

# **GENERAL TECHNIQUES AND MATERIALS FOR THE CLEANING OF MASONRY USING NEOLITH CHEMICAL PRODUCTS**



## 1 PRELIMINARY CONSIDERATIONS

It is first necessary to identify all the building materials involved such as granites (polished/unpolished; sandstones (red, cream and buff); brick, terracotta and brick-type tiles; calcited stones (including Portland, BATH, limestone, marble and slates; glass; PVC; aluminium; iron work and paint protected surfaces. The degree and type of soiling present needs consideration. Heavily soiled surfaces, particularly those with carbon black deposits, may need more detailed or repeated degreasing.

It is then necessary to identify the names of the products suitable for use in each specific case, also the alternative techniques which can be used, with considerations for time and efficiency, costs, environmental requirements and safety.

It is important that operatives are adequately trained and experienced; familiar with correct procedures and have correct equipment on site including first aid materials.

When selecting the techniques and appropriate Neolith and Flowplant Group products, verify that the chemicals being used will not adversely affect other materials nearby or underneath. Washed down debris disposal must comply with local authorities requirements ie. the debris from paint removal operations may need containment, polished granite and glass needs suitable protection, good ventilation is essential and in normal external use the Neolith range of chemicals have been tested behind close

sheeted scaffolding to ensure that no hazards arise from dangerous fumes.

Chemicals on any site should be the responsibility of some designated person with respect to safe storage and handling. Any spillages should be dealt with immediately, nobody should be permitted near to or underneath any areas being cleaned. At the end of each day the area, scaffolding boards, equipment etc should be washed down.

## 2 TESTED TRIALS

Before any extensive work is undertaken a suitable test patch area should be cleaned to establish that the selected method and chemicals give a satisfactory result. Repeated test patch trials may become necessary to establish desired contact times for various products, and/or if repetition of treatments are required.

### 3A ADVICE RELATING TO TEST PATCH TRIALS

Having selected the method and chemicals to be used and undertaken the test patch trial, should the degree of cleaning not be satisfactory then we suggest first, a review of the chemicals being used, the contact times being used and the necessity for repeating the degreasing treatments. A second test patch trial may need to be carried out.

**1. Has the structure been adequately degreased?** Acid cleaners have a much

reduced efficiency if the surface is not fully degreased. Consider using Neolith HDL if other de-greasants have been used.

**2. Consider longer contact time with the Neolith HDL (see notes under the NEOLITH LONG CONTACT METHOD).** We draw attention to our findings that we can clean masonry by repeating the NEOLITH LONG CONTACT TREATMENTS.

**3. Is the correct acid based product being used?** Refer to the table and product summaries.

**4. Has the building been treated with some unusual material?** Silicone treated masonry applied on dirty surfaces may trap in the dirt and then chemical cleaning becomes difficult.

**5. Alternative treatment methods may need to be considered.**

### 3B SUGGESTED CHEMICALS FOR TEST PATCH TRIAL

- a. **NEOWSASH** – A gentle degreasant which can be used for painted surfaces, ceramic and vinyl tiles and masonry surfaces being safer in use than caustic based degreasants, such as NEOLITH HDL and 425)
- b. **NEOLITH 275** - Contains less caustic than HDL and 425 but has better “cutting” power on greasy surfaces than has NEOWASH – use dilutions where possible.
- c. **NEOLITH 425** - This is a powerful degreasant and is slightly more economical in use than HDL. It should be used diluted where possible for cleaning stone or brick.

- d. **NEOLITH HDL** - This is the strongest agent and may require repeated washing off of treatments to adequately remove the debris and salts. It should be used diluted wherever possible as it is a powerful degreasant for stone and brick.

After degreasing with one of the former products washed down surfaces should be neutralised by applying the appropriate acid based cleaner. See section 4.

### 4 SELECTION OF APPROPRIATE ACID BASED CLEANER

Normally chemicals are applied to areas already wetted following a degreasing operation if not, then pre-wetting will be required before application of the acid based cleaner. Care must be taken. Acid based cleaners should not be used on calcited stone as this would have adverse affects on such stone. Frequently after degreasing the surface of calcited stone is then clean and only weak acid neutralisation (NEOLITH 907) is necessary. On types of masonry which are more difficult to clean it may be preferable to use stronger acid formulations with shorter contact times (e.g. NEOLITH YBSAC NEOLTH 625HD, NEOLITH 625SS, NEOLITH RS1). Alternatively Neolith can offer the LONG CONTACT METHOD where strong acids, such as Hydrofluoric, may not be necessary.

