

# CHAPTER 14 Industrial minerals

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## GYPSUM

South Australia's annual production (2000) of gypsum is 1.71 Mt, which is about half of Australia's production, and supplies most of the country's domestic requirements.

Gypsum has been deposited in two distinct evaporitic environments in arid or semi-arid areas of the state:

- **Coastal salinas** in interdunal corridors of Quaternary beach dune systems where gypsum is deposited by evaporation of seawater seeping into lakes. The largest deposits and principal sources for plaster and cement manufacture are of this type on Yorke and Eyre Peninsula.

**Lake MacDonnell** (Fig. 14.1), with a resource of ~500 Mt, is Australia's largest gypsum mine. The deposit comprises ~1 m of gypsarenite at 93%  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  overlying ~5 m of selenite at 94–96%  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ . The gypsum as mined is too high in salt content for plaster manufacture, so it is stockpiled on site for several years to allow leaching by rainwater. Annual production is ~1.39 Mt.

**Streaky Bay Lakes**, 26 km south of Streaky Bay, contain the largest known undeveloped gypsum resource in South Australia. Gypsarenite resources of 44 Mt at 88%  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  and averaging 2.5 m thickness at Lake Purdilla, and 6 Mt at 86%  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  and averaging 2.1 m thickness at Lake Toorna, have been measured at a cut-off thickness of 1 m. An additional 4 Mt are indicated at each lake, and adjacent dunes contain high-grade gypsum (Olliver et al., 1988). The deposits remain undeveloped mainly due to a lack of port facilities.

**Bielamah (Davenport Creek)** — A resource of 5 Mt of selenite and gypsarenite up to 5 m thick and containing up to 97%  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  has been delineated by Pioneer Plasterboard Pty Ltd for use in wallboard manufacture in Sydney and Melbourne.

**Stenhouse Bay deposits** — *Lake Inneston* and *Marion Lake* deposits provided the bulk of the state's production until the end of World War II. *Spider Lake* contains a resource of 2.4 Mt of laminated gypsarenite, averaging 1.2 m in thickness, while nearby *Snow Lake* contains a 2.8 Mt resource averaging 0.9 m in thickness but at an average grade of only 76.9% (Olliver and Warren, 1979).

Coastal salinas at **Coorabie**, **Tukoma**, and **Point De Mole** on western Eyre Peninsula are known to contain largely unexplored gypsum of reasonable grade.

- **Continental playas** underlain by relatively impermeable sandy clay in enclosed inland depressions (Warren, 1982) and their associated gypsum dunes.

