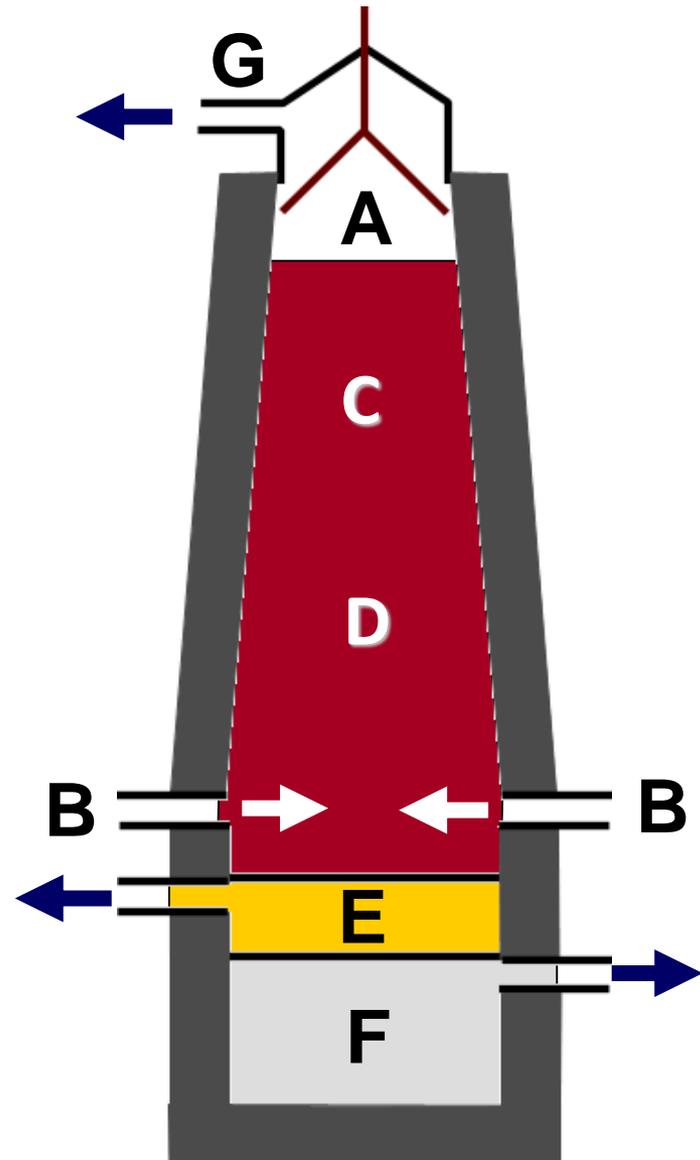


THE BLAST FURNACE – Reduction of iron

IN THE BLAST FURNACE IRON ORE IS REDUCED TO IRON.

