

Glasma Color System Guide

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Glasma offers a wide range of coloring additives developed to be used together with Glasma's pelletized products. Each mix of additives is thoroughly tested to be compatible with Glasma's lead-free crystal glass and studio glass products. The additives are delivered in portions recommended to be mixed with 100 kg (220 lbs) of pelletized batch. Depending on the type of color, the weight of each portion varies from a few grams up to 20 kg (44 lbs). By adding these additives the properties of the melt will be changed, the more additive the more it will change. However, the change of properties normally can be compensated for. For example:

- The most common change in property is decreased viscosity of the melt. This is normally compensated by lowering the working temperature in the melt with 20 to 40°C (36 to 72°F). The high value is normally for amber and black.
- The mix of pellets and additives take normally longer time to melt. To secure a good result it's recommended to use smaller charges and make sure each charge is thoroughly melted before next charge is added. Culletts can normally be added without any problems.
- Some additives can create foaming during the melting process. To avoid overflow of the pot it's recommended to make smaller charges of the batch and the additives.
- To be able to get a perfectly homogenous melt, it's recommended to boil the melt. This is done right after last charging and if needed, do the boiling one more time.
- Colored glass normally requires longer cooling time.

During storage and handling be careful to separate the additives from other materials. A small amount of additive added by mistake can give unwanted colors to your glass. Before series production, we recommend testing thoroughly.

Since Glasma Color System is optimized to work with Glasma pelletized products, it's not recommended to mix it with other type of batches.

If melting is done sequentially with different colors in same pot, it is recommended to start with the least colorful (weakest) color.

The final colored glass can normally be combined with glass in other colors, but within same type of glass. This can be used when making several layers, for example underlay and overlay.

Make sure the color additive is mixed with correct amount of pelletized batch.

Be aware it can take a couple of melts to clean out the pot from a color.

The coloring additive is well mixed and can be used partly. Please remember to weigh very carefully, both the additive and the pelletized batch. If the pelletized batch is mixed

with cullets, please compensate for different density. 100 kg (220 lbs) pellets correspond to approximately 85 kg (187 lbs) cullets. For example, one portion of additive can be mixed with 50 kg (110 lbs) pellets plus 42,5 kg (94 lbs) cullets. Please make sure you use same type of glass raw materials in both pellets and cullets. Also take into consideration any leftover material in the pot.

Each melting process is unique and must be adjusted and optimized before a perfect result can be obtained.

Please be aware that some of the additives are considered as hazardous material, see the MSDS's.

Recommended way of working:

- Weigh the specified amount of pellets, normally 100 kg (220 lbs) per portion of additive.
- Mix it thoroughly with the additive portion.
- Melt the mix according to “Glasma Melting Guide” but prolong the time for melting and make more and smaller charges.
- During the first melt, please make sure the properties behave as expected. If not, adjust according to examples mentioned above, or contact Glasma.