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General Information

The acid- and alkali-resistant glass colours are mainly used for decorating:

- packaging glasses (such as drinking bottles),
- household glasses (dishes),
- technical glasses (stove coverings – attention to thermal expansion coefficient!)
- wall tiles (depending on the type of glaze)
- refined steel (above all cooking dishes)

The colours contain Lithium – so they should not be used for decoration of glass bottles which are under pressure when filled.

The recommended firing temperature is 580 – 620 ° C and with a peak time of 10 – 15 min. They are strongly resistant to acids, alkalis and mechanical dish washing.

The thermal expansion coefficient (CTE) is $80 - 90 \times 10^{-7} / K$.

Resistance

The colours are well resistant to chemicals.

With 3 % hydrochloric acid for 24 hours at 25 ° C, the fired colours are scarcely attacked.

Samples having been stored in a closed receptacle for 24 hours over a saturated solution of hydrogen sulphide at 25 ° C, had only a thin film, which easily could be washed off.

The colours had been exposed to 3 % hydrochloric acid or 10 % sodium hydroxide solution of 70 ° C for 24 hours.

The loss of weight was less than 10 mg/dm² of colour surface.

Miscibility

The colours are widely miscible among each other; thus the palette can be considerably enlarged.

The precious metal containing colours, indicated by „P“ (purple) are not suitable for intermixing with most of the other colour types. They can be mixed with white, black or blue.

If desired it is also possible to make matt colours from them. For matting matt additive RG 24 is used. Depending on the particular firing condition and the desired degree of mattness, the addition of 10 – 30 % of RG 24 is necessary, for example:

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

By this the colour shades will be lighter according to the percentage of the matting additive.

Processing

The acid- and alkali-resistant glass colours can be processed by spraying and by screen printing.

The following decorating auxiliaries are suitable:

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
 For preparing colours for spraying, the colour powder has to be completely dry. Even little moistness having been attracted during storage, will lead to „cheesy“ pastes, which can no longer be processed perfectly. Therefore – before preparing them - we recommend to dry the colour powders at 120 ° C.

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

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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 (decals):

a)
0465 Screen printing oil for transfers
for manual and semi-automatically processing

b)
0782 and 0782 thix Screen printing medium for transfers
for fully automatically process printing

Ratio of pasting:

Colour powder: 65 – 70 weight units

Oil: 35 – 30 weight units

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-automatichal process printing

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b)
0601 and 0601 thix Covercoat
 for fully automatical process printing

c)
0506 Antiblock covercoat

Straining cloth of silk-screen:

Polyester or nylon 30 threads/ cm (HD)

Firing

Orientation values for different materials to be decorated

Glass:	580 – 620 ° C / best at 600 ° C	about 2-3 hours cycle
Refined steel:	580 – 620 ° C /	5 – 20 minutes cycle
Stoneware:	650 – 750 ° C /	40 – 60 minutes cycle

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 media 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.

Forms of Delivery

Powder:	Minimum purchase quantity per colour shade: 5 kg
Pastes for screen printing:	Minimum purchase quantity per colour shade: 5 kg
Thermoplastic pasted:	Minimum purchase quantity per colour shade: 25 kg

Security Advices

Because ceramic colours are chemical products, for processing them you have to consider specific security advices:

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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, beverage and fodder.
- In case of contact with skin: Wash off and rerinse 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).

Storage

Colour powder grants the advantage of unlimited durability if stored in dry condition.

The powders are a little bit of water-attracting (hygroscopic).

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.

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

Colour Samples

For the purpose of tests please request samples from us.

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