INFORMATION SHEET
NATIONAL INFORMATION NETWORK

CSIRO
AUSTRALIA

Concrete roofing tiles

The first concrete roofing tiles were manufactured in Europe in 1844. In Australia, manufacture started in the 1920s and many old roofs using these tiles are still weatherproof and will probably remain so for many years. Each year, however, CSIRO receives many enquiries concerning the painting of old concrete roofing tiles, many of them triggered by roof restoration companies, who make statements like the following.

- Cement tiles were not meant to last forever
- Lichens and moss eat into tiles (false)
- CSIRO recommends our paint treatment (false)
- Weathering of the original surface coating makes old tiles porous (false)
- Your roof and stumps will collapse if the tiles continue to soak up rainwater (false)

The following information will serve to correct any misinformation.

Up until the early 1950s, tiles were handmade by small companies. However, the great demand for building materials following the second world war resulted in improved mechanisation, production and quality control. Today, concrete roofing tiles are mechanically produced from a mixture of sand and cement and they are then spray-coated to improve their appearance.

The colour and appearance of concrete roofing tiles will slowly change due to weathering erosion, fading and lichen growth. Weathering erosion and lichen growth however, cause only negligible changes in tile strength and do not significantly increase porosity, even with total loss of the original surface finish. Concrete roof tiles, like all concrete products, become stronger and less porous with time, unless subjected to extreme frosts or air pollution.

The porosity of concrete roof tiles, measured (under laboratory conditions) between the extremes of prolonged soaking and high temperature drying, is less than 10%. In practice, the absorption of water by capillary action during periods of heavy rain would increase their weight by only 5%. Contrary to the claims of some sales people, this weight increase is extremely unlikely to cause structural roof or stump failure.

After prolonged rain it is normal for both old and new tiles to appear damp on the underside. This moisture can leave a water stain on the underside of tiles which is also normal and no cause for alarm. It does not cause fungal decay in roof framing timbers as temperatures are too high and moisture is not present long enough for the fungus to develop.

To paint or not to paint

Appearance is the only factor to be taken into account when deciding whether to paint or not to paint. If you want to improve the appearance of your roof, then certainly paint it. But if you are not concerned with the appearance, there is no need to paint.

If you decide to have your roof cleaned and repainted, you should consider the following points.

- Once painted, a roof will require repainting every five to ten years, if the appearance is to be retained.
- Check the economics carefully. Roof restoration companies usually charge up to several thousand dollars to clean and repaint the average sized roof. It is questionable if this money can be recouped on resale of the property. Advice from a local Real Estate Agent may clarify this aspect.
- Get at least three quotes from different companies before employing anyone.

• Beware of itinerant traders who move from suburb to suburb and do substandard work. Always obtain evidence that they have roofing trade qualifications e.g. membership of the Slaters and Tilers Union in Victoria. Try to get identification and references from previous work.

• Never be pressured into buying anything or signing a contract.

• Beware of guarantees and find out what they cover. Many things, such as a change of company name, management, or bankruptcy, can result in a guarantee not being honoured.

Cleaning and painting

There are two options: you can do it yourself or, you can employ a qualified tradesperson or roof restoration company to do it.

Although lichens and mosses do not eat into the tile surface, they must, along with accumulated dirt, be removed to ensure a good bond between paint and tile.

High pressure water jet sprays are ideal for cleaning roofs but care should be taken to work down the roof slope to avoid water being forced under the tiles. If you are going to do the job yourself, water jet sprays are available from most plant hire companies.

After cleaning, hose the roof down. While the roof is still damp, apply an acrylic primer-undercoat and follow this with an acrylic top coat. These coats can be applied by brush or spray, carefully following the manufacturer's directions. Note: Other paint types may perform poorly on concrete surfaces.

Leaks

As stated earlier, capillary water absorption does not normally cause roofs to leak. Leaks are usually confined to small areas and occur from other defects. If the roof leaks you should check the following.

• Flashings around chimneys, party walls, vents etc. are in good condition. Flashings can fail due to weathering of the flashing material, or by dislodgment or loss of mortar where the flashing is let into the brickwork.

• Tiles are holed, cracked, chipped or displaced. Damaged tiles should be replaced. If you cannot get the same size or profile, it may be possible to repair them by using an epoxy resin filler. Displaced tiles should be moved back to their correct position.

• Drainage channels under the sidelaps of the tiles are blocked by dirt. If they are, lift a few tiles in the leak vicinity and wire brush clean.

• Cement mortar pointing along ridge caps is cracked away or has fallen out. Where necessary, repoint with a cement-sand mortar of 1 part cement and 2 parts sand by volume.

• Eaves, gutters or downpipes are blocked. This can cause water to flow into the eaves if the gutter is mounted high on the barge board. Lowering, or providing overflow outlets cut into the side of the gutter should also solve this problem.

• The roof pitch is less than that recommended by the manufacturer for the particular tile profile or shape used. If it is, the roof will have to be sarked. This is very costly and should only be considered as a last resort. It may be practical to only sark those parts of the roof which face the prevailing wind direction. Sarking involves lifting the tiles and tile battens and placing sarking materials such as reflective foil insulation between battens and rafters. The sarking should be overlapped at edges, taped and sloped, to drain water to gutters and prevent ponding.

Note: Take care when walking on tiled roofs, particularly if they are wet and slippery. For safety, wear rubber-soled sandshoes. To avoid cracking or breaking, always walk on the tile noses. At this point they are directly supported by roof battens. Never put your full weight on the middle of tiles.

Compiled: Michael Tarrant
CSIRO National Information Network

Enquiries: CSIRO National Information Network
Adelaide 08 268 0116, Canberra 06 276 6266,
Darwin 089 221 711, Hobart 002 206 222, Melbourne
03 418 7333, Perth 09 387 0710 Sydney 02 413 7526

Leaflet 4, 1990. Series editor: Eily Gregg

SPSA B3583