



Decorative Coating types

Epoxy systems



Anochrome applies decorative coatings to a wide range of substrates including plastics, GFR, brass, titanium as well as on top of functional or sacrificial coatings.

With the more common use of aluminium for wheels and brake components as people search for more environmentally friendly and stylish options, the brake discs and calipers have become more visible. Anochrome, by using its knowledge of paint finishes, can provide a variety of coatings in a number of striking metallic, solid and chrome finishes and, in some cases can be applied to pre-assembled units without damage to the internal seals.

These finishes are essentially all barrier coatings, the functional aspect of the coating is visual, which it must maintain in the specified environment. These coatings need to withstand a harsh environment of heat, impact, and chemical attack. The colloid coating found most suitable for general application is one based upon an epoxy binder.

Epoxy, also known as polyepoxide, is a thermosetting polymer formed from reaction of an epoxy "resin" with polyamine "hardener".

These two part epoxy systems were first developed in 1936 and subsequent coatings have been developed for heavy duty service on metal substrates, using less energy than heat-cured powder coatings. These systems use a 2, 3 or even 4:1 by volume mixing ratio, and dry quickly providing a tough, protective coating with excellent hardness. They are usually used in industrial and automotive applications since they are more heat resistant than latex-based and alkyd-based paints. Epoxy paints tend to deteriorate, known as chalk out, due to UV exposure,



The benefits of these systems to the designer are clearly illustrated in the following list of attributes:

- Wide range of colours to RAL or bespoke, chromes, fluorescent, flips, and clear coats.

- Matt to high gloss appearance, Anochrome offers

 - 4 standard gloss levels Full gloss: 90% minimum

 - Semi gloss: 60% Eggshell: 30% Matt: 10%

 - [Measured at 30-35 microns DFT & 60° reflectance

 - A variance of +/-5% may be obtained dependent upon application process]

- Easy to apply - Good coverage

- Temperature stability to 180oc on colours

- Can be selectively applied over hard anodising /plating

 - Low cure temperatures, especially on 2 packs

 - Epoxy offers good adhesion, toughness, chemical resistance,

 - Acrylic / Polyurethane blends offer very good UV stability

 - Salt spray – unbroken films 1000hr @50um, on hard anodising or zinc plating

 - Coating thickness primer 15-25um, colour coat 20-30um (red yellows + 10um) lacquers 15-30um

 - Over printing with logos at Anochrome.

Polyester Silicon systems

To further enhance the range of coatings and to meet recent demands of higher performance both in terms of temperature resistance and improved chemical resistance, new coatings have been developed. These materials are based upon a Polyester/ Silicon binder matrix with improved pigments and are more suitable for carbon rotor clad vehicles and high temperature environments such as those near to exhausts and other engine components.

Typical capabilities of Polyester Silicones

 - Good thermal performance 240oc continuous 270oc peak

 - Wide range of colours

 - Clear top coats

 - Matt to high gloss appearance

 - Good opacity on bright colours

 - Normally selectively applied over hard anodising /plating

 - Offers excellent adhesion, toughness, chemical resistance, corrosion resistance

 - Good self clean properties

 - Salt spray performance over 2000hrs on unbroken films (Hard Anodised LM 25 casting)

 - No primer required, single coat application possible. Typically 20-30um

 - Can be printed on, if required.



Anochrome Group

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Aesthetic Coatings and Decoration



Special finishes and coatings



In addition, if a high gloss finish is not a major requirement, other tough easy clean PTFE containing materials can be specified such as Xylan® which gives a tough hard finish with very good chip resistance and good release properties (Release – inability of a substance to adhere to it) to prevent the build up of dirt.

For more special application chrome paint finishes, flip (colour or hue alters depending upon the angle the light is reflected of the component) can be applied to the customers specifications.

Testing of these decorative films is key to maintaining consistency, Anochrome process 9.0 is the base standard applied to caliper coatings. This specification covers Thermal testing, Brake fluid soak tests, Wheel cleaner compatibility trials, as well as more standard tests for Cross hatch adhesion (ISO2409) Corrosion resistance (ASTM B117) and Pencil hardness (BSAU148 part 6)

These paint films are then applied via manual or robotic spraying to masked and jiggged components.

Inspection of the cured film is carried out in areas of high intensity lighting to Anochrome specification 9.0 or customer paint performance requirements and specifications.

There are a number of miscellaneous considerations when applying decorative finishes that need to be taken into account, some of these are listed below.:

Full hardening process of the paint finish takes 5 days for coating such as Epoxies, this is required before testing, parts are transportable when cooled after curing.

Top lacquers add protection, gloss and depth, and are frequently necessary for metallic finishes.

Transit packing, such as foam lined trays is required to prevent scuffing.

Think about what colour you want, a dark base casting colour will need more paint to get a light colour finish coat.

White primers are frequently needed to lift bright colours.

Oranges and particularly yellows are difficult to get opacity correct on thin films.

Some paints over the long term will yellow with age and heat, noticeable on whites /silvers.

Gloss level, a semi gloss or matt will hide paint and casting faults.

Clean Reds /yellow -Single pigment colours have poor opacity compared to off shades.

White or grey primers can give different colours (hues) if top coated in poor opacity colours - such as Yellow.

N18.2.1

Slightly rough castings when painted give orange peel effect.

Dressing of casting is highly visible if done badly.

Porosity – will show as bubbles or dips in paint film.

Casting oils /wax – can lead to fish eyes.

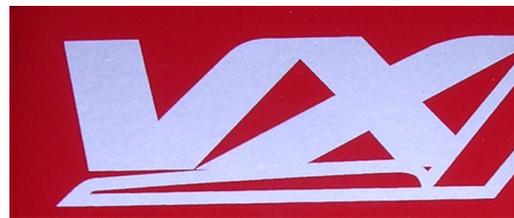
Local filling on a cast finish gives smooth spots and an uneven finish.

A smooth surface is much preferred.

Decoration and Logos

A plain coloured caliper is nothing without an equally impressive name emblazoned across it. Anochrome can offer various methods of this embellishment, some rely on the manufacturer providing raised or sunken lettering to fill or finish, however the most flexible is silk screen printing which allows, at low cost the addition of a model or range image onto a standard caliper in a variety of colours which Anochrome can advise on and obtain screens for.

The possible options for decoration are:



Screen Printing

- + Cheap
- + Fine detail
- + Can use the same casting
- Can be scuffed off
- Requires a good face to print on



Infill / Machined in logo

- + Robust,
- Has to be machined or cast in limiting caliper use to named supplier.



Raised and Linished

- + Stylish, robust
- Needs protective coat
- Cast in, limiting caliper use to named logo

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