MINEX

Aluminum-Copper Master Alloy

Alloy Description:

Aluminum Copper master alloy is the alloy of Aluminium and copper which is used as additive for copper in aluminium alloys as a hardener. This alloy is dissolved fast in aluminium melt and gives maximum recovery of copper. Aluminum based master alloys which contain the hardener elements in high concentrations, provide a convenient and economical way to add them to aluminum to achieve desired properties. These master alloys readily dissolved into the liquid aluminium at lower liquid aluminum temperatures, thus minimizing dross formation, solubility of hydrogen ,reduced energy consumption and longer furnace life.

The chemical composition and physical properties of the Aluminium Copper master alloy is given bellow:

Chemical composition:

Alloy Grade	Chemical Composition (%)			
	Cu	Fe (max)	Others (max)	Al
AlCu 10	9 – 11	0.25	0.5	Balance
AlCu 20	19 – 21	0.25	0.5	Balance
AlCu 28 – 32	28 – 32	0.25	0.5	Balance
AlCu 30 – 35	30 – 35	0.25	0.5	Balance
AlCu 50	48 – 52	0.25	0.5	Balance

Other impurities- Mn, Ca, Zn, Na, Si, Pb **above hardeners are produced from 99.7% (Min.) purity of Al.

Physical properties:

Alloy Grade	Density (gm/cc)	Melting point (°C)
AlCu 10 – 20	3.8 – 3.9	720 – 740 *
AlCu 30 – 50	5.7 – 5.8	860 – 875 *
* melting point is not a relevant in normal use, the majority of master alloy and tablets produced by Minex Metallugical Co. Ltd., dissolve in Aluminium rather than melt.		

Application:

Aluminium copper master alloy widely used as hardener in all aluminium industry for some structural application. Copper has a low solubility in aluminium at low temperatures. An alloy quenched from high temperature to retain the copper in solid solution will therefore be metastable and hence the copper will tend to precipitate forming GP zones. This can be occur even at room temperature, so that hardness will change as a function of time, a phenomenon known as "age hardening". Both cast and wrought aluminium – copper alloys response to solution heat treatment and subsequent aging with an increase in strength and hardness and a decrease in elongation. The strengthening is maximum between 4 and 6% of Cu, depending upon the influence of other constituents present.

Addition technique:

Remove heavy dross from melt surface and add appropriate amount of AlCu master alloy (At T 720 - 760°C). After the dissolution of alloy, stir the melt gently for 30sec.

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Available form:

Forms	Std. Size (mm)	Std. Weight (Kg)
Piglet	60×45×45	
Waffle plate		8 – 10
Ingot		6 – 8
Splatter	Thick: 3-6 & width 10 – 100	

Different shape & Size can also be produced as per customer requirement.

Packing:

Piglet	Ingot	Splatter	Waffle plate
25 Kg gunny bag/500 Kg Jumbo Bag (or as per customer requirement)	1000 Kg jumbo bag or strapping with palette (or as per customer requirement)	25, 50 Kg jumbo bags. (or as per customer requirements)	500 Kg strapping with palette (or as per customer requirement)

Storage:

Use cool and dry place to store the material.

Safety:

Material Safety Data Sheet can be supplied on demand. Material is not hazardous but normal safety precautions to be followed.

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