

Total length of run	8 hr. 7 min.
Effective length of run	6 hr. 12 min.
Mean volts	147
Mean amps	2,235
Mean watts	331
Watts (= volts × amps)	328
K.V.A. (= watts × time)	2,050
Total units (K.W.H.) consumed × 1.25	2,245
Pig iron produced	(lb.) 984
Units (K.W.H.) per ton of pig	5,111
Slag made	(lb.) 1,666

$$\text{Ratio } \frac{\text{Slag}}{\text{Iron}} = \frac{1666}{984} = 1.693.$$

Metallic iron charged as sands	(lb.) 996
Metallic iron charged as ferro-silicon	(lb.) 79
Lime charged of iron produced	(lb.) 150
Coke and breeze charged	(lb.) 382
Lime per ton	(lb.) 341
Coke per ton of iron produced	(lb.) 825
Yield of pig iron per cent. of iron charged	91.53

The analyses of the products obtained were as follows:—

Pig Iron (before addition of Ferro-silicon.)

	Per Cent.
Carbon by combustion	3.538
Silicon	0.068
Sulphur	0.012

Pig Iron (as Cast).

Graphitic carbon	2.490	} Total carbon 3.019.
Combined carbon	0.529	
Silicon	2.055	
Sulphur	0.006	
Phosphorus	0.329	
Manganese	0.237	
Titanium	0.051	

Slag.

Silica	18.64
Titanic oxide	9.95
Alumina	7.24
Ferrous oxide	5.50
Oxide of manganese	1.18
Lime	31.74
Magnesia	24.85
Phosphoric anhydride	0.11

The average yield, taking all three pig-iron heats together, was 91.64 per cent., and the consumption of lime 347 lb., coke 812 lb., and ferro-silicon 237 lb. per ton of iron produced. The average current-consumption was 4,949 K.W.H. per ton of iron produced.

HEAT 12.

After heat No. 11 was completed the lining of the furnace was examined and it was found that the slag had worked through between the magnesia brickwork and the basic material forming the hearth, and also a large portion of the hearth had been eroded away. However, the bad places were patched, and it was decided to run one more heat and to make steel direct. The same charge as before was put in, as follows: Ironsands, 600 lb.; coke-dust, 70 lb.; coke-breeze, 40 lb.; lime, 50 lb.

The second portion was charged into the furnace after 1½ hours' run, and the reduction was complete after 4 hours 39 minutes; the first slag was then poured.

56 lb. hæmatite ore and 50 lb. lime were then added, and later 9 lb. fluorspar, 28 lb. hæmatite ore, and the second slag poured an hour after the first. There were then further additions of 23 lb. lime, 98 lb. hæmatite ore, and the final slag poured off an hour later.

The metal was then carburized with coke-dust and 14 lb. ferro-silicon, 3 lb. ferro-manganese, and a small piece of aluminium added, and the steel poured into ingots after a total run of 8 hours 32 minutes.