THE REACTION IS POSSIBLE BECAUSE CARBON IS ABOVE IRON IN THE REACTIVITY SERIES



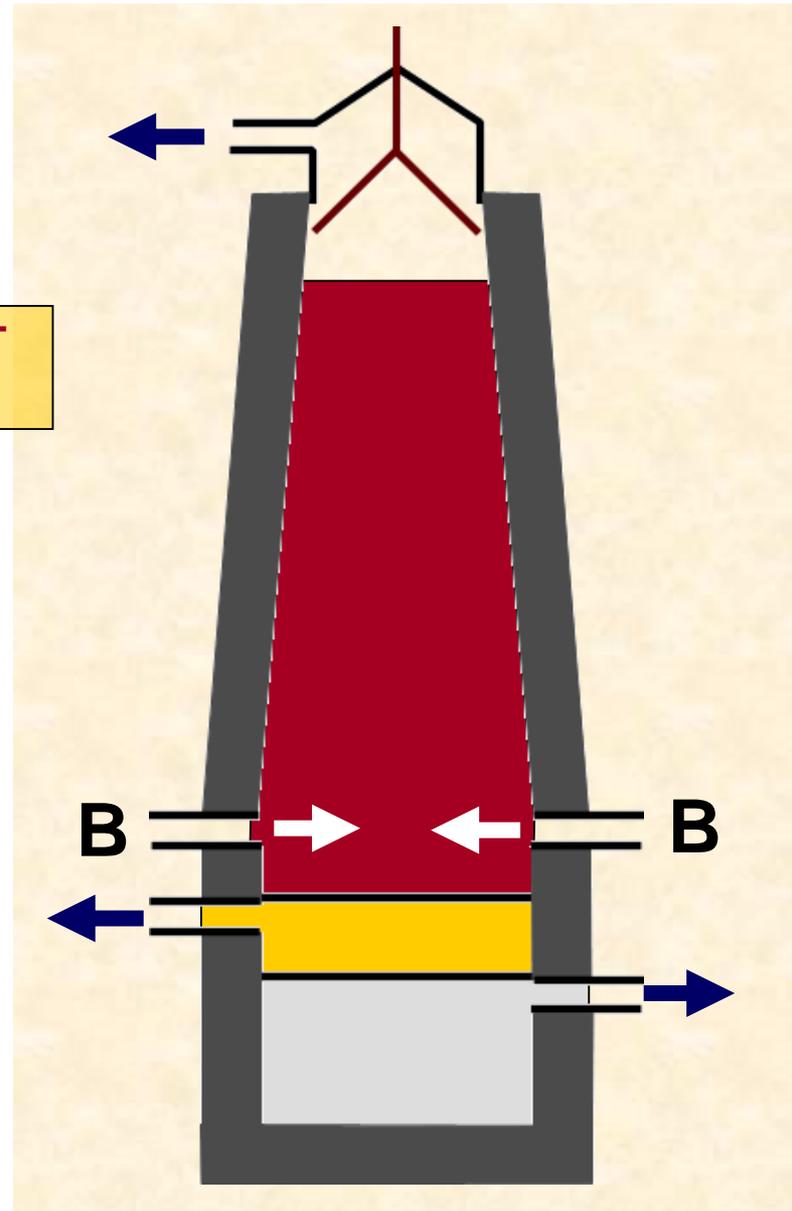
THE BLAST FURNACE – The role of oxygen

**HOT AIR IS BLOWN IN
NEAR THE BOTTOM**

**CARBON + OXYGEN → CARBON + HEAT
DIOXIDE**



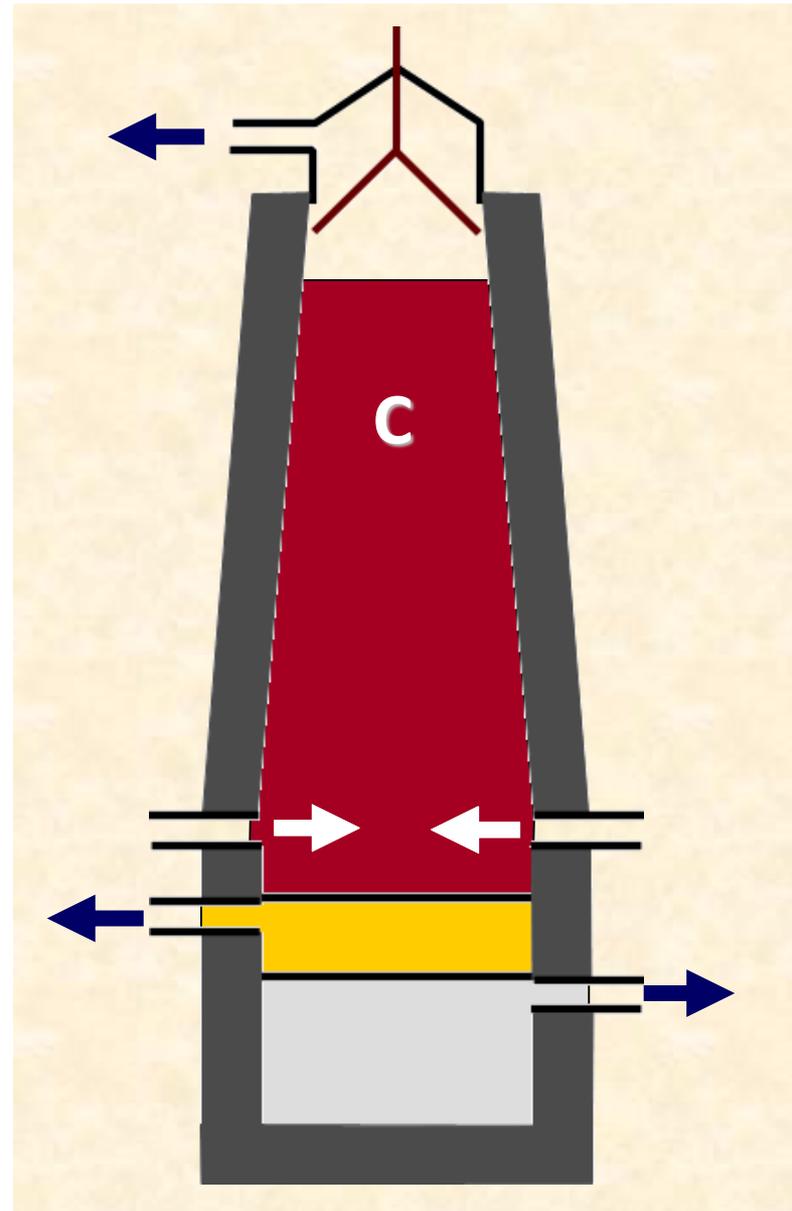
**OXYGEN IN THE AIR
REACTS WITH CARBON IN
THE COKE. THE REACTION
IS HIGHLY EXOTHERMIC
AND GIVES OUT HEAT.**



