

General Glaze Information



All AMACO® Glaze colors are certified by ACMI which conform to federal standard ASTM D-4236/LHAMA for safe labeling.

Product Labeling for Glazes

All AMACO® glazes are either AP (Non-Toxic) or CL (cautions required). Only AP or CL lead free glazes are sold for school use. Read labels for grade levels.



NON-TOXIC
Conforms to
ASTM D-4236
LEAD-FREE



CAUTIONS REQUIRED
Restricted From Use K-6
LEAD-FREE
Conforms to
ASTM D-4236/LHAMA

All AMACO® glaze labeling features either the “AP” (Non-Toxic) seal or the “CL” (cautions required) seal of the Art and Creative Materials Institute, Inc. (ACMI). These seals are your assurance that the product was evaluated by an independent toxicologist and labeled according to ASTM D-4236/LHAMA—the federal standard for safe labeling of art materials. If the product contains harmful ingredients, the label must identify those materials and then carry a warning statement identifying any health hazards in addition to providing directions for the safe usage of the product. **Only AP Non-Toxic Lead Free Glazes are suitable for use PreK-6.**

Why is AP so important?



The ACMI AP (Approved Product) Seal shows that the product is certified to be safe for use by children grades K-6. Potential misuses of the product (such as ingesting the material) are taken into account.

What does CL mean?



The ACMI CL (Caution Label) Seal shows that the product is certified to be safe for use by children grades 7-12 and adults, as long as product warnings on the labels are followed.

Why are these seals different from others?

Because the ACMI certification process takes many different factors into account:

- Each ingredient and the quantity used in the product.
- Possible adverse interaction between ingredients in a product.
- The product's size and packaging.
- Potential acute and chronic harm to the user.*
- Possible allergic reaction to the product.
- How a product is commonly used and potentially misused.
- The intended age group that will use the product.
- U. S. national and state labeling regulations.

Who is ACMI?





The Art & Creative Materials Institute, Inc. (ACMI) is a non-profit association of art materials manufacturers. The program certifies that products tested are properly evaluated and labeled in accordance with all current governmental regulations.

ACMI's consulting toxicology team not only reviews the complete formulas of products in the certification program, but must approve the formula of every color of every product and every formula change. If no changes are made, the products must be reviewed every 5 years in accordance with ASTM D-4236.

The safety of the consumer is the only consideration when evaluating a product.


**Acute harm means the problem will occur immediately, chronic harm means the problem may occur over time (months or even years).*


Not All Lead Free Glazes Are Dinnerware Safe

All AMACO® glaze labels comply with FDA Guidelines to determine whether or not they meet dinnerware safe testing requirements. **Please note:** Not all AMACO® Non-Toxic lead free glazes are dinnerware safe. In addition, some CL listed AMACO® glazes **do** meet FDA Guidelines for safety and have been determined to be dinnerware safe—but are not suitable for use in schools and are for professional or adult use only. In order to determine whether a glaze is dinnerware safe, you must read the label. Those glazes which are both dinnerware safe and lead free are shown with a . Those lead free glazes that are **not** dinnerware safe are shown with a . Plan art projects accordingly.

AMACO® recommends that the producers of any dinnerware for sale submit their production to an independent approved laboratory in order to test for release or leaching of hazardous materials such as lead or cadmium to meet FDA Guidelines in an applicable category **BEFORE DINNERWARE IS SOLD**. Many variables (such as exact firing temperature, contamination from other ware being fired along with dinnerware, and glazes that may not provide a stable surface adequate for food safety) are factors in whether a specific dinnerware line meets with FDA Guidelines.

Over sixty years ago, AMACO® formulated the F-Series of lead free glazes specifically for dinnerware safe ceramics. A well-formulated glaze like the F-Series will result in a stable surface, which will not dissolve in contact with foods. AMACO® submits all of its glazes to an independent approved laboratory for testing of leaching of hazardous materials to establish a dinnerware status for each glaze. Only those glazes (which pass FDA guidelines for dinnerware glazes) receive the dinnerware safe seal on glaze labels.

 **Dinnerware Safe glazes** contain no lead or raw cadmium bearing ingredients.

 **Not Dinnerware Safe glazes** contain no lead or raw cadmium bearing ingredients, but we do not recommend these glazes on surfaces which come in contact with food or drink due to the soft or crackle nature of the glaze, even though they pass tests for hazardous release.

Note: In order for glazes to be dinnerware safe, they must be fired to recommended firing temperature. Glaze products are not suitable for ingestion or inhalation.

Tableware producers must have all finished ware tested and approved as safe for dinnerware through a certified laboratory due to possible variations in firing temperature and possible contamination.



