

Method Statement & Recommendations for Cleaning Mineralic Substrates Using the TORC Cleaning System

The name TORC refers to the Stonehealth 'Low Pressure Swirling Vortex' system, the earlier version of which was called JOS. For the purposes of specification the result can be regarded as comparable. Both the TORC and JOS nozzles operate with water, however only the TORC can be operated without if required.

1. The areas to be cleaned will be examined by the Supervising Officer and those of historic or delicate nature will be noted for additional precautions.
2. It should be normal practice before commencement of the cleaning operation that one or more sample areas are evaluated. Due merit should be given to the following;
 - a) Areas should be representative of the substrate, soling and detail of the main works.
 - b) Test panels should be positioned discreetly.
 - c) Location of the test areas must be recorded and protected from further alteration.
 - d) The parameters by which the result is obtained must be recorded.
 - e) An acceptable test area should be retained as a control panel for the main works.
 - f) Measures adopted as a result of the tests must be attainable and controllable in the main works.
3. The cleaning of the building surface should be carried out by a capable operator, who has received instruction from Stonehealth Limited, into the correct use of the TORC cleaning system. Stonehealth Limited maintains a record of the induction of each operator, together with subsequent monitoring information.
4. If the Test Supervisor is not familiar with the TORC system, they should seek such information from Stonehealth Limited as to be correctly identify the principle components. This is to prevent non-approved contractors making fraudulent claim to the TORC system with consequential damage to building fabric.
5. Consideration must be given to all Health & Safety matters. These are;
 - a) **Protective Clothing & Equipment**
Items specific to the use of this equipment; Eye protection (visor), ear protection (defenders / plugs), water-resistant clothing (skin to be covered), respiratory equipment (minimum shall be a disposable mask type FFP2, progressing through replacement cartridge type). If using the equipment dry or semi-dry then an air-fed helmet will be appropriate. If removing toxic or bio-hazard coatings, take this into account. Gloves (leather, cloth or rubber).
 - b) **Electrical Safety (pre 2016 version only)**
In the UK and Eire, the TORC system is normally supplied in 110 volts. Electrical ancillaries should incorporate abrasion resistant yellow arctic cable and BS4343 plugs and connectors. Power demand is 2.25 Kw.
 - c) **Location of TORC Equipment**
Equipment should be placed in a location easily accessible to the operator or their assistant. The pressure pot must prevent the ingress of water and debris. The same applies to stock of unused abrasive. Do not cover the air cooler / pump when in operation. Keep the equipment clean by placing away from the immediate vicinity of cleaning.
 - d) **Storage and Use of Fuel**
If using a diesel compressor, it may be necessary to store light gas oil (red diesel) or motor vehicle diesel on site. Ensure this is located to prevent accidental or malicious spillage. Make use of containment / bunding as required by law. Avoid contact with skin, soil and vegetation.

e) Education of Personnel

Whilst personnel working in the vicinity need not be inducted into the working of the system they should be made aware of the potential hazards – **compressed air**, dust, noise, high pressure water. It is prohibited to use compressed air against the person e.g. to aid removal of dust. A nominated person adjacent, other than the operator, should be aware of how to safely shut down the system in circumstances unforeseen.

f) Fire Fighting Equipment

The TORC equipment includes electrical items. A diesel engine compressor may present a liquid fire hazard.

6. The material to be used in the TORC system must be that supplied or approved by Stonehealth Limited. These are currently as follows:-

i	Calcite 'mos'	0.05	To	0.3 mm	3	Hardness
ii	Calcium Carbonate	0.05	To	0.4 mm	3	Hardness
iii	Dolomite 80	0.04	To	0.08 mm	4	Hardness
iv	Dolomite 'mos'	0.05	To	0.3 mm	4	Hardness
v	Unil 80 (Micro-Fein)	0.04	To	0.08 mm	6.5 - 7	Hardness
vi	Unil 180 (Ultra-Fein)	0.04	To	0.18 mm	6.5 - 7	Hardness
vii	Unil 250 (Fein)	0.1	To	0.5 mm	6.5 - 7	Hardness
viii	Unil 500	0.1	To	0.8 mm	6.5 - 7	Hardness

In general terms preference should be given to the granulates of lower hardness (i to iv) to minimise the risk of abrasion to the substrate and wear to the nozzle. However the removal of heavy soiling or paint may be best achieved by swift use of a harder granulate (v - viii) rather than prolonged use of a softer one (i to iv).

