

Making a Cement and Tile Tool

By John Nichol
www.nichoptical.co.uk

What follows is a set of instructions for making a cement and tile tool that can be used for the grinding process of making a telescope mirror. The tool is suitable for use with all grades of abrasive, both silicon carbide and aluminium oxide.

1. The mirror blank with a generated curve of the correct radius of curvature is placed on a level surface with the concave surface uppermost. A cardboard damn is fixed around the edge of the mirror as show, it should allow for a cement tool thickness of about 20-25mm. Next, a piece of greaseproof paper is cut to the diameter of the mirror blank and placed on top of it. This will prevent the cement from sticking to the mirror blank.



2. A creamy mixture of pure cement and water is mixed up in a clean bucket. A littler mechanical assistance is helpful here!



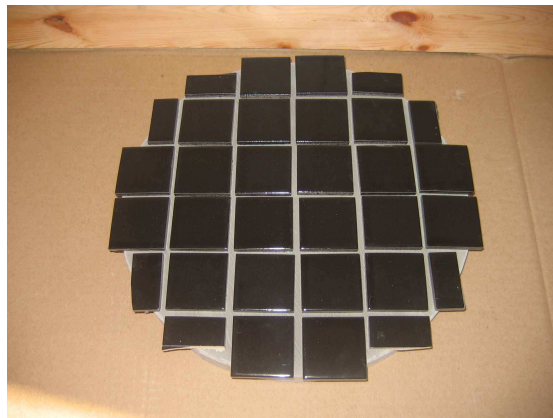
- When fully mixed, the cement is poured into the mould formed around the mirror blank. Do this on a level surface and smooth of the top as shown. Leave until the cement is fully cured.



- The next stage involves sticking the tile onto the cement base. The following will be needed: latex gloves, a brush, epoxy resin and hardener (as used with fibre glass, available from motor shops), container to mix epoxy and something to stir the mixture with.



5. Suitable tiles may be purchased from most DIY stores. They can vary in size from about 20mm square to about 50mm square, the size is not critical. They are sometimes referred to as mosaic tiles and come in sheets with a net backing. They should be removed from this before use. Begin by laying out the tiles on the cement base, glazed surface uppermost, to ensure that you have enough. It may be necessary to cut some of the tiles in half to fill in the edges. Take the tiles off the cement base before moving on.



6. Lay the cement disk on a flat surface. Mix up a generous amount of epoxy and hardener. Liberally apply the mixture to the surface and edge of the cement disk.



7. Start to lay out the tiles across the cement disk. The distance between the tiles should be about 6mm, this is not critical. Ensure that there is a generous amount of epoxy between the tile and the cement tool; this will ensure that the tiles do not come away from the cement tool during working.



8. Finally fill in any spaces at the edge with cut tiles. This is not critical; gaps can be left at the edges and no harm will result. Leave the epoxy to fully cure before using the cement and tile tool.

