

Chromat: Frequently asked questions

Q. What is Chromat?

Chromat is a decorative filler granule which is used in the manufacture of acrylic and polyester solid surface products. Chromat is NPG Isophthalic based granules which is pigmented and filled with high-purity grades of Aluminium Trihydrate (ATH). Chromat granules are cured in a high temperature oven system, reaching temperatures of over 180°C for optimum stability and hardness.

Q. What are the applications of Chromat?

- Open mold casting; in the production of solid surface sheets, tables, counter tops, vanity bowls etc
- Spraying granite effect
- DMC & SMC/compression molding; in the production of kitchen sinks
- Epoxy flooring

Q. Is there a set formulation for the matrix used in solid surface?

There is one generic formulation which is normally used as a guideline:
 casting resin 30%
 solids (ATH & Chips) 70%

This formulation however, may be altered depending on the followings:

- Viscosity of the resin
- Particle sizes in Chromat which effects the viscosity or the grades of ATH which has a similar effect on viscosity
- Percentage of Chromat to the matrix which is adjusted to achieve the desired pattern and color.

Q. What is the bulk density of Chromat?

The average bulk density of Chromat is 1080g/liter. However, the bulk density changes depending on the design (percentage of different particle sizes used in the formulation of chips used in a design). In some colors the bulk density may be as low as 800g/litre. In others in may be as high as 1140g/liter.

Q. How does knowing the bulk density help?

It is important to know the bulk density of chips and ATH to be able to do accurate costing and raw material requirement for the makeup of the matrix.

For example:

		Formulation	Usage	Unit cost	Cost/item
Resin	1.10 (specific gravity)	36%	0.396	2.00	0.720
ATH	2.50 (bulk density)	39%	0.975	0.70	0.273
Chromat	1.08 (bulk density)	25%	0.270	4.00	1.000
			<u>1.641 kg</u>		<u>1.993 cost per kilo</u>

This means a liter of matrix would weigh 1.621kg and would cost 3.22. Therefore, the weight and the cost of a casting of 1m² in the thickness of 12mm is determined as follows:

$1 \times 1 \times 12 = 12$
 $12 \times 1.641 = 19.692$ (weight)
 $19.692 \times 1.993 = 39.246$ (cost)

Taking the above numbers further to calculate the raw material requirement to produce 100 units it would be calculated: $100 \times 19.692 = 1969.20$ kilos

Resin requirement: $1969.20 \times 0.36 = 708.912$ (kilos of resin)
 $708.912 \times 2.00 = 1417.824$ (cost of resin)
ATH requirement: $1969.20 \times 0.39 = 767.988$ (kilos of ATH)
 $767.988 \times 0.70 = 537.592$ (cost of ATH)
Chips requirement: $1969.20 \times 0.25 = 492.300$ (kilos of Chromat)
 $492.300 \times 4.00 = 1969.200$ (cost of Chromat)

Therefore: Total cost of raw materials for producing 100 units of 1m² in the thickness of 12mm would be 3924.616.

Q. How many grades of Chromat are there?

There are five standard grades:

small	with maximum particle size of 700 μ microns (average bulk density 1140g/liter)
medium	with maximum particle size of 1200 μ microns (average bulk density 1040g/liter)
large	with maximum particle size of 2000 μ microns (average bulk density 1060g/liter)
extra large	with maximum particle size of 5000 μ microns (average bulk density 1048g/liter)
Ultra large	with maximum particle size of 8000 μ microns (average bulk density 1036g/liter)

Q. Why does a casting look cloudy?

This symptom is apparent when too much resin in the matrix has been used. If the viscosity of the matrix is too low or the gel time is too long or the ratio between the resin and the solids is incorrect settlement may occur. This creates a resin rich surface on the back of the casting or the front of it or both. Unbalanced formulation is also one of the causes of warping.

Q. Why is the end product soft and easily scratched?

Under cured product. If a casting does not reach the required peak exotherm and is not post cured thereafter, it will remain soft and prone to scratches.

Q. How is the formation of air bubbles prevented?

Air bubbles are introduced to the resin during mixing. However, the matrix can be made in a vacuum mixer which mixes the matrix whilst removing the air. Alternatively (for small quantities only), all the ingredients can be mixed first in a normal open top mixing pot and vacuumed afterwards. Batch mix/vacuuming will remove most of the air bubbles, but not all of them. In this case the mold could be placed on a vibrating table and the matrix could be poured into the mold whilst it is being vibrated.

Q. How long should the matrix be vacuumed and vibrated?

Vacuuming will depend on the viscosity of the matrix, the volume of the material that is being vacuumed and the strength of the vacuum pump. Calculations should be made in conjunction with the recommendations from the manufacturer of the vacuum unit. Length of vibration of the matrix is dependent on the thickness of the unit being produced. But in general, throughout the duration of the pouring and up to 2 minutes after the mold has been filled up with the matrix.

Q. Which grade of ATH is most suitable for casting with Chromat granules?

We recommend TLV103 or TLV107 from TP&T in the Netherlands.

Q. What is the mixing procedure?

First Resin (with pigment if required), then ATH, then Chromat, then Catalyst

Q. Which catalyst and at what ratio is it used?

A medium reactivity catalyst such as MEKP HA2 from Proxid-Chemie is suitable for most applications. Recommended catalyst level is 1 - 1.5% to the weight of the resin content. The percentage is also dependent on the thickness and the shape of the item being cast. Appropriate gel time should be obtained by testing.

Q. What is the mixing and curing timetable for a typical casting?

Mixing:	10 minutes
Gel time:	10-15 minutes at 17-25°C
Cure time:	3 hours at 17-25°C
Post cure:	24 hours at room temperature followed by 4 hours at 80°C

Q. Can Chromat be used with standard safety precautions?

Yes. Consult the Safety Data Sheet for details.

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