Formulations containing Hydrofluoric acid should not be used on pre-cast concrete or normal concrete as white marks can be formed. These materials would however be

cleaned by the normal degreasing process. Neolith recommend that acid cleaning agents be used as dilute as possible for efficient cleaning. Any acid cleaning agent applied to masonry which causes fizzing on the surface of the stone should be examined carefully to see if an alternative gentler product can be used. A short summary relating to each product is given below. Application should be by brush.

#### **NEOLITH YBSAC**

For use on Yellow Stock brick and is a very strong viscous product, coverage 3m<sup>2</sup>/l. Contact should be 15 minutes or less, special care is needed in hot weather, because of possible fume hazards.

#### **NEOLITH 625HD**

For use on unpolished granite, sandstones which are very heavily soiled, such as balustrades porches and balconies. It is a very strong acid cleaner, viscous, with coverage 3m<sup>2</sup>/l.

#### **NEOLITH 625SS**

For use on cream/brown sandstone and if diluted 50-50 or more may be used on bricks, terracotta and unglazed baked tiles. This product has been in use over 30 years with very satisfactory results. Ingredients prevent iron stain migration. Non viscous, coverage 3-4m<sup>2</sup>/l. This product complies with BS 8221-1: 2000 recommendations for sandstone cleaning formulations.

#### **NEOLITH RS1**

For use on red sandstone, in addition to cleaning it prevents efflorescence formulations. Viscous, coverage 3m<sup>2</sup>/ l.

#### **NEOLITH 600**

For use on brick, terracotta and unglazed baked tiles. Ingredients are balanced for best results. Non viscous, coverage 3-4m<sup>2</sup>/l.

Contact time normally 7-10 minutes but not longer than 30 minutes.

### **5 NORMAL CLEANING TECHNIQUES FOR MASONRY**

The basic technique established over many years has five stages carried out in order:-

1. To pre-wet
2. To degrease and prepare the surface for the acid cleaner.
3. To power jet off the surface debris.
4. To clean using the appropriate acid based product.
5. To power jet off the surface debris.

The purpose of pre-wetting is to fill the pores in the masonry and mortar with water so as to prevent deep chemical absorption and retain the product on the surface where its cleaning action is needed and from where it can be removed more efficiently later.

A cold water jet is normally used and each square metre of surface washed and wetted for about 30 seconds after which a short time is allowed (5-10 minutes) for surface water to drain down. This jetting also removes dust and loose organic matter from the masonry face. This should be carried out on all types of masonry except prior to using organic solvent based paint stripper or silicone water repellent or solvent based degreasers.

### **6 SURFACE PREPARATION AND DEGREASING**

If this stage is omitted then the efficiency of the acid based cleaner will be reduced and the results may be patchy. Heavy black surface carbon soiling may require repeated

degreasing treatments or extended contact times and this will be evident from the first test patch trial. Care would be necessary regarding the contact times on sandstone etc. Hydrofluoric acid containing chemicals left on the surface of some masonry, for long periods, can lead to colour changes or to white deposits forming. Only weak acids are necessary for neutralisation on clean or calcited stone.

For cleaning exterior masonry we recommend a selection of one of the following:-

#### **NEOLITH HDL**

Viscous fluid – essential for use on black carbon soiled masonry. Minimum normal contact time 1 hour (also see later the NEOLITH LONG CONTACT METHOD). Coverage rate approx 1 litre to 2-3m<sup>2</sup>.

#### **NEOLITH 425**

Non viscous fluid for general masonry degreasing. Contact time 1 hour. Coverage rate 1 litre to 3-4m<sup>2</sup>. Work to a distinct mortar joint horizontally and vertically to a down-pipe, window or corner so as to give a natural breaking off point when applying cleaning chemicals.

These products can be applied on any type of prewetted stone, brick or concrete etc as shown in the table, following the safety precautions given in the individual product data sheets. Thickened (viscous) Neolith products are applied by brush and worked well into the surfaces leaving an even and thick coating of the product. Non viscous products can be applied by low pressure spray units but considerable additional dangers are involved and so spray application is not a preferred technique. Before any spray

application is used a full risk assessment should be carried out.

### **7 POWER JETTING OFF SURFACE DEBRIS**

The most efficient and suitable technique found from our research and experience is The NEOLITH ENVIRONMENTAL JETTING METHOD. The chemically coated masonry is jetted off using preferably hot water but cold will suffice. The pressure used should be the lowest pressure required to remove the chemical and debris. Start with a general low pressure wash down to remove large residue from corners and crevices.