THE BLAST FURNACE – Generating the reducing agent

**THE CARBON DIOXIDE
PRODUCED REACTS
WITH MORE CARBON
TO PRODUCE
CARBON MONOXIDE**

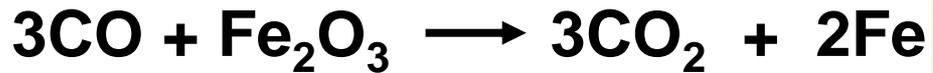
CARBON + CARBON DIOXIDE → CARBON MONOXIDE



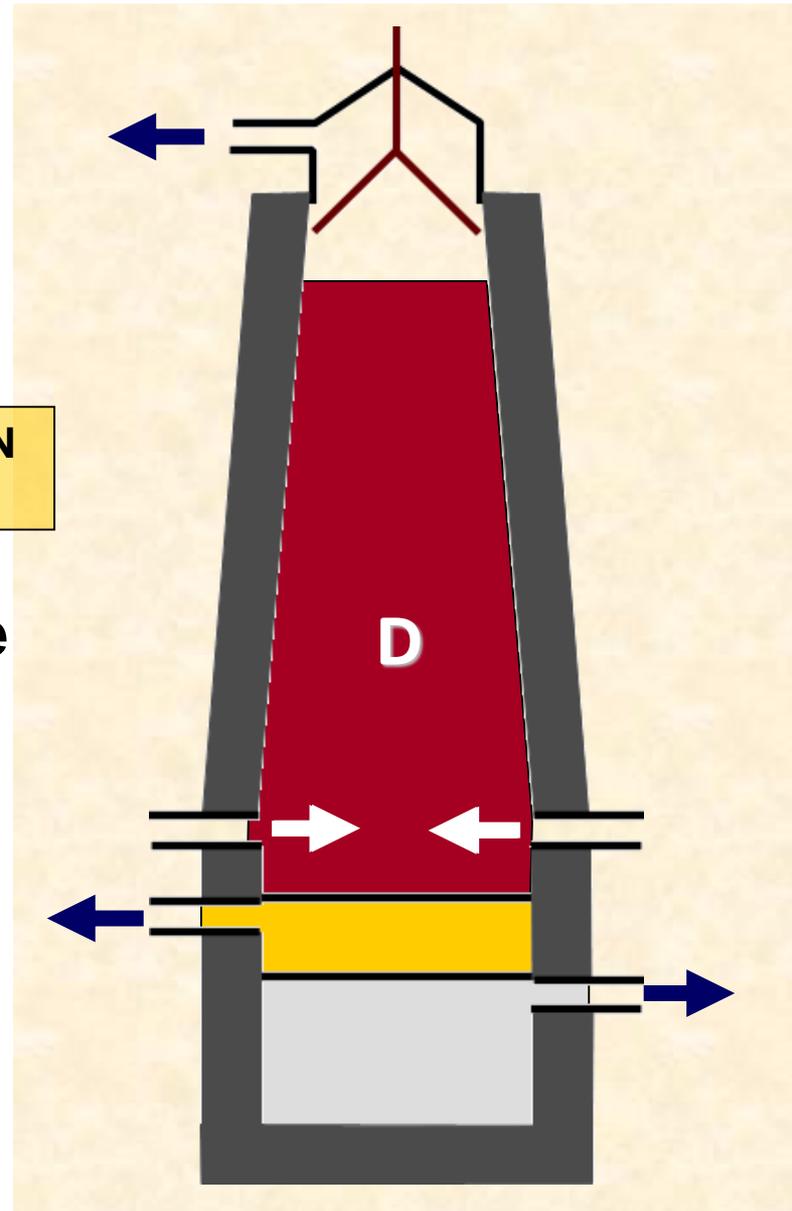
THE BLAST FURNACE – reducing the iron oxide

