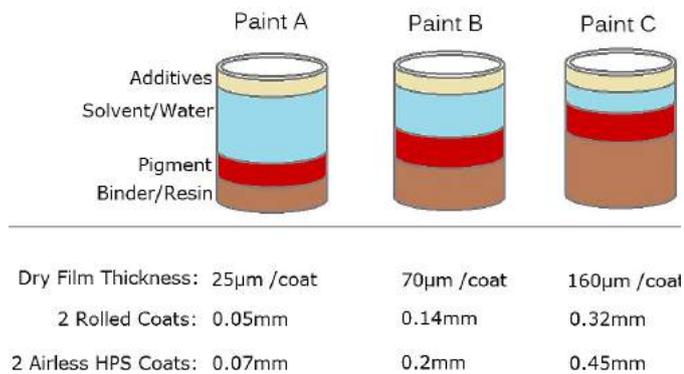


# NO TWO "TWO COATS" ARE EQUAL!

All paints are not created equal, so simply asking for two coats of paint is like asking for a slice of biltong. Don't be disappointed if your slice is too small - as you didn't specify correctly. The same applies when specifying a painting project. Two coats of a cheap, low quality paint will not provide the same coverage or finish as one coat of high quality industrial paint, nor will it last as long. So what determines the quality and durability of a given paint?



To understand what makes up a high quality paint, we must first understand that there are four main groups of raw materials that used in the making of paints, namely 1) solvents (or water), 2) pigments, 3) resins (binders), and 4) additives.

## Solvents

Solvents refer to various low viscosity, volatile liquids which can dissolve a resin. Solvents include petroleum mineral spirits and aromatic solvents such as benzol, alcohols, esters, ketones, and acetone.

In many water-based paints, water is simply used as a large component. These raw materials and the liquid portion of paint/coatings, which make it easier to apply, and they evaporate as the coating dries.

So when we talk about the percentage mass to solids or percentage volume to solids, a paint which has a higher percentage means that it has a lower percentage of solvent or water in the paint ingredients. So, when the solvents evaporate, more of the raw materials are left on the walls.

## Pigments

Pigments are simply insoluble, finely ground materials that give paint its properties of colour. Titanium dioxide is the most important pigment as it is used to provide basic white colour in paint. Hundreds of different pigments, both natural and synthetic, exist. Iron oxide, tuscan red, and cadmium sulfide can be used to make reds. Other pigments include anatase titanium, barium metaborate, barium sulphate, burnt sienna, burnt umber, carbon black, china clay, chromium oxide, iron blue, chrome yellow, lead carbonate, strontium chromate, zinc oxide, zinc phosphate and zinc sulfide. Most are earth pigments (obtained naturally) including barytes, ocher, chalk and graphite.

## Resins (Binders)

Resins are synthetic or natural materials used as a binder in coatings. Resins can be translucent or transparent, solid or semi-solid. The natural resins most commonly used are lin-seed, coconut, and soybean oil, while alkyds, acrylics, epoxies, and polyurethanes number among the most popular synthetic resins. In the Optima Elastoflex coating that Superseal like to use, the resin used is Maincote EC-11 which is imported from Rohm & Haas, a subsidiary of Dow Chemicals, and is an acrylic-based resin. The nature and amount of binder determines much of the paint's performance properties, such as washability, toughness, adhesion, elasticity, colour retention, etc. This is not to say that other paint manufacturers, don't also offer similar products. It is just that these are not always the products that are specified for a project as generally the cost for a 20 litre of a high-quality elastomeric paint can be more than double the cost of a standard contractors paint. However, this does not necessarily mean that the cost of your painting project need be double as the highest cost for a Contractor, is often labour, scaffolding, etc. Typically, Superseal have found that using a higher quality paint

only increases the cost of the total project, by around ten percent, but it can mean the difference between having to paint again in four or five years versus being able to wait nine or ten years.

### Additives

The last category of raw materials in paint are additives, which can serve many purposes, from reducing the drag on a brush, providing anti-slip characteristics, adding texture, etc. There are many different paint additives, such as the thixotropic agents that give paint its smooth texture, driers, anti-settling agents, anti-skinning agents, defoamers, silica (or sand) for texture, mildewcide, perfumes and a host of others that enable paint to cover well and last long. Some, like calcium carbonate and aluminum silicate, are simply fillers that give the paint body and substance without changing its properties.

### What is Dry Film Thickness (DFT)?

You can probably appreciate that it is possible to have a 20 litre of paint that consists of 70% water or some other solvent. The application of this paint may be easy, but when the paint dries it is going to leave behind less of the other raw materials on the walls. This sort of paint may only have a 28-30% volume to solids ratio and so when the paint dries the thickness of the paint film that is left on the wall is relatively thin. If a lot of the remaining materials in that paint are fillers, like calcium carbonate, then the quality of the paint is not likely to be very high. Your walls may look fine after a two coat application, but the coating will not endure for long.

We measure the DFT of paint in microns ( $\mu$ ), which is a thousandth of a millimetre. We have seen that many commonly used paints only produce a DFT of around 25 $\mu$  to 40 $\mu$  a coat, so a typical two-coat system will leave your wall with a film thickness of between 50-80 $\mu$ . For example, Dulux Weatherguard will provide a DFT of between 50-70 $\mu$  a coat, or 100-140 $\mu$  for a 2 coat system. With Midas Environlite 225 and Prominent Paints Premium Satin, you should obtain a DFT of 80 $\mu$  from 2 coats.

Plascon Wall & All coats at a DFT of 60 $\mu$  for a 2 coat system. Yes, you will get better coverage per litre from these paints, but it dries to a thinner dry film thickness.



It is normally better to look for a higher quality paint that will have a higher mass to solids and higher volume to solids ratio and so consequently, you will be left with a thicker film when the paint dries. Ideally, the other raw materials, such as the resins, should help to contribute toward a quality coating that will last for a number of years, or even decades. For example, the Optima Elastoflex product when applied with a roller will give a single coat DFT of around 150-175 $\mu$ . So, a two-coat system will deliver a 300-350 $\mu$  DFT instead of the standard 50-80 $\mu$  DFT some other paints might deliver. The solvent or water represents the part of the coating which will evaporate as the paint dries, while the binder or resin, along with the pigment, are what remain on the wall. The Dry Film Thickness represents the amount of paint which remains on a surface once the coating has dried.

The manufacturers dilemma is, if the maximum price that the market is prepared to pay for a 20 litre of paint, is say R750, then they need lower input costs to ensure that profit margins are maintained. Ironically, a cheaper paint, doesn't offer more value. We would recommend that if you do use a product that dries to 30 $\mu$  a coat then you would need to prime all walls before painting, and would probably need to put an additional waterproofing coating onto all horizontal surfaces, as such a thin coating will not keep water out of the substrate.

I am sure that you can appreciate that it is important to insist on a certain minimum Dry Film Thickness (DFT) when doing a redecorating project, than simply arbitrarily insisting that a contractor apply two coats of paint.