

## ALIEN PROPERTY CUSTODIAN

### PROCESS FOR EXTRACTING POTASSIUM AND ALUMINIUM FROM A MIXTURE OF POTASSIUM AND ALUMINIUM SILICATES

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Alien Property Custodian

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One of the methods proposed for extracting potassium and aluminium from leucites and similar minerals, comprises subjecting the mineral to dry treatment at a temperature from 1200° C to 1600° C in the presence of limestone or other calcium salts: the double silicate is thus decomposed giving a mixture of insoluble calcium silicate and of soluble potassium aluminate, which may be separated by lixiviation.

This process shows however a considerable drawback, as a good deal of potassium is lost by volatilisation during the thermal treatment, so that rather low yields are obtained. It has been tried to recover the potassium volatilised, and also to reduce the temperature necessary to decompose the double silicate (e.g. by subjecting the mineral to forced grinding), but all these steps have been without success. Some advantage has been obtained by subjecting the mixture to thermal treatment in form of cakes prepared by dry compression, but also in this case the losses are still rather high.

I have now found that the losses mentioned above are due to the fact that the amount of alumina set free during the decomposition of

double silicate is not sufficient to bind potassium to form the correspondant aluminate. Consequently I have found that it is possible to reduce these losses to a considerable extent by adding to the mixture a certain amount of bauxite or other ores containing alumina. In this way the mass receives the amount of alumina necessary to fix the potassium set free first during the decomposition of the double silicate and at the same time the alumina subsequently formed during decomposition is thus able to fix still further potassium.

It is preferable to mix the limestone and mineral after accurate grinding, adding to the mixture obtained about 5-10% bauxite, referred to leucite present, and dry-pressing the mass into cakes, baking these cakes at 1200-1300° C in furnaces of suitable design, preferably with outer walls heating in order to reduce the amount of combustion gases flowing over the cakes.

This process allows to reduce considerably the losses of potassium and to reach yields of the order of 90% and more.

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