THE CARBON
MONOXIDE **REDUCES**
THE IRON OXIDE

CARBON + IRON → CARBON + IRON
MONOXIDE OXIDE DIOXIDE



**REDUCTION INVOLVES
REMOVING OXYGEN**



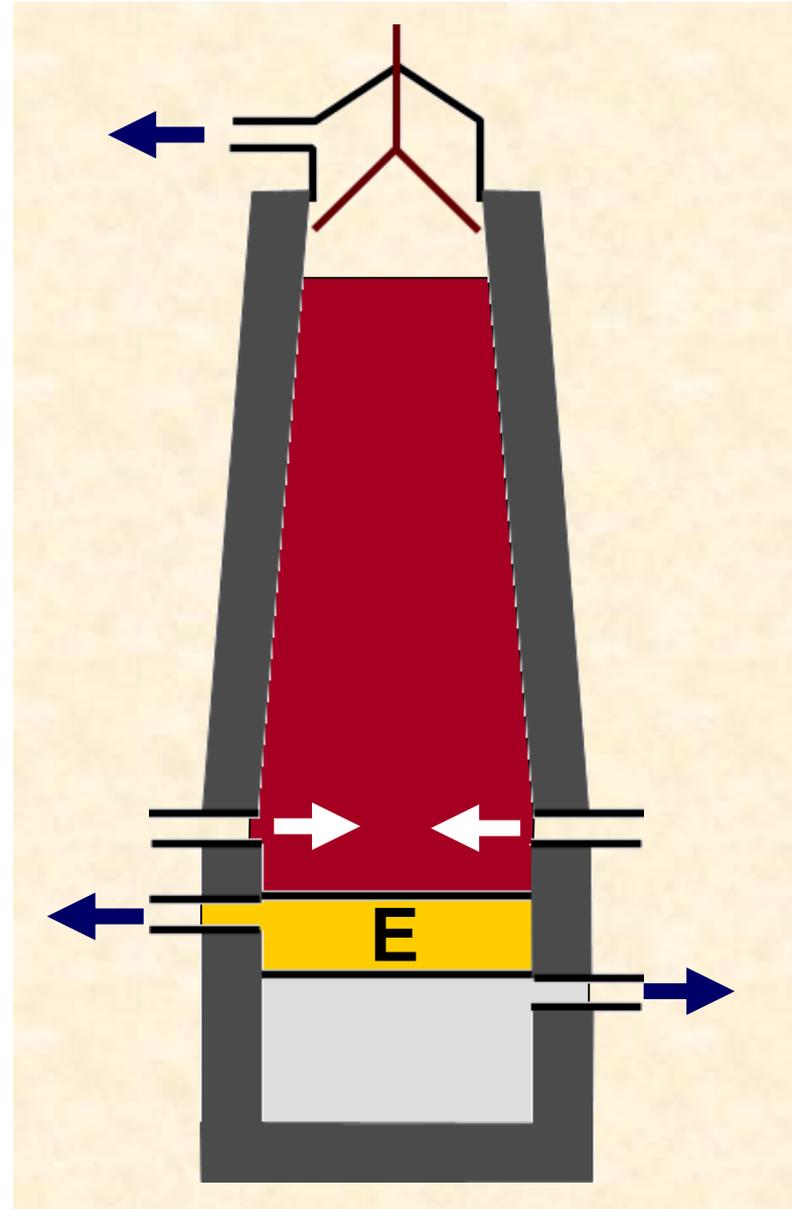
THE BLAST FURNACE – Dealing with impurities

