CONVERSION OF SRI LANKAN IRON ORE INTO HIGH QUALITY PELLETS TO BE USED IN IRON MAKING

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DECLARATION

"I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any University, and to the best of my knowledge and belief it does not contain any material previously published, written or orally communicated by another person except where due reference is made in the text."

Signature of Candidate Date:

The above candidate has carried out research for the Master of Philosophy under our supervision.

Signature of the supervisors:

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ABSTRACT

Iron ores and lime are two of the available raw materials in Sri Lanka for iron making. However, proven reserves of iron ore deposits in Sri Lanka have not been scientifically estimated as yet. There is no indication of the occurrence of coal deposits in Sri Lanka for the utilization to produce iron using the blast furnace. Therefore, it is important to investigate the possibility of producing high quality iron ore pellets using locally available resources as a substitute for sponge iron which is imported to use in the cupola furnace.

In this study it was aimed at obtaining high quality iron ore pellets with required strength, porosity and degree of reduction by varying pellet compositions, firing temperature and soaking time.

The pellets prepared with 100 parts of Dela Iron ore, 7 parts of Aruwakkalu lime and 7 parts of coke which was sintered at 1250°C for 10 min gave the optimum crushing strength, apparent porosity and degree of reduction. The subsequent melting of these pellets in the lab scale cupola recovered iron as "metallic pigs', which conformed to alpha iron having high purity.

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