

THE INTERNATIONAL GROUP, INC.

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General Guidelines for Container Candles

Suggestions for Container Selection.

- Container choice: This is probably one of the most critical things to choose correctly for any container candle to get good results. The container shape affects the cooling rate of the wax, for optimal results the cooling rate should be as uniform as possible:
 - Containers with uniform wall thickness help to maintain a uniform cooling rate of the candles;
 - Containers with uniform wall thickness will be easier to pre-warm;
 - Containers with smooth rounded corners will work better than ones with sharp corners;
 - Containers with bottoms comparable in thickness to the walls will promote uniform cooling rate of the candles, and will be easier to heat;
 - Containers with thinner walls will pre-warm faster than ones with thicker walls or bottoms;
 - Containers with uniform volumes along its height will work better than ones that have varying volumes along its height (e.g. a straight up-and-down glass container will work better than one with a bulge in the middle);
 - Containers with smooth inside surfaces will work better than ones with uneven surfaces.
 - Generally round containers will give better results than square, oval, or angular ones.
 - For optimal single pour characteristics, containers with a diameter equal to or larger than the height are required. In containers with a diameter smaller than the height of the container, the blend may require a top-up pour.

Suggestions for optimizing production and storage conditions:

- Evaluate containers by pouring candles within the specified parameters, using the desired fragrance and dye combinations.
- If the required equipment is available, temperature cycling can be done, as follows:
Age half of the candles at room temperature and temperature cycle the other half of the candles as follows:
 - Place the candles in a fridge (we recommend 40°F/4°C) for 24 hours.
 - Remove from fridge and place in an oven or other suitable hot place (temperature preferably above 95°F/35°C, up to 104°F/40°C).
 - Repeat this cycle for at least 2 weeks, preferably 3 weeks.
- The temperature cycled candles should give a good indication of how the candles will behave for each fragrance/dye combination under various storage and transport conditions.

Troubleshooting Guide:

- Pull-away of candle from container walls:
 - Check container temperatures before pouring;
 - Check pour temperature
 - Check container design against guidelines above
 - Check candle cooling area for drafts which could result in non-uniform cooling.
- Excessive shrinkage: (For “one-pour” applications)
 - Note that a small amount of shrinkage is normal, and that this will be more noticeable on large volume candles. The shrinkage is usually less noticeable once a wick is present.
 - Check pour temperature
- Some fragrance/dye combinations work well, while others don't:

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Although extensive testing with different fragrance/dye combinations have been done, it has obviously not been possible to test all fragrance/dye combinations. If consistent problems are seen with a particular combination, it is recommended to try a dye or fragrance from an alternative supplier

- Blistering and Pitting
 - Check jar temperature prior to pouring
 - Check pour temperature
 - Experiments with cycling have shown that temperature fluctuations can lead to blistering and pitting. Check for possible temperature fluctuations during storage and transportation.

Mottling Troubleshooting/Notes

- Mottling incomplete or not sufficient (for IGI mottling blends)
 - Note that mottling may take several hours (up to 24) to develop fully.
 - Check production temperatures
 - Check jar temperature
 - Check pour temperature
 - Check cooling temperature. Mottling can be improved by cooling candles as slowly as possible, to give the crystallization time to occur.
 - Oil level may be too low - increase oil level
- Shrinkage:
 - Note that shrinkage is normal, as this is a multiple pour container wax. However, studies have found that good mottling is usually accompanied by less severe shrinkage than non-mottling waxes. Shrinkage will be more noticeable on large volume candles.
- Some fragrance/dye combinations work well, while others don't:
 - been done, it has obviously not been possible to test all fragrance/dye combinations. If consistent problems are seen with a particular combination, it is recommended to try a dye or fragrance from an alternative supplier.
- Bleeding:
 - Note that mottling is often accompanied by bleeding. The mottling phenomenon is thought to include the displacement of liquid by air following a phase transition in which the wax recrystallizes, and waxes that mottle well usually exhibit bleeding too.
 - The additives that alleviate bleeding in other candle types also decreases or even completely eliminates mottling
 - Optimizing production conditions could help minimizing bleeding (pour temperature, cooling temperature).
 - Fragrance will affect the degree of mottling.
 - Temperature cycling tends to increase the amount of bleeding – candles should preferably be stored and transported at constant temperatures.
 - Allow 24 hours for the excess oil on the surface to evaporate before placing lids on containers should help to get rid of surface greasiness.
 - If 1286 exhibits too much bleeding after optimizing all parameters listed above, IGI 1288A could be tested – this has a lower oil content than 1286 (1.5% typical instead of 2.3%).
- Mottle disappears: Check storage temperature. Check transportation temperature. Note that if the mottled candles are heated (e.g. stands in sunshine, near a heater or UV light) the part of the candle exposed to the heat may lose its mottle.

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