APPLICATION FIELD

MOULD CASTING

For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition which does not contain certain high percentages of elements that evaporate at low temperature, thus avoiding blowings in the single ingots produced or that evaporating may modify the characteristics of the alloy itself; a Liquidus temperature inferior than 1000°C for avoiding a premature solidification during the passage of the crucible towards the casting area; a chemical composition which promotes the formation of a grain refined structure even with slow-cooling conditions during the casting process; a chemical composition which reacts the less the possible with the oxygen present in the atmosphere.

CONTINUOUS CASTING WITHOUT COOLING SYSTEM

For this sort of production, the most suitable master alloys have the following characteristics: a Liquidus temperature inferior to 1025°C to easy the drawing of the pieces during the casting phase; a chemical composition which promotes the formation of a grain refined structure even in slow-cooling conditions during the casting process; a chemical composition which helps to reduce the friction and gripping effects of the bar on the die during the casting process; a chemical composition which does not promote the formation of secondary phases with a slow cooling; these last ones influence the microstructural features of the alloy and, consequently, the behaviour of the same during cold working.

CONTINUOUS CASTING WITH COOLING SYSTEM

For this sort of production, the most suitable master alloys have the following characteristics: a Liquidus temperature inferior to 1025°C to easy the drawing of the pieces during the casting phase; a chemical composition which promotes the formation of a grain refined structure even in improper cooling conditions during the casting process; a chemical composition which helps to reduce the friction and gripping effects of the bar on the die during the casting process; a chemical composition which does not promote the formation of secondary phases (due to an improper cooling), these last ones influence the microstructural features of the alloy and, consequently, the behaviour of the same during cold working

CENTRIFUGAL CASTING

For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition with an adequate concentration of refining elements; a chemical composition able to confer the alloy the required viscosity in order to be affected, the less the possible, by turbulence during the pouring step.

CASTING BY OPEN SYSTEMS

For this sort of production, the most suitable master alloys have the following characteristics: a Liquidus temperature inferior to 1000°C for avoiding a premature solidification during the passage of the crucible towards the casting area; a chemical composition which favours an elevate fluidity and the alloy's form filling capability; a chemical composition with an adequate concentration of deoxidizing elements; a chemical composition which reacts the less the possible with the oxygen present in the atmosphere.

CASTING BY VACUUM SYSTEMS

For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition which favours an elevate fluidity and the flask's form filling capability; a chemical composition which guarantees a reduced quantity of residuals in the crucible; a chemical composition with the lesser concentration the possible of elements which evaporate at low temperatures especially in depressurized conditions; a chemical composition with a reduced concentration of deoxidizing elements which excess may favour an undesired brittleness.

CASTING WITHOUT STONES IN PLACE

For this sort of production, the most suitable master alloys have the following characteristics: a casting range the stricter the possible to help reducing the noticeability of shrinkage defects;
a chemical composition which promotes the formation of a grain refined structure to help avoiding the presence of shrinkage defects; a chemical composition with an adequate concentration of deoxidizing elements; a chemical composition which does not promote the formation of low-melting phases even in case of slow cooling – this last one is causing breakings during the assembling phases or deformations of the pieces.

CASTING WITH STONES IN PLACE

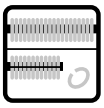
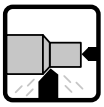
For this sort of production, the most suitable master alloys have the following characteristics: a Liquidus temperature inferior to 1000°C for reducing the thermal impact on the stones; a casting range the stricter the possible to reduce the pressure the alloy is making onto the stones during the cooling step; a chemical composition which promotes the formation of a grain refined structure to help shrinkage being well-distributed and a consequent reduced pressure on the stones during cooling into the flask, together with a decreased presence of shrinkage defects; a chemical composition with an adequate concentration of deoxidizing elements which helps to preserve the surfaces underneath from oxidation.

HANDWORKING

For this sort of production, the most suitable master alloys have the following characteristics: dimension of the grain – this is not too fine to reduce the stress necessary for the hand deformation; a low hardness value aiming to easy the deformation the goldsmith has to hand make on the alloy; an elevate percentage stretching for adapting to any shape during deformation.

