EXTRUSION INGOT

Technical Datasheet

Al99.70 alloy 107070

APPLICATION

Typical applications:
Equipment for electrical components, bus bars, light reflectors, heat exchangers and drawn tubes for various purposes.

STRENGTH

Obtainable mechanical properties may vary with the production equipment, process parameters used in extrusion and consistency of the process parameters. We recommend that this is checked out for each production line. Typical mechanical properties for the alloy are:

Temper (AA)	Yield strength (MPa)	Tensile strength (MPa)	Elongation (%)	Hardness Brinell
O	25	70	45	18
F	40	80	30	21

ALLOY

%	Si	Fe	Cu	Mn	Mg	Zn	Ti			Other elements		Al
										Each	Total	
Min.	0.05	0.17	-	-	-	-	-			-		99.70
Max.	0.08	0.23	0.01	0.01	0.01	0.02	0.02			0.02		-

* Analysis is performed on supplier's spectrographs using supplier's selection of calibration standards.
Analysis made on other instruments using other standards may show deviations.

Chemical composition *

Date issued: April 1991
Edited: May 2001

EXTRUSION INGOT

Technical Datasheet

Al99.70 alloy 107070

PROPERTIES

Strength

This alloy is not heat treatable, i.e. it cannot achieve higher strength by aging. The strength can only be increased by cold working.

Special properties

Machinability……..:	Suitable for all types of plastic deformation such as bending, buckling, deep drawing, spinning and forging
Weldability……..:	Very suitable for all methods
Corrosion resistance……...:	Very good against atmospheric attack, water, food products and a number of chemical products
Surface treatment……:	Excellent for all types of mechanical surface treatment, including pickling, chemical and electrochemical brightening
Anodizing……..…:	Excellent for anodizing

Physical properties - typical values

Density		2.70	kg/dm^3
Modulus of elasticity		69	kN/mm^2
Shear modulus		26	kN/mm^2
Linear expansion coefficient	20-100 °C	24	$\mu°C^{-1}$
Thermal conductivity	20 °C	235	W/(m•K)
Specific heat capacity	0-100 °C	920	J/(/kg•k)
Resistivity	20 °C	28	nΩ•m
Conductivity	20 °C	62	% IACS
Melting range		645-660	°C

k = kilo μ = micro (10^{-6}) n = nano (10^{-9})

Corresponding or closely approximating norms and designations

Norway NS	Sweden SIS	France NF	Germany DIN	UK BS	USA AA	ISO	Italy UNI
17015	4005	1070	Al99. 7	1050A	1070	Al99.7	9001-3

EXTRUSION INGOT

Technical Datasheet

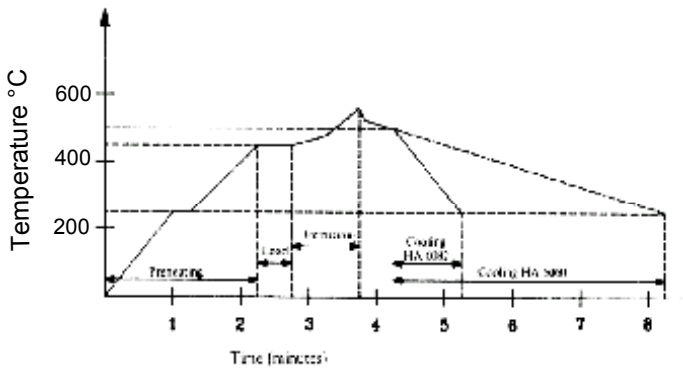
Al99.70 alloy 107070

EXTRUSION

Preheating

The preheating should preferably be as low as possible to obtain the best possible speed, and high enough to secure a good material flow.

Sketch of temperature elapse during extrusion



Flow

The material flow is depending upon:

- Friction against the container (container temperature)
- Deformation resistance (elements in solid solution)
- Surface of the container liner
- Lubrication of the dummy block
- Temperature difference between front and back end of the ingot (taper).

Cooling

The alloy is not depending on fast cooling to obtain the mechanical properties. However, rapid cooling helps to keep a small grain size and to avoid handling damages.

Recommended production parameters for an open section:

Preheating temp. (°C)	Taper (°C)	Container temp. (°C)	Minimum exit temp. (°C)	Typical extrusion speed (m/min.)	Maximum recommended cooling time from 500 to 250 °C
380-430	50-90	400	-	55	-

EXTRUSION INGOT

Technical Datasheet

Al99.70 alloy 107070

HEAT TREATMENT

For fully annealing material that has been cold worked, it has to be heated rapidly up to a temperature of 350 - 400 °C. It is recommended to keep the material for approx. 30 minutes on the annealing temperature (after all parts of the material has reached this temperature).
To avoid coarse-grained structure, the material should be cold worked at least 25 % (preferably over 50 %) before fully annealing.
A too high annealing temperature and/or holding time may give a coarse-grained material.