Resene

Resene Paints Limited

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RESENE PAINTS IN FIRE SITUATIONS

Last month we gave a general background into Early Fire Hazard testing of paints and this month we pursue the subject in a little more detail. We considered paints in three categories, the first one being described as Standard Paints.

In this context we are referring to the average range of decorative paints which make up the bulk of the market, to which no specific technology has been applied to reduce the burning properties. It was claimed that such paints added little to the fire hazard of the substrate; for example uncoated Gibraltar Board has a Spread of Flame (S.O.F.) index of 0 and a Smoke Developed (S.D.) index of 3. Two coats of Resene Semi Gloss will not alter these indices unless it fails to ignite, in which case the S.D. may increase slightly to 4. it is a curious fact of life that generally best results are obtained under the present test system if the coating does burn slightly. This burning can consume the particulate matter and gases involved which would otherwise show up as smoke.

Minor differences do show up in these coatings in regard to the mineral content of the paints. As the mineral content is non-flammable, paints with high mineral content (i.e. egg shell and flat paints) will contribute less combustible matter than highly resinous coatings (i.e. varnishes and gloss paints). Individual binders can also contribute slight differences, for instance PVA's generally generate less smoke than pure acrylics, which in turn generate less than styrene-acrylics.

The foregoing comments have been directed of standard paints applied at normal film builds. If however a resinous paint is applied at a very thick film build it can have a more significant affect on the Early Fire Hazard properties of a surface. An example of this is Resene Fleckle — a highly resinous, pure acrylic, thickly applied coating. When this was applied onto 3mm Hardiflex at 270u dry film thickness an S.D. of 5 was recorded on one sample that did not ignite (S.O.F. was 0).

Resene Resitex however, an aggregate filled material, applied at 420u had an S.O.F. of 0 and an S.D. of 2; whilst the new product Resene X200 at 180u had an S.O.F. of 0 and an S.D. of 1. (These results would have been classified as Class 1 under the old system.) In both of these instances however the substrate was concrete 35mm thick. Heavier substrates provide a greater 'heat sink' which invariably reflects in lower indices for an applied coating.

Certain paints, because of the make up of the constituents, can be classified as Non-Burning. The simplest paint in this class is Resene's Stipplecote cement-based paint. Having a total mineral binder means there is no propensity to burn at all although additions of polymer modifier, such as Cemstik, can alter this. Resene Hush is another product in this category which, being vermiculite based, is non-burning whilst also conveying some protective insulating properties to the surface. The thicker the coating the more insulation that is achieved.

Chlorinated rubber is a class of material which is non-flammable and when formulated with suitable pigments (antimony trioxide, or barium metaborate) some small measure of substrate protection is achieved

The importance of the Fleckle-type coating, especially in stairwells and egress ways in public buildings prompted Resene to develope a product with improved non-burning properties for use in these areas. The result of this programme is "Fleckle F.R." (Interior) a seamless, heavy-duty wall spray. The letters F.R. denote Fire Retardant. When tested over 35mm concrete at a film thickness of 300u Fleckle F.R. (Interior) gave an S.O.F. of 0, and an S.D. of 2 (Class 1 under the old classification)

There is a third area of coating of interest in the fire retarding area and this is Intumescent coatings. These coatings, which can be looked upon as latent chemical factories, swell and bubble under the influence of heat eventually forming a protective, insulating char. They also represent one of the high points of the paint makers art Resene's latest development in this area is its 'Fireguard' intumescent paint; a water-based system designed for three coat application at a rate of 7 sq. metres per coat. Application difficulties normally associated with intumescent coatings have been overcome. Fireguard has been tested over a variety of inflammable substrates and in all cases the S.O.F. was zero. Smoke developed varied with the substrate as follows:

		Old Classification
12mm CUSTOMWOOD	S.D. 5	Class 2
12mm SOFTBOARD	S.D. 4	Class 2
12mm PARTICAL BOARD (M.D.)	S.D. 4	Class 2
4.5mm HARDBOARD	S.D. 3	Class 1

Major problems have existed in the past with the colour range of intumescent coatings. It is impractical to provide a specialised coating in a wide range of colours and tinting of these coatings, or the overcoating with standard colour coats was often sufficient to upset the delicate intumescing reactions. Resene Fireguard has however been evaluated with tinter added and overcoated with two coats of Semi Gloss Resene with no detrimental effects on either the S.O.F. or S.D.

This then is the present state of the art with regard to Resene Paints Limited. Changes in regulations plus new technical developments, which must always be expected, will ensure that this topic will continue to exercise the minds of both paint chemists and specifiers for some time to come.

Data sheets on the two new products mentioned, Fleckle F.R. shortly. (Interior) and Fireguard will be forwarded to you

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