

ALIEN PROPERTY CUSTODIAN

METHOD OF OBTAINING ALUMINIUM FROM CLAY

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The hitherto known method of obtaining aluminium according to the method of Héroult-Hall of 1887 requires the use of the special aluminium ores (bauxit) and admixtures to them (kriolith), present only in a few countries.

Furthermore this method as the one based on obtaining metal from oxide requires the consumption of great amount of energy, because the heat of formation of Al_2O_3 amounts to 380 Cal per 1 grammolecule of this compound.

The method of obtaining aluminium from aluminium chloride as described hereafter does not require the import from abroad either of the aluminium ore or the additions for them and requires the lesser consumption of energy, because it is based on the electrolysis of the aluminium chloride ($AlCl_3$), the formation heat of which amounts to 162 Cal per 1 grammolecule of $AlCl_3$.

The clay is roasted with coke and is submitted to the action of chlorine. The distillate or the sublimate contains aluminium chloride and other chlorides, volatile in these conditions. The separation of the aluminium chloride is done by means of fractional distillation or fractional sublimation. The sublimated pure aluminium chloride is melted under the minimum pressure of 2.5 atmospheres of the dry chlorine at the temperature of at least $190^\circ C$ and is decomposed by the electric current—without the addition of potassium chloride or sodium chloride. The carbon electrodes are employed here. The cathode from the beginning of electrolysis is covered by a thin aluminium sheet and is movable. The pressure of the chlorine in the electrolyser is regulated automatically, whereas the level of the electrolyte is maintained constant.

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