

The invention deals with a method of manufacturing molten pig iron into an electrical smelting unit 13. The method comprises the following successive steps: - providing a directly reduced iron product 12, - feeding the DRI product 12 into the smelting unit 13, - feeding together with the DRI product 13 at least one steel or ironmaking by-product-based material having an iron content upper than 20 % in weight, at least a part of said iron being under an oxidized form, - melting the DRI product 13 and the at least one steel or ironmaking by-product-based material to produce molten pig iron. The invention also deals with a steel manufacturing method using said pig iron.