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Removing waste materials from under a tidal quay is costly and time consuming



# Is spray concrete performance secretly holding back your project?

Sprayed concrete, dry or wet method, is a fantastic way of free-forming repairs and shaping new concrete – especially in irregular forms. A skilled shotcrete team and the right materials makes a massive difference to the outcome of a project, and not just in the ways you may think.

Fosroc UK spoke to a number of leading spray concrete applicators, who had a fascinating insight into the amount of variation in rebound it is possible to get. Their conclusion was that saving money in buying a cheap material generally leads to much higher waste and rebound with some estimations of up to 50% of total dry spray material wastage, compared with current best performances that are around 10 to 15% and can even be as low as 3%.

The simple material mathematics are easy enough to calculate. However, the total impact on the project can be far greater as unforeseen knock-on costs spiral.



Removing excess materials from beneath rock stabilisation areas can be very dangerous

## Time and cost

The money spent on wasted material can be painful enough, but it gets worse. Looking at the initial process, more material has to be delivered, using more manpower and time getting it to where it's needed. What do you do with the overspray? It has to be collected, often meaning spray works have to stop for extended periods which is extra time and extra man-power cost. The waste material then has to be transported across site and removed. In tunnels and other hard-to-access sites, costs and delays can rack up quickly.

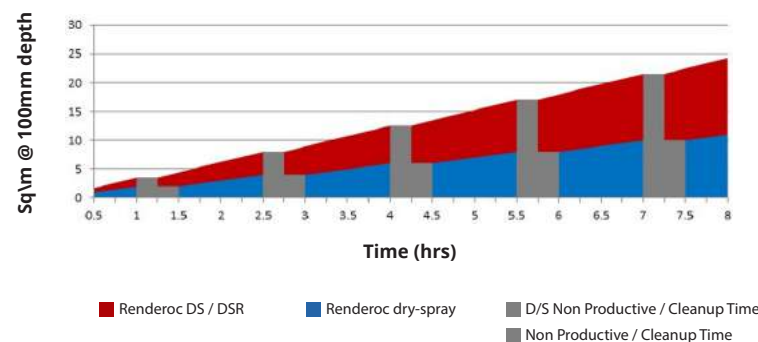
Materials that adhere poorly and rebound mean that the nozzle man spends longer achieving the coverage. So the skilled tradesman costs more and the rate of project progress will be much slower, incorporating all the associated plant and overhead.

## Safety and Ecology

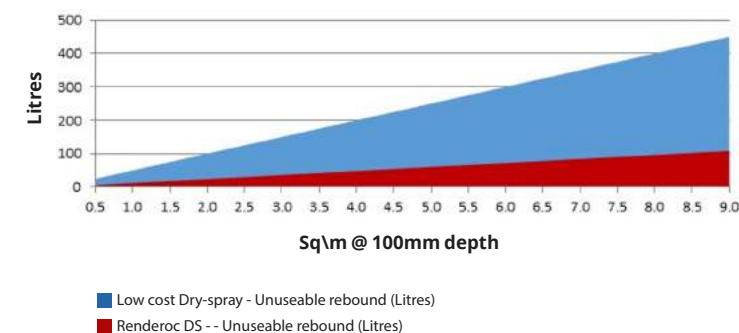
Considering the high carbon footprint of concrete, choosing a material where up to 50% of material will be put into landfill is plainly irresponsible. That is not to mention the increased energy consumption of additional material transportation and application. Close to watercourses, there is a greater risk of pollution from overspray and rebound.

In numerous sites, rebound creates a bigger issue for the safety of workers. Clearing up concrete can be perilous, putting workers into zones that risk falling debris or other site hazards. Especially in tunnels and groundworks, the areas at the workplace are undoubtedly the most dangerous on site, increasing time spent in those areas extends the risk.

Dry Spray Coverage over Time



Unusable rebound at Depth



## Conclusion

Conducting trials of materials and equipment to gauge best performance should be a prerequisite of any project where the spraying of concrete will form a significant part of the works. As accessibility becomes more of an issue, then the importance of the material quality will magnify. Selecting the right combination of materials, machinery and skilled workers, with a site proven capability will be the most sure-fire way to deliver a project success.

Choosing the right dry spray material with fibre reinforcement or selecting the right plasticisers and alkali-free shotcrete accelerators should never focus on cost per litre or kilo. A more holistic view of the project impact is critical if the sprayed concrete is to unlock its full potential rather than become a dirty, dangerous, slow and polluting process.

## Future Options

Fosroc's Renderoc DS and DSR materials were agreed by applicators to be market leading dry spray materials, producing as little as 10% rebound on projects and in recent trials have achieved less than 3%.

Wet shotcrete testing at Fundacion Santa Barbara in Spain showed it was possible to achieve rebound rates of less than 9% with initial set times of 90 seconds using Fosroc Auramix 353G, Fibercrete ST900 and Sparayset HBL75.

If you would like to find out more about how to get the most out of your dry spray and wet spray materials, speak to Fosroc representative or visit the website [www.fosroc.com](http://www.fosroc.com).