COLORBOND® PREPAINTED STEEL - COLOUR SELECTION

TECHNICAL BULLETIN TB-22

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This issue supersedes all previous issues

A most important aspect of the performance of COLORBOND® prepainted steel is its ability to maintain colour over long periods of exposure. The formulation of suitable colours is not always easy, since the product is expected to withstand harsh environmental conditions, such as high levels of UV radiation and high temperatures, and to require minimal maintenance during its service life.
Colour change is related to surface degradation of the coating, which inevitably occurs with increasing periods of exposure. In order to achieve a satisfactory coating life we require:

i) a stable resin (the 'binder' or polymeric part of the coating); and

ii) stable pigments (the components of the coating providing colour).

We have also learnt that even when stable pigments are used, it is necessary to have a combination of pigments which does not result in preferential loss or retention of particular pigments as the surface of the coating weathers. Such preferential loss or retention may cause unacceptable degrees of colour change.

As COLORBOND® steel is intended for use on exterior surfaces, sometimes with only minimal maintenance and is subject to a specification regarding expected colour change, BlueScope Steel Limited must ensure that only suitable coatings are used. This has led to some difficulties in providing customers with the exact colour they specify in COLORBOND® steel grade. There are a number of reasons for this:

1. Some colours require the use of pigments which are not considered to have adequate durability for incorporation in a COLORBOND® steel coating.

2. The pigmentation required to achieve certain colours may provide less than adequate opacity (hiding power) at the specified thickness. This can affect performance in the visible light portion of the spectrum, eg undue colour sensitivity to minor variations in film thickness and/or in the ultraviolet region, where inadequate top coat opacity may result in degradation of the primer and consequent loss of top coat adhesion.

3. Even with the best available COLORBOND® steel resin/pigment combinations, some colours, particularly very dark shades, do not meet the COLORBOND® steel colour change criteria. In such cases it may be possible to offer a particular colour in a more expensive, but premium durability, fluorocarbon (PVF_2) resin.

QUV - Used to provide accelerated rates of weathering.

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With regard to points (1) and (2), while it is realised that a customer may be initially disappointed if a specific colour is not available in COLORBOND® steel, the use of an unsatisfactory pigmentation will almost certainly lead to dissatisfaction in the long-term. If a colour is not considered to be of adequate quality, it will not be supplied as COLORBOND® steel to a customer who intends to use it for exterior roofing or walling. With regard to point (3), the use of PVF_2 coatings in 'COLORBOND® steel' is a means of providing a specified colour with an adequate degree of durability. However, as noted above, the PVF_2 resin is much more expensive than the normal COLORBOND® steel paint types.

Exterior Exposure- Sample racks at Bellambi Point, NSW, Severe Marine environment.

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