**Jetting operations should start at a top corner of the coated surface and the spray jet be moved very slowly horizontally working downwards slowly, taking at least 1 minute for the first washing down of 1 m<sup>2</sup> of surface area. When all surfaces have been washed in this way then further washing time of 2 minutes per m<sup>2</sup> should be given.**

Contractors are advised to contact local authorities with regard to acceptability of waste waters into surface or sewer drains. It is hazardous to masonry if water and jetting operations are to masonry if water and jetting operations are considered, should air temperatures fall (or be likely fall) to less than 2 degrees centigrade. Freezing of water soaked masonry can result in spalling.

### **8 THE NEOLITH LONG CONTACT**

This method offers an alternative technique whereby granites, sandstones, brick and



terracotta can be cleaned without the use of Hydrofluoric acid formulations. Several treatments are often necessary to achieve a good standard of cleaning and the masonry being cleaned retains its full surface colour

The process consists of:-

1. Pre-wetting (see previous comments).
2. Application of Neolith HDL by brush as a thick coating, well brushed into the masonry. The surface is then left for a time period determined test patch trial results after which it is brushed over with more HDL for a further time period, again determined by the test patch trial. It is better to jet off and re-treat. Total contact time for each trial should not exceed 3 hours.
3. Pressure water jet off the surface (see previous comments). This constitutes one, long contact treatment and it should be repeated until the desired degree of cleaning is obtained.
4. After the final jetting the surface needs to be neutralised using Neolith 907, applied by brush and jetted off after 15-20 minutes. Masonry should be tested with litmus paper and if necessary further neutralising should be carried out. Prior to the Neolith discovery, cleaning masonry such as granite, sandstones and brick was always considered to require Hydrofluoric acid agents. This alternative method is time consuming but avoids the possible dangers of such acid products and retains the natural colour of the stonework.

## 9 EFFLORESCENCE

Before pre-wetting masonry, preliminary pointing to ensure the structure is adequately water tight, is customary. Water soaked areas, such as those under broken guttering

or down pipes, often efflorescence after cleaning. Also after cleaning it is common for re-pointing to then be carried out. Mortar materials, especially those containing lime, can lead to efflorescence formations which are frequently blamed on the cleaning treatments and can take many years to weather away, often the efflorescence formed is calcium materials from the lime mortars. Neolith cleaning products have been formulated in order to reduce and prevent efflorescence formations and NEOLITH 10 can be used on efflorescing non-calcited surfaces making efflorescences soluble so the can be removed.

## 10 REMOVING ALGAE FROM MASONRY

Chemical cleaning with caustic based degreasants and strong acids kill living surface organisms. If chemical cleaning is not to be carried out masonry surfaces maybe freed from algae and lichens by pressure water jetting, allowing 30-40 minutes to drain down and then brushing on NEOLITH 800. This can be left on the masonry for 3-8 hours – it kills the organisms and the spores. Afterwards the Surface may be power water jetted off taking care not to allow run down waters into fish pools etc. The treatment does not leave algaecide agents in masonry.

## 11 WATER REPELLENT TREATMENT (ALGAE GROWTH PROTECTION)

After cleaning, the removal of oils, greases and dirt from the masonry surface reduces the repellency. Using caustic based degreasants or acid based formations kills all living organisms including algae and spores.

Masonry which wets easily will support algae growths and on buildings cleaned by chemicals or by abrasive methods the appearance of green organic matter on the cleaned stone is objectionable. No long term algaecide treatment is known at present. Treatment of the masonry with (NEOLITH 76) can render the surface water repellent and can reduce future soiling. The protective coating is considered effective for up to 10 years. Water repellent surface, being drier resist algae growths.

## 12 CLEANING MASONRY INSIDE BUILDINGS

Interiors usually require weaker and diluted chemicals. Strong acids are not normally used. Difficulties can be encountered with the disposal of washdown debris as suitable drains are often not available. Soiling matter is usually body grease and smoke contamination which respond easily to diluted degreasant products such as NEOWASH. Adequate precautions should be taken to contain all washdown debris for safe disposal.

## 13 THE REMOVAL OF PAINT

Neolith offers a paint stripper for various functions.

**NEOLITH HDL** - Can be used where masonry has been treated with older types of paint and other products may not have been effective. Dwell times established by test patch trials (see section 2).

Where HDL has been used to remove paint an appropriate acid based product must be used

to neutralise the masonry.

## 14 REMOVAL OF OIL AND GREASE STAINS FROM STONE AND CONCRETE

Chemical degreasants (NEOLITH HDL; NEOLITH 425; NEOLITH 275) will reduce much oil deposit marks. For heavy stains see the data sheet for NEOLITH 77.

## 15 THE PROTECTION OF SELECTED MATERIALS

It is necessary to prevent some chemical formulations from coming into contact with materials that they can damage. (See table of product suitability for further information).

See separate information sheet for our Neolith Graffiti removal range of products.