

Breathe Freely by design (BOHS) - www.breathefreely.org.uk (P1)

The BOHS Design Guides

are intended to help those at the very beginning of the construction process to produce practical designs that reduce the use of activities or materials that have the potential to produce ill health in construction workers.

These guides cover common materials and activities associated with construction, maintenance, refurbishment and demolition.

If you have any feedback on this guide please contact the Breathe Freely campaign.

Cutting stone and cementitious materials

Typical occurrence

Stone and cementitious materials are often cut on site for basic building construction or to produce a particular finished effect.

This might include paving or materials used to face buildings.

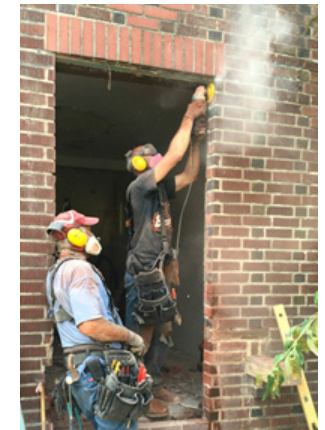
Chasing is often employed to cut channels in walls or floors to fit pipework or cables.

Potential Health Effects

Stone and cementitious materials contain varying amounts of crystalline silica. Breathing in dust produced by cutting or abrading these materials can result in the development of serious lung diseases, including fibrosis, silicosis, chronic Obstructive pulmonary disease (COPD) and lung cancer. These diseases may cause permanent disability and early death. It is estimated that over 500 construction workers die every year in the UK from exposure to silica dust.



Approximate crystalline silica content of different materials	
Sandstone	70-90%
Concrete, mortar	25-70%
Tile	30-45%
Granite	20-45%, typically 30%
Slate	20-40%
Brick	Up to 30%
Limestone	2%
Marble	2%



Breathe freely by design BOHS (P2)

How to avoid or reduce

- Less is more? Can a low silica or even a no silica material be used? The table above shows the wide difference in silica content of common materials ; or may-be something completely different such as plastic kerbs.
- Death by a 1000 cuts? Consider whether your design is reducing or increasing the number of cuts of paving or facing materials. Complicated mono-block designs can require many cuts to each piece; every one exposing the worker to harmful silica. Choose pre-cut blocks and kerb pieces.
- Pour not cut. Can walkways be produced by poured materials rather than paving?
- Offsite option? If cutting is required can the design facilitate offsite cutting where fixed dust suppressing or dust extraction equipment can be used?
- Predict and precast. Can any fixings or channels required be determined at the design stage and blocks precast with the required channels shaping or fixings?

SFARP

The design team need to consider their options of cutting or no cutting, or a combination of both to achieve the desired design effect in the context of the design intent.

If a high percentage of cutting cannot be designed out for reasons of practicality other control measures need to be specified eg. Off site cutting, tented enclosure, dust suppression and dust extraction.

