8 in. (203 mm):	+ 0.04 - 0.02 in. (+ 1.0 mm - 0.5 mm)

Length tolerance:

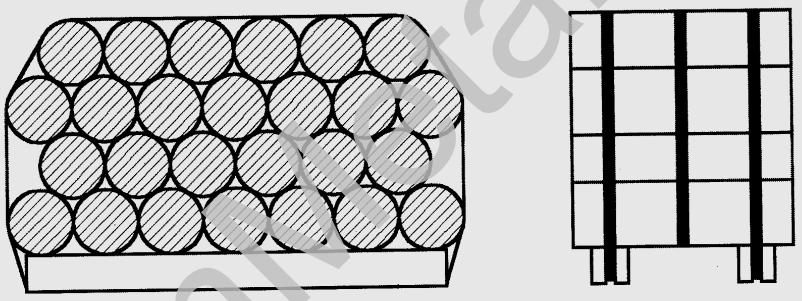
Billets up to 29.5 in. (750 mm):	± 0.12 in. (3 mm)
Over 29.5 to 112 in. (750 to 2,850 mm):	± 0.24 in. (6 mm)
Over 112 to 235.7 in. (2,850 to 6,000 mm):	± 0.36 in. (9 mm)

Bow tolerance:
Less than 0.025 in./ft (2 mm/m).

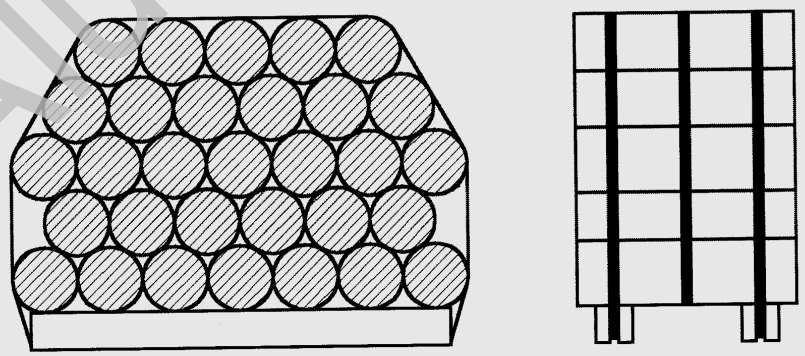
Cutting angle:
The angle formed by the cut face of the billet and the axis of the log is 90º ± 0.5º.

Packing

Billets are stacked on 3.1 in. x 3 in. (80 x 75 mm) wooden runners. These figures show the basic configurations of the different types of packing.



#1



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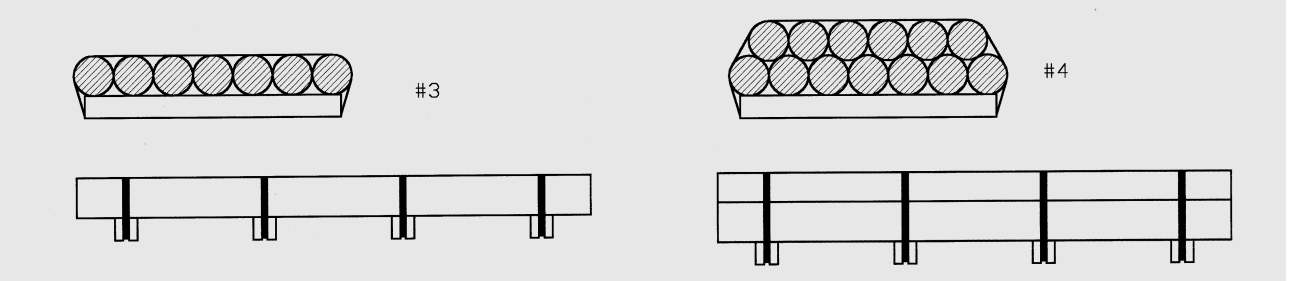

Billet Length in.	mm	Number of wooden runners	Number of straps
19.7 - 39.4	500 - 1000	2	3
39.4 - 59.1	1001 - 1500	3	3
59.1 - 236.2	1501 - 6000	4	4

Weight and Size for Billets, Bundles and Runners

DIAMETER		WEIGHT		BILLET LENGTH		STACK DIMENSION (Height)		STACK DIMENSION (Width)		PIECES PER STACK	STACKING PATTERN	WOODEN RUNNERS LENGTH		TYPE OF STACKING
mm	Inch	kg/m	lb/ft	mm	Inch	mm	Inch	mm	Inch			mm	Inch	
152	6	48.99	32.66	500-1000	19.7-39.4	829	33	1216	48	36	8-7-8-7-6	1005	40	#2
				1001-2000	39.4-78.8	697	27	1064	42	26	7-6-7-6	955	38	#1
				2001-3000	78.8-118.2	434	17	1064	42	13	7-6	955	38	#4
				3001-6000	118.2-236.4	227	9	1064	42	7	7	955	38	#3
170	6,7	61.28	40.85	500-1000	19.7-39.4	909	36	1190	47	31	7-6-7-6-5	1080	45	#2
				1001-2000	39.4-78.8	762	30	1020	40	22	6-5-6-5	905	36	#1
				2001-3000	78.8-118.2	467	18	1190	47	13	7-6	1080	45	#4
				3001-6000	118.2-236.4	245	10	1190	47	7	7	1080	45	#4
178	7	67.19	44.79	500-1000	19.7-39.4	945	37	1068	42	26	6-5-6-5-4	955	37.6	#2
				1001-2000	39.4-78.8	790	31	1068	42	22	6-5-6-5			#1
				2001-3000	78.8-118.2	482	19	1068	42	11	6-5			#4
				3001-6000	118.2-236.4	253	10	1068	42	6	6			#3
203	8	87.39	58.26	500-1000	19.7-39.4	880	35	1015	40	18	5-4-5-4	905	36	#1
				1001-2000	39.4-78.8	880	35	1015	40	18	5-4-5-4			#1
				2001-3000	78.8-118.2	529	21	1015	40	9	5-4			#4
				3001-6000	118.2-236.4	278	11	1015	40	5	5			#3

Stacks height includes wooden runners.

Identification

Each aluminium extrusion billet is identified on one of its cut faces with:
- Aluar's logo and name
- Heat number
- Alloy designation

Each billet stack has an adhesive label as shown on the right.

Batches of stacks to be shipped to the foreign market are identified with different colours of paint, according to their destination, painted on the straps.