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MAGNESIUM ALLOYS

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1 Claim. (Cl. 75—168)

The invention relates to a pre-alloy (master batch alloy) for the production of magnesium alloys.

The magnesium alloys hitherto known for casting in sand and metal moulds do not exhibit sufficient tensile strength even if they are subjected to improvement, viz. quick cooling followed by pre-heating, and they also exhibit defects in respect of adequate ductility so that the possibility of using them is still very limited.

The defects are avoided by the use of the pre-alloy according to the invention in an amount lying within the limits of 3–10% and varying in accordance with the purpose for which the resultant alloys are to be used.

The pre-alloy according to the invention has the following composition:

	Per cent
(1) Aluminium	43.5–41
(2) Zinc	26 –30
(3) Manganese	1.5– 3
(4) Nickel	3 – 6
(5) Steel (Siemens-Martin)	5 – 2
(6) Magnesium	21 –18

In accordance with the use of rising or falling percentages of the corresponding components 1 and 2, 4 and 5 and in accordance with the choice of the amount of this pre-alloy in the final alloy within the range of 3–10%, the properties of the latter vary simultaneously in respect of tensile strength and ductility.

Example

The pre-alloy consisting of the above composition and produced in a suitable manner is added in a pre-heated condition at about 100° C. to the actual magnesium melt or to the melt of the magnesium alloy if an alloy is to be improved, the percentage added being within the prescribed limits. The added pre-alloy slowly dissolves in the melt.

During this melting operation the customary flux rises to the surface and covers the melt. When everything has become fluid the melt is thoroughly stirred and heated further to 800–900° C.

Then the crucible is removed from the furnace and after waiting some minutes for it to cool down to the casting temperature of 700–750° C., the alloy is cast into pigs or moulded blocks.

I claim:

As an article of new manufacture for use in the production of magnesium alloys, a pre-alloy of the following composition:

	Per cent
(1) Aluminium	43.5–41
(2) Zinc	26 –30
(3) Manganese	1.5– 3
(4) Nickel	3 – 6
(5) Steel (Siemens-Martin)	5 – 2
(6) Magnesium	21 –18

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