

Technical Information

NDS080/226REV2

Polyester Pigment Pastes

DESCRIPTION

NCS POLYCHROME POLYESTER PIGMENT PASTES are designed to pigment unsaturated polyester resins and gelcoats. NCS Polychrome pastes are dispersions of selected pigments in unsaturated monomer-free polyester resin. Because the resin is unsaturated it cross-links with the resin or gelcoat during the cure process and hence becomes an integral part of the finished product.

MANUFACTURE

NCS Polychrome pigment pastes are manufactured using specialised high shear equipment and a selected number of base colours has been chosen to meet our colour range requirements and for their superior weathering and chemical resistance.

NCS Polychrome pigment paste bases are subject to considerable finished product quality control testing. NCS Resins is an ISO 9001 listed company and is ISO 14001 compliant.

These base colours are then blended together in various proportions using sophisticated computerised colour matching technology to meet our customers' exacting requirements at our Pinetown facility.

Customers are advised that good colour reproducibility can only be achieved by accurate weighing and extreme care during the mixing and application process. Exact matches of multi-component assemblies can only be achieved by the use of the same batch of pigment paste and by maintaining identical moulding conditions.

COLOUR MATCHING

NCS Polychrome pigment pastes are available in all the colour shades shown in the NCS colour card.

NCS Resins offers a colour matching service and most colours can be matched.

METHOD OF INCORPORATION AND USE

NCS Polychrome pigment paste can be used to pigment natural gelcoat or resin by mixing the pigment paste in by hand or by mechanical stirring. Mechanical stirring is recommended as improper mixing may result in streaks and non uniform colour. The viscosity of NCS Polychrome pigment pastes is such that it enables the pigment paste to be easily incorporated into the gelcoat or resin. When mixing by hand it is recommended

that the pigment paste be first mixed into a small amount of the gelcoat or resin before addition to the bulk to facilitate mixing and even colour distribution.

OPACITY (HIDING POWER)

In order to obtain complete opacity, sufficient pigment paste must be added to the gelcoat or pigmented resin. As a general rule, 10 % NCS Polychrome pigment paste is required to provide opacity in a wet film 250 µm (0,25mm) thick. Opacity is measured on an instrument called a cryptometer. A wet film thickness of 250 µm is not considered adequate for satisfactory gelcoat performance.

A table of addition levels for the pigments on the NCS Resins colour card is included with this document.

The gelcoat, when pigmented, may appear to be opaque and have good hiding power when painted on to the mould. However, when removed from the mould, the moulding may allow light to be transmitted through it and hence appear translucent. This will be most obvious if the gelcoat is unevenly applied as light will tend to shine through the thin sections.

White, yellow, some green shades, as well as some orange shades, have poor opacities. To minimise the effect of low opacity with these pigments it is acceptable, in non - critical applications, to increase the level of these pigment pastes to 15% as is shown in the table provided. Another method is to increase the gelcoat thickness. In certain situations it is appropriate to add 10% pigment paste to the gelcoat and an addition of 3-4% pigment paste to the laminating resin to improve the opacity and reduce the transmission of light through the laminate.

The preferred method is to purchase the gelcoat pre-pigmented. In this instance the gelcoat is prepared with sufficient pigment to ensure opacity but without the loss of properties associated with the addition of high levels of pigment paste. (DO NOT exceed 10% in critical applications and 15% in other situations)

APPLICATION

NCS Polychrome pigment pastes are suitable for use in brush viscosity gelcoats and unfilled lay-up resins manufactured by NCS Resins.

In order for the gelcoat to perform its protective function and to ensure long term durability, a cured film thickness of 400 - 500 µm (0,4 - 0,5mm) is recommended. As a guide, 450 - 600 gm⁻² when applied evenly in a wet film will give the required cured film thickness. This film thickness may be increased to 800 - 1000 µm (0,8 - 1,0mm) to improve opacity but care should be taken when this is done that the application will not be subjected to reverse impact or severe flexing as this may lead to gelcoat cracking.

When considering these pigment pastes for applications with gelcoats and resins other than those mentioned, it is advisable in all cases to test the products on small sample panels to be sure the performance of the system is acceptable before embarking on a large moulding.

NCS Polychrome pigment pastes may be used in spray viscosity gelcoats but care should be taken when pigmenting spray viscosity gelcoats to ensure that the rheology of the gelcoat is not adversely affected by the addition of the pigment paste. Low viscosity systems are more likely to exhibit faults on spraying and for this reason it is advisable to spray a test piece and to examine the cured gelcoat film closely for any sign of pigment flocculation or colour separation before proceeding to a large moulding. NCS Resins

technical representatives will be pleased to provide advice on suitable pigment pastes for use in spray gelcoats. In most cases, to avoid possible problems, it is recommended that specially formulated pre-pigmented spray viscosity gelcoats are purchased.

