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2,762,706

LOW MELTING POINT ALLOYS

Arthur T. Cape, Los Angeles, Calif., assignor to Coast Metals, Inc., Little Ferry, N. J., a corporation of Delaware

No Drawing. Application October 19, 1954,
Serial No. 463,321

5 Claims. (Cl. 75-134)

This invention relates generally to low melting point alloys, but has reference more particularly to boron-free alloys of this type which are especially adapted for brazing and hard facing purposes.

Alloys made in accordance with the invention fall within the following ranges:

	Range, percent	Preferred, percent
Phosphorus.....	1-6	3.50
Molybdenum or Chromium (or both).....	2-15	5.40 Mo
Silicon.....	4-20	11.80
Nickel.....	40-83	50.00
Iron.....	0-35	29.3
		100.0

As indicated by the above range, the iron may be as low as zero, but dilution of the alloy with iron up to 35% does not affect the properties of the alloy.

The alloy, as indicated, is free from boron, and is therefore well adapted for atomic energy purposes, due to its low absorption of neutrons, which is not true of boron-containing alloys.

The hardness of the alloy varies from 40 to 64 Rockwell C scale.

A particular advantage of the alloy is that high amounts of silicon may be present, and yet strong bonds are obtained.

The alloys have melting points within the range of 1825° F.-2000° F.

Copper may be substituted for nickel in any amount up to about 1/4 of the nickel. For example, when the alloy contains 40% nickel, copper may be used in an amount up to 10% of the alloy.

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Examples of copper-bearing alloys are as follows:

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	Percent	Percent
Nickel.....	72	62
Chromium.....	12	12
Silicon.....	10	20
Copper.....	5	5
Phosphorus.....	1	1

It will be understood that various changes may be made in the alloys without departing from the scope of the appended claims.

Having thus described my invention, I claim:

1. A boron-free, low melting point alloy, especially adapted for brazing purposes, and having low absorption for neutrons, said alloy consisting of about 1 to about 6% phosphorus, about 2% to about 15% of at least one metal selected from the group consisting of molybdenum and chromium, about 4% to about 20% of silicon, about 40% to about 93% nickel, and up to about 35% iron.

2. An alloy, as defined in claim 2, in which copper may be substituted for nickel in any amount up to about one-fourth of the nickel.

3. A boron-free, low melting point alloy consisting of about 3.5% phosphorus, about 5.40% molybdenum, about 11.80% silicon, about 50% nickel, and about 29.3% iron.

4. A boron-free, low melting point alloy consisting of 72% nickel, 12% chromium, 10% silicon, 5% copper, and 1% phosphorus.

5. A boron-free, low melting point alloy consisting of 62% nickel, 12% chromium, 20% silicon, 5% copper, and 1% phosphorus.

References Cited in the file of this patent

UNITED STATES PATENTS

2,521,273 Wissler ----- Sept. 5, 1950

FOREIGN PATENTS

583,737 Great Britain ----- Dec. 30, 1946

633,230 Great Britain ----- Dec. 12, 1949

926,132 France ----- Sept. 23, 1947

OTHER REFERENCES

Van Natten: "The ABC's of Silver Alloys Brazing,"
Iron Age, January 8, 1948, page 53.