



Tech. Information

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Universal Glass Colours

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General information

This low-melting colour series predominantly is used for decorating:

- lighting and decorative glass,
- beer and other drinking glasses,
- cosmetic vials, ampoules and many things more.

The colours are also suitable for earthenware (beer mugs) and wall tiles.

However, the suitability depends on the type of glaze and has to be examined by tests in each case.

Also the decoration of aluminium enamel - as for instance cases of toasters and non-ferrous metals - is possible with Universal Glass colours.

These decorations are less resistant because of their low firing temperature and the formulation of the colour and frits.

The coefficient of thermal expansion (CTE) is lin. $85 - 100 \times 10^{-7} / K$.

This corresponds to the values of normal glasses and earthenware glazes.

However, this palette is not suitable for glasses with a specially low coefficient of thermal extension, because these colours would crack or exfoliate.

The delivery program consists of 30 standard opaque colour tones, which you can find also on our glass sheet with samples of „Universal Glass colours“.

Resistance

The Universal Glass colours have a strong opacity power and a wide firing range.

If fired properly (high gloss), the colours have a good abrasion resistance and can be considered as durable and stable.

Regularly the lead content of the colours is between 45 to 50 %.

They are essentially less resistant against acids and alkalis than our „Acid and Alkali Resistant Glass colours“ which are for the firing range of 580 – 620 ° C. Therefore the colours should be applied in those cases, in which a high brilliance, but not highest resistance against acids and alkalis is demanded.

For drinking glasses, it is necessary to keep 20 mm of lip and rim area free of decoration with the „Universal Glass colours“.

Please Note:

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Miscibility

The colours are widely intermixable among one another; thus the palette can be considerably enlarged. Only the three precious metal containing colours (purple)

P 7029	Malvenviolett	(mallow violet)
P 7036	Violett	(violet)
P 7044	Purpurrot	(purple red)

are not suitable for intermixings with most of the other colour types.

They should only be applied as mixings with white, black or blue. Further tests are necessary.

For mixings with black we recommend our black colour RGF 330.

If you want to brighten the colours, please use Flux FL 231.

Normally the Universal Glass colours burn out with a high gloss.

If you want to produce matt decorations, you may add matt additive RG 24. Depending on the firing conditions and the desired mattness, the addition of 10 – 30 % is possible.

Colour powder:	80 weight units
RG 24:	20 weight units

Firing

The colours can be fired within the temperature range of 500 - 600 ° C.

The most advantageous temperature is between 540 – 580 ° C.

In each case you have to adjust the firing temperature, object temperature and firing cycle to the items to be decorated and to the type of kiln.

In the temperature up to about 450 ° C – in which organic medias and covercoats decompose – the kiln should exhaust very effective. A fast increase of temperature, short peak time and a slow cooling down is advantageous to the glasses.

Processing

Universal Glass colours can be processed by brush, spraying, lining or screen printing. Applied in thick and middle thick layers colours have a very good opacity. Applied as thin layer they are transparent as it is desired for lighting glass.

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The following decorating auxiliary devices are suitable:

Application by Brush:

a)

Turpentine oil and 0000/3 Dammarlaquer or 21 new Bodied oil

0405 Screen printing medium (used as painting oil), addition according to the need

b)

Paste for screen printing (based on oil 0405)

to be thinned with turpentine oil until you reach a paintable consistency

c)

0509 Screen printing medium, compatible with water

Pasting ratio:

Colour powder: 65 – 70 weight units

Oil: 35 – 30 weight units

to be thinned with water to application viscosity

Lining:

0513 Lining medium, compatible with water

Orientation recipe:

Colour: 100 g

Oil 0513: 32 g

Water: 60 g

Spraying:

0000/2 Spraying oil

Preparation:

Colour powder: 60 – 70 weight units

Spraying oil: 40 – 30 weight units

Grinding, for instance in a ball mill

Before being processed with oily media, they should by all means be dried at a temperature of about 120 ° C, because a content of little more than 0,1 % moistness will lead to „cheesy“ pastes. In this case they can no longer be perfectly printed, because they become thick.

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Direct Screen Print Process:

a)

0405 Screen printing medium

Ratio of pasting:

Colour powder: 65 – 70 weight units

Oil: 35 – 30 weight units

b)

0509 Screen printing medium, compatible with water

Ratio of pasting:

Colour powder: 70 – 75 weight units

Oil: 30 – 25 weight units

c)

0492 Thermoplastic medium

Pasted ready for screen printing

Recommended screen:

Polyester or nylon: 77 – 120 threads/ cm

steel: 165 – 250 mesh

according to the decoration and colour

Indirect Screen Print Process:

a)

0465 Screen printing oil for transfers

for manual and semi-automatical processing

b)

0782 or 0782 thix Screen printing medium for transfers

for fully automatical process printing

Ratio of pasting:

Colour powder: 65 – 70 weight units

Oil: 35 – 30 weight units

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Recommended screen:

Polyester or nylon: 77 – 120 threads/ cm

Steel: 220 – 300 mesh according to the decoration and colour

Covercoats:

a)

0433 Covercoat

for manual and semi-automatic process printing

b)

0601 and 0601 thix Covercoat

for fully automatical process printing

c)

0506 Antiblock covercoat

Recommended screen:

Polyester or nylon 30 threads/ cm (HD)

Security Advices

Because ceramic colours are chemical products, for processing them you have to consider specific security advices according to the danger substance laws and regulations.

While processing it is most important to obey the hygienic precautions such as:

- Do not eat, drink or smoke while being at work.
- Do not inhale dust.
- Keep it away from food-stuff
- In case of contact with skin: Wash off and rinse with water and soap.
- If having inhaled: Rinse mouth with cold water.

For more information please contact us or ask for a Material Safety Data Sheet. (MSDS).

Forms of Delivery

Powder: Minimum purchase quantity per colour shade: 5 kg

Paste for screen printing: Minimum purchase quantity per colour shade: 5 kg

Thermoplastic pasted: Minimum purchase quantity per colour shade: 25 kg

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Storage

Colour powder can be stored unlimited under dry condition.

The powders are a little bit hygroscopic.

Before being processed with oily media, they should be dried at a temperature of about 120 ° C, because a content of little more than 0,1 % moistness will lead to „cheesy“ pastes. In this case they can no longer be perfectly printed, because they become thick.

Please take care to disperse the colour powder with the medium homogenously. In mixing the powder with the medium, small colour lumps will still remain. Therefore please use a three roll mill or dissolver.

Even in closed containers the pastes for screen process printing have only a limited shelf-life. We advice you to store the pastes under cool conditions.

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