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The Al containing wastes technology of recycling for alumina, coagulants and building materials production

Lainer U. A., Tuzhilin A. S., Perekhoda S. P., Vetchinkina T. N., Samoilov E. N.

(Baikov Institute of Metallurgy and Material Science RAS, Moscow 119991, Russia)

The Al-containing wastes are generated by a row of industrial plants as hydroalumocarbonate residuum, underwastes water, foundry slag, mud, catalysts, mineral part of coals and others. These wastes is cycling in technological processes that cause to extra energy costs, processes stages difficulties and negatively affecting to environment.

The institute has developed physical, chemical and technological foundations for the Al-containing wastes recycling with alumina, coagulants, rear metals and building materials producing by the acidic, chloride and electrothermic means. The physicochemical basis of the Al-containing wastes are: the basis ingredients of wastes, acid, alkali and chloride interaction kinetics research; the aluminate, sulphate, nitrate and chloride system properties definition that system is containing aluminium, iron, alkali and rear metals; the aluminium compounds and iron/silica oxides separation in water solutions; the sulphate to aluminate transformation mechanism at aliminium, potassium and sodium sulphate compounds dissociation; germanium, scandium, gallium, zirconium and other impurities extraction from wastes for most complex usage.

These researches are basis to Al-containing wastes perspective technology creation. The main stages of that technology has been tested by a pilot scale and in a several cases, industrial scale with equipment-technical execution development. The economical evaluation of technology points to its perspective. Our technology has been explored by the several plants.

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