

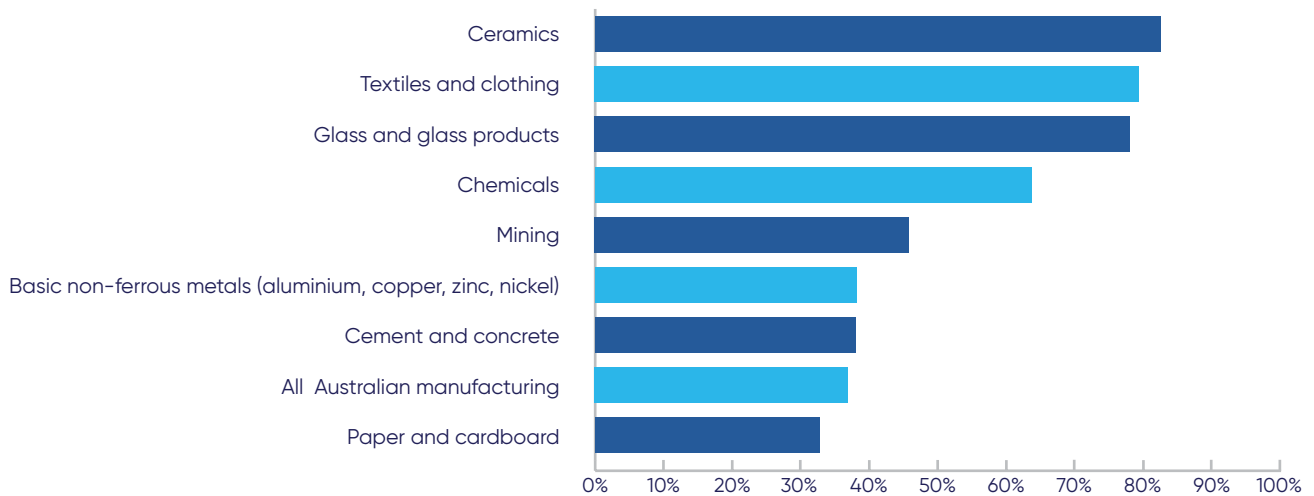
Natural gas use in Australian manufacturing

Natural gas is critical to Australian manufacturing, providing 37 per cent of the energy used by the sector.¹

Manufacturing in Australia contributes more than \$100 billion to the national economy and supports around 1.3 million jobs, accounting for more than 10 per cent of Australia's workforce.²

Manufacturers use gas for high-temperature industrial processes and as an essential ingredient to make a wide range of products and chemicals.

Industrial energy needs provided by gas, by sector (%)



Source: Australian Energy Update 2024, Table F.

In addition to its use as an energy source, around 17% of Australian industrial gas is used as a chemical feedstock to make products and chemicals such as fertilisers, plastics, pharmaceuticals and explosives.³



Natural gas is an industrial heat source⁴

Natural gas is used by industry for high-heat applications:

- Steel
- Cement
- Bricks
- Mining and critical minerals
- Plastics
- Glass
- Building products
- Cardboard and paper



Natural gas is an ingredient in everyday products

Natural gas is an essential ingredient in making:

- Fertilisers
- Plastics
- Pharmaceuticals
- Hydrogen
- Paints and adhesives
- Synthetic fabrics
- Pesticides & herbicides
- Explosives

¹ Australian Energy Update 2024, Department of Climate Change, Energy, Environment and Water (DCCEEW)

² Manufacturing Australia [website](#), accessed 23 September 2024

³ Future Gas Strategy, Australian Government, May 2024, p13

⁴ Australian Energy Update 2024, p9

Natural gas use in Australian manufacturing

Case studies

Natural gas is used by Australian manufacturers to process natural resources like bauxite, clay and silica sand into everyday products such as aluminium, bricks and glass used to build homes and buildings in Australia.

In all three industries, gas-fired furnaces can provide the consistent, extreme temperatures required to transform raw materials into durable building products whilst also supporting thousands of Australian jobs.

Find out more about how Australian gas is used at keepingthecountryrunning.com.au

Glass

Australian silica sand is a key ingredient in glass production. After mining, the silica sand is taken to a processing plant. Refined silica sand is then mixed with other raw materials like soda ash, limestone, and sometimes recycled glass. This mixture is heated in a gas-fired furnace at temperatures exceeding 1700°C to melt the sand mixture and form molten glass. During this process, the gas-fired furnace provides a consistent and controllable heat source, essential for producing high-quality glass. Once molten, the glass is shaped into sheets, cooled, and cut to size ready for use in windows and doors in homes and buildings.



Bricks

Bricks are made using clay quarried from surface deposits. The clay is taken to a processing facility where it undergoes several stages to prepare it for brick production. The clay is first crushed and mixed with water and sometimes other materials like shale, sand, lime, or colorants to achieve the desired consistency and properties. It is then shaped into bricks, air dried, and loaded into a gas-fired kiln at temperatures as high as 1200°C. After firing, the bricks are cooled and are ready to be used in construction sites to build homes and other structures.



Aluminium

Bauxite is mined and taken to a processing plant to be crushed and mixed with a hot solution of sodium hydroxide (caustic soda) that dissolves the alumina in the bauxite. The dissolved alumina is then filtered out as a fine white powder. The alumina powder is subjected to electrolysis to separate the aluminium ions from the oxygen, forming molten aluminium at the bottom of the electrolysis cell. Gas-fired furnaces are used to maintain the high temperatures required for this process. The molten aluminium is then collected, cast into ingots, and further processed into various aluminium products.