Granulates must be stored prior to use in a clean and dry environment.

Whilst these granulates are appropriate for almost all requirements other materials may be available for special applications – Please consult Stonehealth Limited.

7. If working adjacent to a watercourse, prevent contamination by solid or other residues. In preference, use natural abrasives i.e. Calcite, Dolomite and Calcium Carbonate.
8. Windows, doors, delicate features or any other areas not required of cleaning should be protected.
9. Gutters and down-pipes leading to soakaways should be diverted in order that the solid matter does not impair the drainage system. Consider the use of a geotextile such as 'Terram' or 'Tygar' to aid the separation of solid waste from water.
10. Recommended minimum ambient temperature for operation is normally 5°C. The release of compressed air at the nozzle induces a temperature drop of 2-3 degrees.
11. The standard size of TORC nozzle is 9mm. The smaller 5mm parallel is best suited to ornate and less accessible work. For very fine detail, statuary etc. the TORC Studio nozzle in sizes 2 – 4mm is recommended. 9, 5 & 3mm TORC nozzles are approximately equivalent to Jos 'Standard', 'Micro' & 'Piccolo'.
12. In practice, the maximum working pressure for the TORC system is approximately 5 bar.

13. The compressor capacity required to operate the 9mm and 5mm nozzles are 90 and 36 cfm (2500 and 1000 litres per minute) respectively. The 11 and 13mm sizes will require a larger volume of air if operated at full pressure. Please consult Stonehealth for advice.
There may be operational reasons why a diesel compressor is not suitable. It may be appropriate to make use of an electric compressor, if the power supply is sufficient. In general, an electrically driven screw compressor will be much quieter, does not require re-fuelling (or the on-site storage of fuel), and does not require ventilation of exhaust gases.
14. Adjustment of the water and air pressure should be made whilst maintaining an appropriate distance of the nozzle from the work. A balance should be achieved in order to obtain an effective and even cleaning result without abrading the substrate.
In the light of experience gained from producing the trial panels, it will be appropriate to specify the permitted parameters in the main works e.g. type of abrasive to be used, maximum operating pressure.
15. It is advisable that work commences at the uppermost level and continues downward.
16. In some instances it may be necessary to use supplementary techniques to expedite the process;
- a) Pre-soaking of surface contaminants with fine mist water spray, or the DOFF system, allowing a dwell time of several hours. This may soften the unwanted deposits. Its application however should be restricted when retention of hygroscopic components such as lime mortar is required. This is especially the case internally where the stability of the surface may depend upon the low residual moisture levels.
 - b) Chemical or mechanical paint removal e.g. DOFF system, solvent gel etc. These are particularly appropriate for thick coatings. Problems may arise, however, in confined (poorly ventilated) areas or conversely in open areas where public access is difficult to control.
 - c) Use of a spatula / scraper / mason's chisel or similar tool. This may be applicable to paint but will also be to the removal of thick carbon. Moss and other algal growth, greasy or tarry deposits can be removed with DOFF before TORC work is carried out.
17. Rinsing of the surface should take place every 2-5 square metres or at least before the unrinsed surface is dry, particular care should be taken when rinsing off Calcium Carbonate based products (Calcite). This can be achieved by use of the wash-down nozzle, or by using the TORC nozzle with the granulate turned off (i.e. just air and water). The latter method uses less water.
- To avoid the use of rinse water altogether e.g. during internal usage, careful use of a light brush or vacuum to the dried surface may be sufficient.
18. Following the completion of any repair work it is recommended that a final rinse be given to remove any residue.