

game, set, match

With colour matching being a bit of a recent hot topic, we thought that it may be an appropriate time to reprise the fundamentals of what goes in to the making of a good paint.

There will be a large number of people who will never have known paint shops without their ubiquitous tinting machines but, at their introduction during the late sixties - early seventies, they caused a major upheaval. Resene was an early adopter of such an American system and experienced every one of the many, many shortcomings of them.

Compared to the standard of the day - where the colours were made by directly grinding the pigments into the paint - tinted bright colours, using up to 20% by volume of tinter, were but a pale (and transparent) imitation of the real thing. It became obvious that changes had to be made in order to narrow the performance gap between P.O.S. tinted paints and those directly ground in the factory.

Two main strategies were employed, one of which was the obvious ploy of raising the strength of the tinters. Obvious - but not easy! Apart from the fact that there weren't any readily available, high strength tinters (and we are talking up to 4 x stronger) were far more difficult to incorporate into the paint and the delivered volumes of tinter had to be much more precise and accurate.

The other strategy was to design the paint bases such that they required less tinter to move them to the target colour. The less the tinter, the better the quality of the colour. This necessitated Resene creating a greater number of bases, including several coloured bases which were a world first. This made the Resene system pretty damn complicated, with the number of bases going up from the original four to twelve.

In retail shops selling multiple brands, shelf space is at a premium and such a complex system is a significant deterrent to stocking. Resene was/is fortunate in having their own, single brand shops which allows the stocking of this refined system and to deliver on the continuing aspiration of maximum number of colours with the minimum amount of added colourant.

While others have obviously recognised the benefits of this strategy, to the best of your scribe's knowledge, Resene continues to have the most sophisticated tinting system, with colourants re-engineered over the years to take advantage of the considerable advances made in the pigment manufacturing industries.

Which leads me to colour matching of opposition colours!

Given a dozen or so colourants, a gifted colour matcher should be able to 'match' almost any colour presented to them under any single light source. But shade or hue is only one of the properties that the colour has to deliver, the most obvious of which is opacity. If one is trying to change the colour of a substrate one must be able to obliterate that substrate. The ability to do this in 1-2 coats is much preferable to needing 3, 4 or even 5 coats - and I'm not exaggerating!

The second major issue, for exterior paints at least, is colour fastness when the paint is exposed to our harsh elements. Durability is crucially dependent upon the chemistry of the pigments chosen for the tinters, and there is a very high degree of variability especially in the areas of bright yellows, oranges, reds, magentas and purples; some of which are automotive grade to others which will fade in moonlight.

Thirdly, the colour should match under a variety of light sources. A complete lack of metamerism (as this variability of colour under different light is called) can only be achieved when exactly the same pigments are used.

And finally, how about the accuracy of the colour match itself? There remains an increasing use of the latest, impressive looking 'in store' spectrophotometric colour matchers. (If this reveals a little cynicism, it is not the Luddite in me, rather the remains of earlier iterations, which make up the landfill).

Modern spectrophotometers are good - really good - and we wouldn't be without them - but! Such an instrument, in the hands of an average operator, can produce good matches to simple colours. In the hands of a highly skilled operator, they can get you 90-95% of the way towards a more complex colour. An excellent match needs the final intervention of a trained colour matcher. Considering that the human eye can distinguish between 7-10 million different shades, this is not surprising!

The only true match to a paint colour is when you use the same as the original paint, the same tinters and the same tint formulation. Anything else will be at best a close 'match' and at worst a completely different colour.

So if you are looking for an exact match, from different bases; different tinters; derived via a spectrophotometer operated by a part-time operator - well, good luck with that!!



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