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CONTAINER HAVING A HIGH RESISTANCE TO CORROSION BY ALKALINE AND SODA ASH SOLUTIONS

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3 Claims. (Cl. 206—2)

The present invention relates to alloys containing aluminium as the predominant constituent, and more particularly to articles of such alloys having a high resistance to the corrosive action of alkaline and particularly also of soda ash solutions.

It is well known that the comparatively low resistance of aluminium and aluminium alloys to alkaline and soda ash solutions constitutes a disadvantage in many respects. This is so particularly when employing aluminium for kitchenware and similar vessels as the cleansing of such vessels generally is performed by means of alkalies or soda ash.

I have discovered that certain high-grade aluminium alloys, containing a moderate percentage of magnesium, which are known per se, display a quite surprising resistance to the attack of alkaline and particularly also of soda ash solutions.

In comparison with pure aluminium, the incorporation of magnesium in amounts ranging from upwards about 6 to 8 percent gives rise to a gradually increasing resistance to the attack of the said ingredients, aluminium alloys containing more than about 7 percent of magnesium being for all practical purposes proof against the corrosive action referred to. However, the magnesium content may rise as far as 15 percent of the weight of the alloy without a maximum in the resistance to corrosion being attained.

The following comparative figures are representative of the superiority, with respect to the resistance to corrosion, of the alloys according to the present invention as compared with other high-grade aluminium alloys frequently used for similar purposes. The figures give the quantity of hydrogen developed in the course of 15 hours of equal surfaces in contact with a 5 percent soda ash solution at room temperature:

	Ccms.
Pure aluminium	about 195
Duralumin alloy	about 165
Alpax	about 130
Sea-water proof alloy "K S"	about 130
An alloy consisting of 90 percent of aluminium and 10 percent of magnesium (according to the invention)	about 3

The influence of increasing amounts of magnesium when alloyed with aluminium upon the resistance to corrosion appear from the following table, the tests being carried out under the same condition as above.

Alloy	Duration of contact	Hydrogen developed
	Hours	*Ccms.*
98 perc. Al, 2 perc. Mg	3	50
96 perc. Al, 4 perc. Mg	3	34
94 perc. Al, 6 perc. Mg	3	23
92 perc. Al, 8 perc. Mg	20	12
90 perc. Al, 10 perc. Mg	20	5
88 perc. Al, 12 perc. Mg	20	3
85 perc. Al, 15 perc. Mg	20	1

It appears from these figures that the resistance to soda ash solutions suddenly increases when the alloys contain more than between about 6 to 8 percent of magnesium.

A further improvement in resistance to corrosion may be attained by incorporating in the said binary alloys manganese, in quantities preferably ranging between 0.8 and 1 percent.

I claim:

1. A container for use in conjunction with alkaline and soda ash solutions composed of an alloy containing between about 6 and 15 percent of magnesium, the balance being aluminium.

2. A container for use in conjunction with alkaline and soda ash solutions composed of an alloy consisting of between about 6 and 15 percent of magnesium, and up to about 2 percent of manganese, the balance being aluminium.

3. A container for use in conjunction with alkaline and soda ash solutions composed of an alloy consisting of between about 6 and 15 percent of magnesium and between about 0.8 and 1 percent of manganese, the balance being aluminium.

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