

ARMOUR STONE - HOW TO DO IT

Traditionally armour stone has been produced in two ways. Firstly you just picked out the appropriate sized boulders from a normal production blast. Given that in most cases you were looking for good fragmentation, production rates were likely to be slow. This was not a problem if you had plenty of notice of the order and room to store it (any salesman reading this, please note). Secondly you introduced more and more decking into a conventional shot and probably opened up the pattern as well. This generally increased production of the sizes you required but there was inevitably a downside. The quality of the face tended to deteriorate, making it difficult to maintain accurate burdens. The ideal would be to produce more of the sizes you want whilst still maintaining a good quality of face.

Over the past few years several operators have tried a different approach using air-deck techniques. The basic rules of thumb that have emerged are as follows.

- Burden is double the spacing (this is **not** a misprint)
- Aim for an air-deck volume of 50 - 70% to produce a blast ratio in the order of 10-16 t/kg
- On faces over 1.5m, splitting the charge, say 80/20 may help maintain a good quality of face
- Fire as many holes as possible on the same delay.

So if your normal burden and spacing is say 4m x 4m (based on 30-40 x hole diameter), start with a spacing of 2m. After a couple of shots to see the results, it may be possible to open up the spacing slightly. These techniques have been tried in basalts and limestones and hole diameters from 105mm to 127mm. With regard to face angles it is probably better to leave them as they are until you can judge the overall quality of the face, especially in the toe area.

If you are serious about armour stone production, you need to identify an area of the quarry away from your production faces. Useful though these guidelines might be, the most important factor is always the nature of the deposit itself, particularly the jointing and bedding. That ultimately determines how successful you are likely to be.

You also need to consider the equipment required. In our experience the best armour shots look as if they have hardly moved. Tackling it with a standard loading out machine could seriously damage your health and wealth. Specialist contractors use long reach excavators and grapples so they can safely 'dismantle' the face.