SILICA IN THE IRON ORE IS REMOVED BY REACTING WITH LIME PRODUCED FROM THE THERMAL DECOMPOSITION OF LIMESTONE



CALCIUM SILICATE (SLAG) IS PRODUCED

MOLTEN SLAG IS RUN OFF AND COOLED



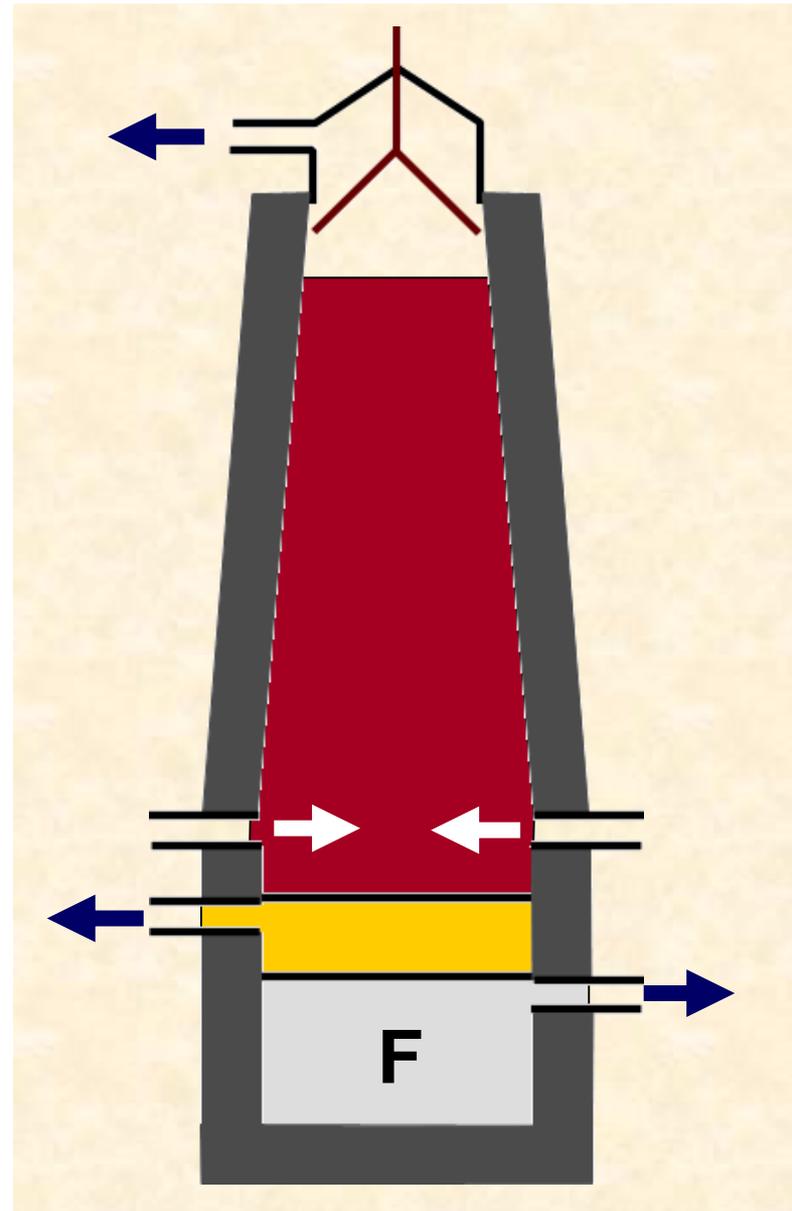
THE BLAST FURNACE – Getting the product

**MOLTEN IRON RUNS
TO THE BOTTOM OF
THE FURNACE.**

**IT IS TAKEN OUT
(CAST) AT REGULAR
INTERVALS**

CAST IRON

- cheap and easily moulded
- used for drainpipes, engine blocks



THE BLAST FURNACE – Environmental Problems

**HOT WASTE GASES
ARE RECYCLED TO
AVOID POLLUTION
AND SAVE ENERGY**

CARBON MONOXIDE - POISONOUS
SULPHUR DIOXIDE - ACIDIC RAIN
CARBON DIOXIDE - GREENHOUSE GAS