"NASA Rocket and Astronaut" were glazed with AMACO® F-Series glazes.



University of Wisconsin ceramic students using AMACO® products.

Important for all AMACO® Customers: Special Information for States Regarding Product Safety for K-12

Federal law requires the use of lead free, Non-Toxic products in grades K-12 and requires art materials labeling that conforms to the ASTM D-4236 Standard. Under the Federal Hazardous Substances Act, children should not be permitted to use art material products labeled "not recommended for the use of children". Products with this statement may not be sold in school systems in states with laws prohibiting the sale of such products to pre-kindergarten or grades 1 through 12.

1. Certain states have special regulations relating to lead bearing products.
2. Leaded glazes and overglazes shall not be sold to individuals under eighteen (18) years of age. Leaded glazes, underglazes, and overglazes shall not be sold for use in settings where children under eighteen (18) years of age, or mentally handicapped, or impaired individuals may use them or be exposed to their use. Such settings include, but are not limited to, schools, nursing homes, camps, recreational centers, churches, etc.
3. Leaded glazes, underglazes, and overglazes shall not be sold to institutions or organizations working with or serving the mentally handicapped.
4. State and Federal laws allow lead bearing glazes to be used by artists, crafts people, and individuals over the age of eighteen (18) as long as they comply with the provisions listed above. For adults over the age of 18 who want to know product availability and safe usage of leaded glazes, please contact salesupport@amaco.com.

How to Use AMACO® Lead Free Glazes

AMACO® glazes are available in a wide variety of colors and textures, all of which are perfectly compatible with AMACO® clays. All AMACO® glazes are accurately formulated and compounded from the finest raw materials available. Each batch is laboratory tested before packaging, assuring our customers of receiving only the highest quality dry and liquid glazes.

AMACO's liquid glazes are prepared by homogenizing to the correct consistency for brushing. Only stirring is necessary before application. For spraying, dipping, and pouring, liquid glaze may be thinned with water.

LIQUID AND DRY FORM. AMACO® Glaze Series LG and HF are available in liquid form with some also available dry. AMACO® Glaze SE Series are available in dry form only.

AMACO® LIQUID GLAZES are supplied in non-breakable plastic jars and are homogenized to the correct consistency for easy brushing.

AMACO® DRY POWDER GLAZES are packaged in safe, convenient, non-breakable plastic jars with plastic lids. Since they contain gum, only water need be added.

NOTE: All AMACO® glazes are available in a 5 gallon bucket on a special order. Call for pricing. Special orders are not returnable.



SPRAYING/AIRBRUSHING: Make sure to use only AP Non-Toxic sprayable glazes for spraying and take the necessary ventilation precautions. We recommend the use of a respirator mask that is suitable for mist and dust when spraying glazes.

The technique of airbrushing underglazes and glazes onto greenware or bisque is common in ceramics and is often taught to high school and college level ceramic students. Safe and proper rules of airbrushing should also be taught and enforced in any classroom or studio.

Airbrushing should be done in an exhaust ventilated spray booth specifically designed for this purpose. NIOSH approved dust masks should also be worn for safety. Airbrushing is an exciting ceramic decorating technique and need not be avoided if proper safety precautions are used. **Lead-containing glazes should NOT be airbrushed; there are suitable lead-free glazes for this purpose.** We do not recommend airbrushing for pre-school and elementary age children. In high school, airbrushing should only be introduced under strict supervision.

If users feel they must spray glazes containing lead or silica, use extreme caution. When spraying these glazes in production, extreme caution MUST be taken. Use only a NIOSH approved particulate respirator for dust and water mist and replace it often. A safety supply house is the best source of suitable equipment. For more detailed information about masks for protection against dust and mist

contact: Dept. of Health & Human Services, National Institute For Occupational Safety & Health (NIOSH), (800) 356-4674, (513) 533-8328 (Outside U.S.), Monday through Friday 9-4 EST or visit their website, www.cdc.gov/niosh.

Use a spray booth equipped with a strong fan that exhausts all glaze away from the breathing zone. Replace all spray booth filters often. Wear protective clothing that is removed before eating, drinking, smoking or leaving work. Wash hands and arms thoroughly after spraying and removing protective clothes. Do not smoke, eat or drink in work area. If leaded glaze spraying is a regular or major part of your work, regular blood-lead-level testing by your doctor is necessary. Follow all OSHA guidelines for use of heavy metal products.