FLAT-BOTTOM STAMPATO

For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition which promotes the formation of a grain refined structure to reduce as much as possible the formation of the "orange peel" defect during the stamping step; high drawing; the capability of the alloy to be hardeneable most of all for the flat part of the item thus avoiding the dipping problem during the cutting step; a chemical composition which does not promote the formation of low-melting phases even in case of slow cooling – this last one is causing breakings during next stamping steps.

DOUBLE STAMPATO 	For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition which promotes the formation of a grain refined structure to reduce as much as possible the formation of the “orange peel” effect during the stamping step; high drawing; the capability of the alloy to be hardeneable especially when producing very thin items.
HANDMADE SOLID CHAIN 	For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition which promotes the formation of a grain refined structure to reduce as much as possible the formation of the “orange peel” defect during the chain’s production; a low hardness aiming to avoid a too elastic behaviour of the alloy and as a consequence, granting a constant distance between the strips of the chain itself favouring a good soldering; a an elevate percentage’s stretching for adapting to any shape during deformation without too much hard manual stresses.
MACHINE MADE SOLID CHAIN 	For this sort of production, the most suitable master alloys have the following characteristics: a Solidus temperature (beginning of melting) inferior to 1000°C to ease the powder soldering process; a chemical composition which promotes the formation of a grain refined structure to reduce as much as possible the formation of the “orange peel” defect during the chain’s production; a chemical composition which avoids or at least does not promote the formation of oxides layers or superficial compounds impeding the weldability of the chains by powder soldering; for nickel-based white gold the concentrations of this very last element are low for avoiding a too elastic behaviour of the alloy and, as a consequence, granting a constant distance between the strips of the chain itself favouring its soldering; the lowest hardness the possible to avoid the phenomenon described above; zinc concentration enough to grant stretching at best.
HANDMADE HOLLOW CHAIN 	For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition which promotes the formation of a grain refined structure to reduce as much as possible the formation of the “orange peel” defect during the chain’s production and to increase the resistance to acid during the emptying process; a silver concentration able to improve much further the resistance to corrosion during the emptying process; the ability to be hardenable in case of ultra-light hollow chains.
MACHINE MADE HOLLOW CHAIN 	For this sort of production, the most suitable master alloys have the following characteristics: a Solidus temperature (beginning of melting) higher than 850°C in order to grant the weldability of the core, when this is made of Iron; a chemical composition which promotes the formation of a grain refined structure to reduce as much as possible the formation of the “orange peel” defect during the chain’s production and to increase the resistance to acid during the emptying process; a silver concentration able to improve much further the resistance to corrosion during the emptying process; the ability to be hardenable in case of ultra-light hollow chains.
ITEMS BY SOLDERED TUBE 	For this sort of production, the most suitable master alloys have the following characteristics: a chemical composition which promotes the formation of a grain refined structure to reduce as much as possible the formation of the “orange peel” defect during the tube’s coiling and to increase at best the resistance to the acid’s attack during the emptying out; a silver concentration able to increase further the resistance to corrosion during the emptying out process; the capability of being hardened when dealing with very thin tubes; a not too high Solidus temperature which grants a sort of “plating” of the alloy with the core and preserves from the formation of “wrinkles” during the tube’s coiling steps.
MACHINE TOOL PRODUCTION 	For this sort of production, the most suitable master alloys have the following characteristics: a hardness which may preserve the lasting time of the tools; a chemical composition which promotes the formation of a grain refined structure granting a higher brightness of the surfaces.
SOLDERING SHEET 	For this sort of production, the most suitable soldering master alloys have the following characteristics: a higher concentration of low-melting elements (% of In, Ga and Zn); generally, a lower Liquidus temperature and a better flowability.
SOLDERING WIRE 	For this sort of production, the most suitable soldering master alloys have the following characteristics: a chemical composition (% of In, Ga and Zn) which does not promote the formation of secondary phases due to a slow cooling. This last one is the cause of the alloy’s hardening and a consequent difficulty in cold working; generally, a higher Liquidus temperature and a reduced flowability.