Iron making must occur to extract iron from the iron ore that is used in the production of steel. This takes place in a blast furnace by a thermochemical process known as reduction.

There are two blast furnaces at BlueScope Steel's Port Kembla facility. The No 6 blast furnace produces around 7,300 tonnes of molten iron per day. Iron making is a continuous process and a blast furnace typically operates for 15-20 years before refurbishment.

Iron ore, coke and trimming fluxes (limestone and quartzite are used to control slag chemistry). These are fed into the top of the blast furnace on a conveyor. Oxygen-enriched hot air is blown into the furnace through inlet ports in the lower section of the furnace. This causes the coke to burn, producing carbon monoxide. The chemical reaction reduces the iron oxide to molten iron by removing the oxygen.

Powdered coal is injected into the blast furnace to ensure an even, high temperature is maintained in the blast furnaces. The molten iron is drained continuously through one of three tapholes in rotation at each blast furnace. The molten iron runs into torpedo ladles on rail tracks below the furnace and slag is skimmed off the top of the molten iron into giant slag pots. Slag is a by-product of ironmaking and is used to make cement.
The blast furnace produces gases are captured and cleaned for use elsewhere in the Port Kembla Steelworks in heating processes, or to generate energy. The gas cleaning process collects flue dust which has a high iron content and is recycled as feed for the Sinter Plant.

The Port Kembla Steelworks uses three furnaces that are charged with steel scrap, molten iron and a variety of additives. Each vessel can manufacture up to 300 tonnes of steel comprising around 50 tonnes of steel scrap and up to 250 tonnes of molten iron.

The mixture is heated to a level that turns the mix to molten steel at which point a water-cooled lance is lowered in and blows 99% pure oxygen at high pressure to raise the temperature. This melts the scrap and lowers the carbon content of the molten steel to help remove impurities. Fluxes (burnt lime or dolomite) are fed into the vessel to absorb the impurities, forming slag.

Samples of the steel are taken and tested and if necessary, alloying materials are added to give the steel special properties.

After the steel is removed from the BOS vessel, slag is poured off, cooled and recycled.