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New Inventions

BENEFICIATION OF TITANIFEROUS ORES

US Patent no. 07/983,486
Inventor: K.J. Leary
Applicant: E.I. du Pont de Nemours and Company
Application no.: 93/8946
Date filed: 93–11–30
Date of acceptance: 95–05–30
A process for beneficiation of titaniferous ores is disclosed in which a titanium and iron–containing ore, such as ilmenite is heated with potassium hydroxide, e.g. at temperatures of about 350–650°C and then treating the product with carbon monoxide and water. After cooling and washing the solid product can be separated by magnetic means into an iron–containing magnetic fraction and a titanium–containing fraction.

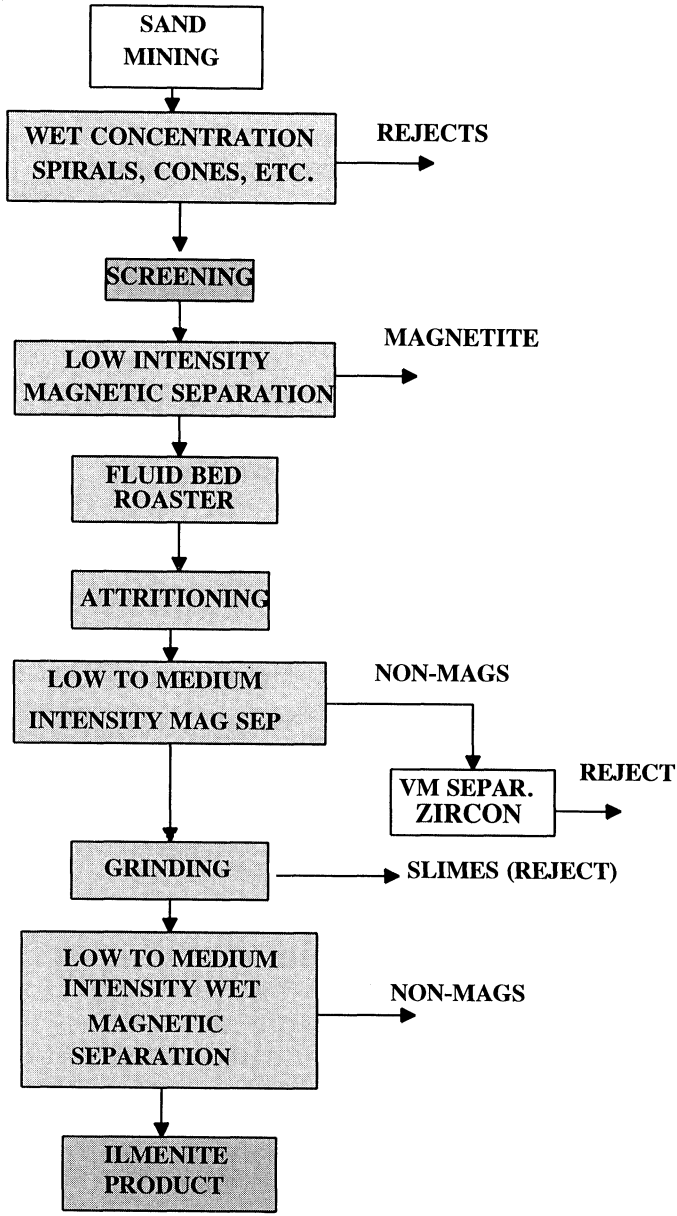
METHOD FOR PRODUCTION OF FeSi

Norwegian patent no. 933264
Inventor: O. Raaness
Applicant: As Sydvaranger
Priority date: 13 September 1993
Application no. 94/6994
Date filed: 12 September 1994
Date of acceptance: 95–05–08
Method for production of ferrosilicone in an electric reduction furnace, by using iron–containing, quartz–containing and carbonaceous materials. The reduction furnace is, in addition to Si–containing materials, supplied with agglomerates, which replace in at least a portion of the iron–containing material. The agglomerate comprises a substantially homogeneous mixture of a carbonaceous material and a reducible iron compound, alternatively iron, whereby the weight ratio between carbon and iron in the reduced agglomerates is in the range from 0.2:1 to 1.5:1 based on reduced agglomerate. The agglomerate affects an absorption of SiO gas present in the furnace which normally is lost through the off gases from the furnace, thus increasing Si yield and decreasing energy consumption.

PRIMARY BENEFICIATION OF ILMENITE

Australian patent no. PL9643
Inventor: E.A. Walpole
Applicant: Austpac Gold N.L.
Application no.: 94/4548

Date filed: 24 June 1994
Date of acceptance: 95–06–19
Priority date: 25 June 1993



A process for enhancing ilmenite from deposits of mineral sands or mineral concentrates comprises a single stage fluidised bed or rotary kiln magnetising roast. A temperature of 650–900°C in an excess of a carbonaceous fuel (such as coal/char, CO or hydrocarbon) is used to provide an atmosphere in which the oxygen potential is controlled resulting in a consistently high magnetic susceptibility product. Roasting has been used before but the current process requires a lower intensity magnetic separation stage 18 and provides improved recovery (even of tailings produced by prior art roasting process). Controlled cooling of the roasted product improves the resultant magnetic susceptibility. A high intensity magnetic separation stage may be introduced prior to the roasting stage.

Ilmenites having inclusions or selvedges of silicate minerals may be further improved by employing a grinding step after magnetic separation prior to slagging or use as synthetic rutile feedstock. The roasting stage potentiates the ilmenite for leaching in the production of synthetic rutile.

DIE CAST MAGNET ASSEMBLY AND METHOD OF MANUFACTURE

US patent no. 5318095
Inventor: M.W. Stowe
Convention date: October 9, 1992
Date of acceptance: June 7, 1994
A die cast, two pole, insulated magnetic assembly and method of manufacture. A magnetic body of preferably ceramic ferrite material is sandwiched between two pole pieces such that each pole has a free end which projects beyond the magnetic body. The sandwiched pieces are then inserted into a female mold having a main mold cavity and a pair of opposed pole cavities formed therein to receive the projecting ends of the poles, thereby correctly aligning them. A metal sleeve is then inserted into the main mold cavity such that an annular space is created between the sandwiched magnet assembly and the sleeve. Molten zinc is then poured into the mold and sleeve to encapsulate the magnet except for the projecting ends of the poles. After the Zn has solidified, the assembly is removed from the mold.

HARD FACING

British patent no. GB2282826
Inventor: A.R. Boswell
Applicant: Pratco Industries
Convention date: June 22, 1993
Date of acceptance: April 19, 1995
A hard facing is produced with particulate wear resistant material bonded by a matrix of substrate material by feeding particulate into a melt pool with a degree of dissolution to produce recrystallised wear resistant material in the matrix. Particulate is fed from a hopper to a delivery chute into a melt pool produced by a TIG electrode in a surface being hard faced. The TIG electrode is mounted on a robot arm and moved or scanned over the surface receiving hard facing. A magnetic separator removes magnetic material which might foul the electrode.