Technical Note No. 25

SELECTION OF APPLIED FINISHES FOR METAL

Introduction

Metal components of facades may require finishes to provide protection against corrosion or for appearance. This Technical Note describes finishes which are applied to aluminium and carbon steel. Finishes are not normally applied to other metals.

Finishes described in this Technical Note are organic coatings, which may be applied to both steel and aluminium, vitreous enamel which is generally restricted to steel and anodising which is only applicable to aluminium. These finishes are applied under factory conditions allowing organic coatings to be oven cured. Painting of structural steel is normally partly carried out before delivery to site with finishing coats applied on site after erection and is not covered by this Technical Note.

Protection

The requirements for protection depend on the type of base metal and exposure conditions as described in Technical Note 24 *Corrosion.* Protection is usually required for plain carbon steel but not normally required for other metals. The primary protection for most carbon steel is zinc coating, which may take various forms as described in Technical Note 22 *Cladding metals 1- ferrous metals.* For internal components and external elements with a design life less than 30 years this may be sufficient. However zinc coatings will corrode, albeit at a much slower rate than the underlying steel and further protection may be required.

Organic coatings provide protection by forming a barrier, which prevents access of oxygen, water and aggressive chemicals to the metal surface. Coatings are slightly permeable and hence if they are too thin they will give reduced protection. Coatings exposed to harsher environments (e.g. industrial or marine) should be increased in thickness and cleaned more frequently.

Coatings which provide protection must be maintained in good condition to prevent the onset of corrosion. Delays in carrying out maintenance can therefore lead to the need for more extensive repairs or replacement of the cladding. Where the only purpose of the coating is to provide decoration, delaying maintenance is unlikely to affect the integrity of the cladding.

Aesthetics

Colour selection

The selection of colour is primarily dependent on aesthetic considerations but the effects of colour on other aspects of performance of both the finish and the cladding need to be considered. The colour of the finish will affect surface temperatures, particularly when subject to solar radiation, which will result in thermal movement of the base metal. Temperature may also affect durability.

Paint colours are specified by the RAL, British Standard (BS 381C), NCS, Colour Dimension or Pantone reference number. Some of these colours (particularly those in the latter two ranges) are inherently difficult to formulate, and as such their availability is subject to certain technical considerations of the manufacturer; generally, purple and paler red colours are difficult. Some pigments are affected by ultra