MIXING DRY GLAZES: To prepare AMACO® dry glazes, we recommend as a "basic recipe" a ratio by weight of three parts of glaze to two parts of water. A one-pound jar of AMACO® dry glaze powder will make approximately one pint of liquid glaze. Add water gradually to the jar, stirring slowly and completely until desired consistency is achieved. Every glaze formula will have its own special water requirements. Various application techniques will dictate consistency for optimum application properties. Each craftsman has his own preference for glaze consistency.

BRUSHING GLAZES:

When brushing, glaze consistency should be similar to that of latex house paint. Other techniques may require a thinner mixture and AMACO® Gum Solution may be added. Try not to let the glaze become thinner than needed, since the lower the viscosity, the greater the chance that heavy glaze particles will settle out. For instance, the very thin consistency required for spraying will need continual agitation to prevent settling.



DIPPING GLAZES:

When using liquid dipping glazes, shake the jar well, pour into a bucket, and mix thoroughly using a fan blade mixer attached to a hand drill. If the consistency is too thick add a small amount of water. Be careful not to thin the glaze too much or it will settle.



For dry dipping glazes, add water to the bucket as indicated on the label then mix thoroughly using the same procedures as above.

To dip, hold the piece with the tip of your fingers or use dipping tongs. When dipping an enclosed container, start immersing the piece mouth first until it is entirely immersed into the glaze. Rotate so it will be covered all over, then bring the piece out of the bath with the bottom first so it will empty as it is pulled out.

To glaze plates, start immersing one side of the plate, slide the plate through the bath and pull it out the same side first, thus bringing the whole plate through the glaze.

How to Use AMACO® Lead Free Glazes continued

With AMACO® Dipping Glazes you will not have any dripping as soon as you pull the piece out of the glaze bath.

Slight variations in the color of glazes may result from: 1) thickness of application, 2) opacity or transparency of glaze, 3) color of clay body.

EXPERIMENTING WITH GLAZES: As knowledge and skill in working with glazes increases, experimentation may produce many new and special glaze effects. When experimenting, be sure to test glazes on tiles before using them on pottery. It is also a good idea to keep records of experimental procedures for future reference. Some suggestions for experimenting with AMACO® glazes follow:

- **Mix Glazes Together.** Glazes within a series usually mix well. Mixing high fire with low fire glazes can change the maturing temperature of the glaze; may increase or decrease temperature depending on percentage of each glaze used. Visit our website for more information on mixing glazes (GlazesThatMix.com).
- **Layer One Glazes Over Another.** Layer different colors from the same series or layer a glaze over an underglaze. Visit our website for more information on layering (LayeringAmacoGlazes.com).

- **Pour One Glaze Over Another.** Pouring gloss over matt or vice versa may produce a variegated effect. If glosses and matts are first mixed, then poured on bisque, the effect may be a semi-matt without variegation.
- **Add AMACO® Velvets or AMACO® Liquid Underglaze Decorating Colors to Glaze to Change Color.** An average of 3-5% may be added according to intensity desired.
- **The Two White Gloss Glazes From AMACO® Offer a Variety of Finishes When Fired.** LG-11 Opaque White fires white, and F-11 White fires to an off-white.
- **If You Are Experiencing Under-firing When Using a Kiln-Sitter® During the Firing of AMACO® Clays and AMACO® Glazes, Use One Cone Higher Than Recommended.**

CAUTION: Intermixing ANY or overlapping ANY dinnerware glazes, whether leaded or lead free, will not assure that they will remain dinnerware safe. Also, additions of underglazes or oxides may alter the composition of the glaze and disrupt the formula balance thus making it unsafe for dinnerware. Only testing for lead release will determine if they are dinnerware safe.

Firing AMACO® Lead Free Glazes

AMACO®, the leading manufacturer of lead free glazes, has the advantage of many years of formulating experience. Unlike lead bearing glazes, where a little underfiring or overfiring may not make a difference, low fire lead free glazes must reach Cone 05 to mature. The other fact to consider is that lead free glazes do not flow as much in the firing as most lead bearing glazes will. Therefore, if application is made by brush, a criss cross brush pattern is recommended for even application. These minor adjustments are all that are necessary to use safe glazes with perfect results.

Health and Safety

AMACO® is dedicated to an ongoing program of safety research and awareness. All AMACO® glazes, overglazes, and underglazes have been evaluated by a toxicologist and are properly labeled for safe use, according to the guidelines established by The Art and Creative Materials Institute, Inc. AMACO® glazes and underglazes are labeled for safety in accordance with ASTM D-4236.

For additional safety information, please call Steve Lampron or Lori Jenkins at 800-374-1600.



Noelle Hoover, decorated "Leaf Dish" with AMACO® Potter's Choice glazes PC-25 Textured Turquoise and PC-36 Ironstone.