NCS Polychrome pigment pastes are suitable for use in hot press moulding compounds and resins. Moulding compounds such as SMC and DMC often contain fillers and additives which affect the colour of the pigment paste being used. Testing by the customer on each moulding compound application is essential to determine the suitability of the pigments selected.

Similarly NCS Polychrome pigment pastes may be used in many moulding processes such as cold press moulding, RTM, pultrusion, continuous laminating, cast polymer and button applications, provided due care is applied to proof the pigment paste during the selection process.

The base pigments used in the NCS Polychrome pigment pastes have been tested, selected and used successfully in the South African outdoor environment for many years. They have been extensively tested in accelerated weathering and outdoor conditions. Outdoor weathering will affect the colour and surface quality of all pigmented polyester gelcoats and maintenance, such as polishing with a good quality automobile protective polish will enhance the life of the pigmented polyester gelcoat finish.

From our experience we have found that some colours tend to darken on exposure to the weather and that this darkening in colour is gradual and uniform over the entire exposed surface of the product. Areas that are shielded from the weather will darken more gradually. Pigments that are likely to undergo a slight darkening on exposure to the weather are listed below:

P802 (Tangerine)	P862 (Bright Orange)	P641 (Traffic yellow)
P4168 (Signal Red)	P6042 (Canary yellow)	

It is recommended that a high pigment paste loading is not used for applications where pigmented gelcoats are to be subjected to permanent immersion in water such as in swimming pools or yacht hulls. High levels of pigment paste can adversely affect the blister resistance and durability of good quality gelcoats and resins.

Where pigmented gelcoats are to be used for such applications it is advisable to select pre-pigmented gelcoats designed specially for the application.

PACKAGING

NCS Polychrome pigment pastes are available in pack sizes of 500g, 5kg, 30kg and 225kg.

STORAGE

Containers of NCS Polychrome pigment paste should be stored in a cool place, below 25°C out of direct sunlight. Under these conditions, unopened containers of pigments will remain stable for at least six months after manufacture but may remain usable for many years. Always stir the pigment paste thoroughly before use.

HEALTH AND SAFETY DATA

The carrier base resin for NCS Polychrome pigment pastes is an unsaturated polyester resin which does not contain any inflammable solvents and has no toxic hazards if normal precautions are taken.

Because NCS Polychrome pigments are pastes they do not pose a dust hazard. Some red, orange and yellow pigments are not suitable for use in toys or for applications involving

contact with food. Please contact your nearest NCS Resins technical representative for recommendations in this regard.

Care should always be exercised in the use of Chemical products not to cause spillage or waste. In the event of skin contact, the pigment paste should be removed with a suitable cleaner and then thoroughly washed with soap and water. In cases of accidental ingestion or eye contact seek immediate medical attention.

Please read and understand the material safety data sheet before working with any particular pigment

Note

NCS Polychrome pigment pastes are made with great care and to exacting standards. We do, however, have no control over the conditions under which these pigment pastes are used in our customers' premises.

The information herein is to assist customers in determining whether our products are suitable for their applications. Our products are intended for sale to industrial and commercial customers. We request that customers inspect and test our products before use and satisfy themselves as to contents and suitability. We warrant that our products will meet our written specifications. Nothing herein shall constitute any other warranty expressed or implied, including any warranty of merchantability or fitness, nor is protection from any law or patent to be inferred. All patent rights are reserved. The exclusive remedy for all proven claims is replacement of our materials and in no event shall we be liable for special incidental or consequential damages.

NCS Polychrome polyester pigment pastes

The loading percentages are provided as a guide to select the correct addition level for each pigment paste to achieve a minimum wet film thickness of 0,25mm.

Code	Loading (%)	Colour
P200	5	Black
P103	10	Light peach
P336	10	Knysna blue
P340	10	Strong blue
P349	10	Flag blue
P354	10	Jacaranda
P3028	10	Violet
P3038	10	Pool blue
P455	10	Cosmos pink
P4014	10	Protea pink
P518	10	Lime yellow
P525	10	Lime green
P541	10	Brilliant green
P584	10	Moss green
P5041	10	Loerie green
P628	10	Light stone
P637	10	Biscuit
P640	10	Sandstone
P713	10	Chocolate brown

P714	10	Dark Brown
P802	10	Tangerine
P911	10	Mid grey
P918	10	Mist grey
P919	10	Cloud grey
P932	10	Powder grey
P641	12	Traffic yellow
P4168	12	Signal Red
P1075	15	White
P602	15	Linen
P643	15	Pastel yellow
P6042	15	Canary yellow
P862	15	Bright orange

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