

# Acid Cleaning of Architectural Precast Concrete



Light acid cleaning of polished panel prior to delivery

### Background

Architectural precast concrete, by its nature, requires a clean surface finish. During manufacture all architectural precast finishes, except for off form, acquire some coating in the production process which will spoil the appearance.

Precasters throughout the world use a dilute solution of hydrochloric acid to clean panels after all finishing processes are complete.

There has been concern raised that such use of acid will affect the durability of the precast units.

### Effect of Acid Washing

There has been no evidence to indicate that acid cleaning affects durability. On the other hand all studies available to the NPCAA indicate that it is a safe practice. For instance refer C&CA publication S62, *Chloride Movement Through Precast Concrete Panels* by M G Symons and F J P O'Sullivan.

Acid washing is distinct from acid etching. The latter process is not addressed here.

### Specification

The following specification is appropriate.

#### 0.1 General

The manufacturer shall send units to site in a clean condition. To this end it is acceptable to wash them with a dilute hydrochloric acid solution.

#### 0.2 Acid solution

The concentration of Commercial Grade concentrated (33%) hydrochloric acid in water shall not exceed 1 part acid to 15 parts water except for localised cleaning where a stronger solution may be required.

The normal range is 1 to 40 for polished panels to 1 to 15 for washed or retarded finishes.

#### 0.3 Method

The dilute acid shall be evenly applied and spread and shall then be thoroughly rinsed with mains water. Where appropriate high pressure water should be used. Different application methods will apply to different finishes. For instance the procedure for polished finishes and water washed finished will differ.

#### 0.4 Safety

Acid washing should be carried out by trained operators familiar with safety procedures for the use of hydrochloric acid.

#### 0.5 Testing

Where testing is required it shall be carried out in accordance with AS 3600—1994, 4.9.1.

### Summary

Dilute hydrochloric acid is an effective cleaning agent for precast panels. There is no evidence that it affects the durability of the panel.

Cleaning will be a normal part of any manufacturer's production process. The details of this will be covered in work instructions contained within each manufacturer's QA system.

