LET'S TALK CHALK - Points to note when buying chalk

By Steven Wilson

Coloured Chalk

The most common colouring agents are pigments and dyes (natural or synthetic). A dye is a coloured substance that chemically binds to a surface to which it is applied as opposed to a pigment which does not.

Pigments such as Ochres (iron oxide/clay mixtures) can be natural or compounded. They tend to be opaque in solutions and are commonly used in paints in which a resin is added to support the colour and bind it to the surface.

Dyes, on the other hand, are translucent when dissolved and do not need additives to bind them to a surface. They can be water, spirit or oil soluble -which make them ideal for dying fabrics, food products etc.

Ochre coloured chalk is a combination of the pigment and Magnesium Carbonate. As a result, there is a small drop in performance compared to the pure substance but has a distinct advantage in that it can be washed off a surface with water provided there are no further additives.

By contrast, the performance in dye coloured chalk is slightly better. However, a major draw-back of these products is that the dye may not be colour-fast. Consequently, the dye may leach from the chalk with the distinct possibility of staining one's skin, clothing and possibly the rock!

Another problem is that dyes have a tendency to fade, resulting in the appearance of white chalk marks - undermining the whole purpose of using coloured chalk. The quality of the dye used will determine the extent to which these problems arise.

Above: Dye coloured chalk in water - the dye has separated from the chalk, resulting in the water becoming coloured and the chalk settling on the bottom of the jar.

Left: Ochre coloured chalk in water - you can see that the ochre and chalk has settled on the bottom of the jar leaving the water clear.

There is at least one product on the market which states that the chalk is ‘dyed with pigments’! As mentioned above pigments are not a dye. This chalk is most likely dyed with a dye of some type. It is easy to not understand the products that are being used and this can also be the case with the manufacturer colouring the chalk. Dyes and Pigments come in a variety of forms, powder form is quite common, this means that they can look the same, but they react very differently.

Below:
Black Spirit Dye (Left)
Black Pigment (Right)

Additives in Chalk

There are some additives (mainly found in liquid chalk) to be aware of - however they may also appear in white or coloured chalk

Rosin (also known as Gum Rosin, Pof and Colophonium), Styrax Benzoin Gum (Benzoin Resin) are natural resins which dry to a hard polish. They are often used in furniture polishing, prior to the use of shellac and before modern manufactured finishes.

Hydroxypropyl cellulose - used as a thickener

Hydroxypropyl Guar derivative of Guar Gum - used as a thickening agent.

These products are water soluble, although they act as a binder when dry and could possibly become permanent once mixed with skin oils.

Magnesium Hydroxide, small quantities are found in chalk alongside Magnesium Oxide.

Benzyl Benzoate - insect repellent. I have included this one so that you will know what it is when you see it on a label

Purchasing Chalk

When searching for chalk, I would suggest only purchasing products that have the ingredients labelled. Stay away from any coloured chalk products that have other products other than pigment colours added. This should also apply to white chalk, powder or liquid.

It is probably best to avoid any chalk that doesn't have the ingredients labelled. Perhaps ask yourself, why any one chalk product is better than another, is it because it has some unspecified additive mixed in?

As climbers, we should avoid using white chalk outdoors,I now only use coloured chalk outdoors and have only noticed a small reduction in holding capacity on very humid days. Before you ask, yes, I do have sweaty hands.

NB: Steve has 40 years professional experience with these products as part of his trade (French Polishing), and has also received a 2nd opinion from an industrial chemist regarding this article.

Adjusting to using coloured chalk.

To help get a better colour distribution, the chalk needs to be finely pulverised. This can result in the chalk being slippery if you get too much on your hands (chalk is used as a dry lubricant!).

To help minimise this, the use of a chalk ball is a better option, however I have found that the chalk is too fine for the standard chalk sock, as it allows too much chalk to pass through. I have been using coloured chalk for around a year now and have found a double layer of 40 denier stockings to be a good home made option. This lets just enough chalk through for my liking, you may wish to experiment a little to work out what denier number or how many layers to use.

As coloured chalk is of a less pure option there is a reduction in moisture absorption. As I have sweaty hands I have noticed on high humidity days I have less holding capability using coloured chalk. This is still a better option than no chalk at all and does have a better visual impact.

Disclaimer: Crag Stewards imports a range of Grimpi chalk (available now through Absolute Outdoors).