

Celadon Dry Form Dipping Glazes

AMACO's technical department completed a review of the Celadon Dry Form Dipping glazes in July of 2016. Mixing instructions, glaze suspension, and raw materials were all evaluated to ensure the quality of our products. AMACO created this guide and the subsequent attached information to explain the proper use of this product. For any additional questions not answered in the following text, please contact technical support by emailing technicalsupport@amaco.com or calling (800) 925-5195 ext. 1303.

NOTE: Always wear a NIOSH approved respirator or mask for dust or mist when mixing dry glazes. Use the bucket the glaze is packaged in to mix the glaze. Do not empty the glaze powder into another container. Add water slowly so as not to produce any dust. If you have any questions regarding the safety of this process, please refer to the SDS on www.amaco.com.

- 1. Mixing Instructions:** These glazes are designed to work properly when the correct amount of water is added to the dry glaze bucket. The attached sheet lists each Celadon glaze, the size of the bucket, and how much water to add by either weight or volume, whichever method of measuring the water you prefer. The chart also shows what the specific gravity of the mixed glaze should be. It is recommended that the glaze be prepared in the following manner:
 - a.** Carefully measure your water. Double-check the amount before adding it to the bucket. Add water slowly so as not to produce airborne dust.
 - b.** Mix the glaze with a prop type mixer (available in the paint department of most hardware stores) at high speed for 5-10 minutes. This will allow all of the suspension materials to come into contact with the water.
 - c.** Let the glaze sit overnight so that the materials may fully hydrate.
 - d.** Remix the glaze the following day with the prop mixer until smooth.
 - e.** Measure the specific gravity and put the date made, specific gravity, and any other pertinent information on the side of the bucket.
 - f.** Test glaze on a small tile or piece of ware to make sure the glaze fires properly before glazing multiple pieces. This will save time, money, and aggravation.
 - g.** Label the test tile with relevant information including dip time, firing temperature, batch number, etc. Save fired tile, either taped to the side of the bucket or in your studio to use as a reference until the glaze is depleted.

- 2. Alteration of Glaze: It is not recommended** that alterations be made to this glaze. There are many different types of clay bodies, dipping techniques, firing schedules, etc. that these glazes must work on. The amount of suspension added to these glazes is based on the exact amount of water given to each glaze. If less water is added the glaze will be deposited more heavily and it may not adhere properly and flake off onto your kiln shelf. Adding additional water may cause the glaze to lack enough suspension power to keep the glaze from settling hard.

However, if you decide you want to experiment with these types of alterations, the glazes will soft settle overnight and water may be taken off and discarded. Take detailed notes regarding how much water has been removed / added so that you may make the glaze the same way next time. Record the new specific gravity and note that it will differ from AMACO's recommended specific gravity listed on the attached sheet.

- 3. Water Quality:** We recommend using **DISTILLED WATER**. This water will have no charges on it and no tramp materials that may flocculate or deflocculate the glazes. When making an investment in a bucket of glaze, adding \$4.00 more into your largest raw material is a wise investment. This is not to say that if you have been using the Celadon glazes with your own water source and everything has been working well that you need to change. However, the use of distilled water makes it easier to identify the cause of any issues that may arise. Water comes in varying degrees of hardness from very hard to soft. Types of water can and do cause glazes to behave differently. Hard water tends to flocculate the glazes slightly, making them appear a bit thicker. This may enhance the suspension. Softened water may tend to deflocculate the glazes and cause them to appear thinner. This may counteract the suspension and could make them settle out hard as a rock. AMACO has spent a great deal of time deliberating over the best way to approach this issue.
- 4. Layering of Celadon Dry Form Glazes:** Because dipping glazes don't have the binder that brushing glazes have, layering them is not as easy. Although some customers layer Celadon dipping glazes with success, they have achieved their results through trial and error. AMACO cannot guarantee that you will have the same success. Celadon glazes are not specially formulated for layering. The total amount of glaze may prove problematic when layering because the thickness in the overlap area is doubled, which can cause the first glaze to lose its bond with the clay or the second glaze to lose its bond with the initial glaze. You may try to minimize the overlap area but that may not give you the effect you want. If you thin the glazes down with water to make the overlap glaze thickness correct, the areas where it is only a single layer might be thin and unattractive. Additionally, a too thin dipping glaze may settle out hard in the bucket.
- 5. Tools:** Please find attached a copy our instructions for **Measuring Specific Gravity**. Specific gravity is a useful and recommended tool used to obtain consistent results when working with dry dipping glazes.
- 6. Suspension:** All the Celadon's that come with these instruction sheets enclosed will settle soft and will be able to be mixed with a prop mixer easily when made with distilled water.

CELADON DO Glazes 7/9/15

#	Name	25 pound dry		10 pound dry		Specific Gravity (grams/ml)
		Water Weight	Water Volume	Water Weight	Water Volume	
1	Obsidian	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
10	Snow	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
11	Mixing Clear	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
20	Cobalt	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
21	Sky	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
22	Fog	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
23	Ice	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
27	Storm	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
36	Iron	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
40	Aqua	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
41	Pear	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
43	Wasabi	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
47	Jade	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
49	Rainforest	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
50	Cherry Blossom	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
53	Weeping Plum	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
56	Lavender	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43
60	Marigold	27.8 lbs or 12.6 kg	3 1/3 gal or 12.6 liters	11.1 lbs or 5 kg	1 1/3 gal or 5 liters	1.41 - 1.43

Measuring Specific Gravity

Tools required: Gram scale
Paper cup bathroom size, or any other container
Calculator
Pencil and paper

Specific gravity is a measure of the weight of fluid per unit volume. This actually tells you the relative ratio of liquid to solids in your material.

1. Zero out your scale.
2. Weigh the empty paper cup (or equivalent)
3. Write this weight on the paper as your “empty container weight”.
4. Fill the paper cup with tap water until it is exactly to the top.
5. Weigh the paper cup plus the water. Write this weight on the paper as “full cup weight water”.
6. Subtract the “empty container weight” from the “full cup weight water” and record the answer. It will be **XXX** grams.
7. Since water is equal to 1 gram per milliliter, the weight of water in grams is equal to its volume in milliliters. So **XXX** grams of water weight required to fill the cup becomes **XXX** milliliters of volume in the cup. This is your unit volume that the cup holds. Record this as “volume of cup”.
8. Empty the paper cup and dry it. Now fill it with your liquid material to the same level you filled it with water.
9. Weigh the paper cup full of glaze and record. Record this as “full cup weight material”.
10. Subtract the “empty container weight” from the “full cup weight material” in grams. This is the weight of the glaze in the container. Record as “material weight”.
11. Since specific gravity is the (weight per unit volume), simply divide the “material weight” (grams) by the “volume of cup” (milliliters) and this is your specific gravity in grams per milliliter.

Cup volume: (full cup weight water) – (empty container weight) = Cup volume

Material weight: (full cup weight material) – (empty container weight) = Material weight

Specific gravity: $\frac{(\text{material weight})}{(\text{Cup volume})} = \text{grams / ml}$

Ex. Your cup empty weighs 13.7grams
Your cup filled with water weighs 186.3 grams
Your cup filled with liquid materials weighs 257.1 gram

Volume of cup: (186.3 grams – 13.7 grams) = 172.6 grams = 172.6 ml

Weight of material: (257.1 grams – 13.7 grams) = 243.4 grams

Specific gravity: $\frac{(243.4 \text{ grams})}{(172.6 \text{ ml})} = 1.41 \text{ grams / ml}$