ARCHITECTS MEMO
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absorbing stuff!

The concept of a 'hero' paint forming a tough, impenetrable barrier; resisting all antagonists may exist in some very high performance coatings, however, the majority of paints are much 'wussier' than this. They are typically quite porous, especially on a molecular level, and can absorb quite a variety of materials.

Most noticeable, as to be expected from its ubiquity, is water. While the absorption of water into a paint seems to be intuitively bad, it can be turned into a positive in anti-condensation paints. These products are designed to absorb water during periods of high humidity; to be released as vapour once the humidity drops. These coatings contribute to safety, as well as improving the internal atmosphere, by preventing condensation from cool, overhead pipes from pooling dangerously on floors.

Soft, porous coatings can also absorb (or attenuate) sound. These two properties were combined, during the seventies and the eighties, in textured ceiling sprays based on vermiculite. Vermiculite is an expanded form of mica, which looks like miniature concertinas. This wonderful material is able to absorb water and sound, has excellent insulation properties and is totally non-combustible. The two major ceiling sprays of the time were branded 'Hush' and 'Whisper', which were evocative of their performance. Their demise was due to a fashion change away from textured finishes rather than lack of performance. It remains difficult to achieve the performance attained with vermiculite in a non-textured coating.

Typical, waterborne interior paints also absorb volatile organic compounds but, in the main, re-release the absorbed moieties on a cyclical basis. If you wish to moderate VOCs in your home environment, pot plants are a better option than paint! There are a couple of exceptions however, one of which is incumbent in the Resene range of waterborne enamels (Resene Enamacryl, Resene Lustacryl and Resene SpaceCote). The defining feature of this range is the use of a special resin, which contains a cross-linking mechanism.

Because of the 'bulkiness' of the base resin used, an excess of the cross-linking sites must be used in order to enhance the chances of these sites 'meeting up' and reacting, one with the other, within the dried film. After the film has cured, the vast majority of these cross-linking sites remain unused – but they still have a use! It has been found that these groups can react with and denature formaldehyde.

The reaction is a 'one off' and the residual sites can only react with one molecule of formaldehyde each – once they are all reacted, that is it! We therefore would not claim these products as formaldehyde abatement products, but it is nice to know that, in a maximum formaldehyde flux (i.e. in new homes or major renovations) these paints can be (small) heroes.

For a more permanent paint solution to VOCs, I need to refer you back to Architects Memo 102. If this pearl is in its rightful place (in a VIP file!*) you will see that it describes a photocatalytic method of dealing with this issue.

To paraphrase a somewhat turgid and technical memo (its fine, I'm allowed to criticise), the paint will absorb VOCs into the film where they come into contact with a photocatalytic, titanium dioxide nanoparticle. This particle, with assistance from light (OK, I'll accept that the use of this phrase after the use of photocatalytic is tautology) will oxidise organic pollutants to carbon dioxide and water. There has been criticism that this technology also oxidises not so nice ammonia to much nastier nitrous oxides. This is true, but while, in my opinion, this doesn't outweigh the good, we are able to also formulate these paints to internally neutralise these oxides of nitrogen.

So there it is; while further 'hidden secrets' of paint may be revealed in the future, this should be enough to warn you against taking paints at their face value!

* If your VIP filing system is missing a few pages, you can view the Resene Architects Memos on the Resene website.

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