

LEE S. McDONALD, INC. est. 1976
THE SOURCE FOR THE PAPER ARTS

PEARLESCENT PIGMENTS

Pearlescent pigments are dry, powdered pigments made from mica platelets that are coated with titanium dioxide and/or iron oxides. In papermaking, they can be used like other dry pigments for addition of color and special effects by adding directly to the pulp. For other artistic mediums, they can be used as surface coatings with or without a binding agent. However, if used without a binding agent, they will work like pastels and be prone to smudging.

Printers and painters will find that with the addition of suitable coating vehicles, such as acrylic, varnish, or enamel, they will be able to make inks and paints with unusual colors and luster. They are used heavily in the plastics industry, and crafts people with imagination may find many uses for them, from casting plastic resins to candle making.

These pigments are non-bleeding and compatible with practically all coating systems. They have good light stability and weatherability, and are heat stable up to 900° C. All pearl pigments, by their nature, are transparent and have relatively low hiding power. Some colors such as gold, copper, bronze and their antique shades have somewhat better coverage because they contain small amounts of absorption pigments. In most cases it is not practical or economical to hide dark substrates with pearl pigments. The most effective use is achieved by applying over a colored base coat, or if possible, over a primer of the desired color. To eliminate cases where the pearl provides too much contrast with the base color, add a slight amount of colored toner to the pearl, this will diminish its luster slightly and reduce the contrast. In general, very satisfactory pearl coatings can be achieved with proportions of 3 to 6 parts pigment to 94 to 97 parts binder by weight, based on the weight of the vehicle. Several thin coats of this mixture tend to be more effective than one thicker coat.

These products are nacreous pigments consisting of mica platelets coated with titanium dioxide and/or iron oxide. All nacreous pigments contain transparent platelets with a high refractive index; in the case of these pigments, the platelet shape is derived from mica flakes and the refractive index from the oxide coating. Since coatings of controlled thickness may also produce color by optical interference, some pigments impart color as well as luster. In addition to pearlescent luster in a range of particle sizes and iridescent color effects, a number of the pigments exhibit metallic sheens of exceptional depth and richness. Details are provided in the following tables:

White Pearlescents:

The first three in the table are pearl grades, which differ in particle size, distribution, and provide a range of textures. Color effects can be secured with conventional pigments, preferably transparent colorants and dyes. Opaque pigments should be used only in small proportions to avoid obscuring particle surfaces which would inevitably reduce luster.

Metallic Colors:

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These produce metallic shades and effects without the use of metal flake pigments. Unlike many of the latter, they do not tarnish or oxidize and are non-arcing. Brilliant Gold and Gold Sparkle are normally used individually to achieve rich gold tones. Copper and Golden Bronze may be used alone, or can be blended together to achieve intermediate shades. Antique colors are extremely dark in their original state, and are designed to be combined with regular colors to achieve an exceptional range of metallic effects. For example, blends of 60% or more of Antique Silver with Pearl white produces an attractive assortment of "gunmetal" (black pearl) tones. Increasing the proportions of Pearl white lightens the blend into the pewter range, and further additions of Pearl white shades it off into medium and pale silver. Similar gradations are achieved by combinations of Antique Gold with Brilliant Gold, and Antique Copper and Antique Bronze with the corresponding regular color. Unusual blends, such as Antique Silver with Brilliant Gold, create an infinite variety of "white" golds, "yellow" golds, etc. The other Antique colors lend themselves to similar cross-combinations for unique color effects.

Interference Colors:

Provide twin colors (by both reflection and transmission), which can only be achieved with interference pigments. Many variations are possible by combining the interference pigments with conventional transparent colorants or dyes. For example, when Pale Gold is combined with a red dye, it develops a gold highlight against a red background. The added red modifies or eliminates the inherent blue transmission color. The gold highlight is retained in all such combinations. Iridescent red, when used with dyes and transparent colorants, similarly retains the red reflection color as the highlight, and the transmission color is obscured. It should be noted that mixing interference pigments with each other does not result in increased color play, but leads to a marked reduction in color intensity.

Use In Hand Papermaking:

Beat the pulp and put into a vat in desired amounts for making thick or thin sheets of paper. For western pulps, pour 2 tablespoons of a stock solution of retention agent into 1 cup of water and stir well. Dissolve 1 to 2 teaspoons of pearlescent or metallic powder in 1 cup of water and mix well. Add the cup of pearlescents to the pulp and stir well. Now add the diluted retention agent and mix thoroughly throughout the vat until the pearlescents are evenly dispersed.

For Japanese fibers, dilute the pearlescents in 1 cup of water and add to a vat in which the PMP or other formation aid is already mixed. It is not necessary to add retention agent.

After the Western or Eastern vat is prepared, make sheets and couch as usual. Your couching cloths will absorb some of the pearlescents or metallics so it is a good idea to set these cloths aside for use specifically with these pigments. As you replenish the vat, you will want to add more pearlescents or metallics as well as more retention agent. For the greatest effects you may even want to add more pigments before you replenish the vat with pulp. Choose the amounts you use will according to the effect you desire. As in dyed or pigmented pulp, the color is much darker (by at least 50%) in the wet stage than in the dry. It might help to make several trial sheets first before getting just the right effect. The thicker sheets that occur at first tend to drown out the effects of these pigments, and the results are usually most impressive in thinner sheets. The appearance can be especially beautiful with "rain" paper or with papers in which a negative space stencil is used.

Pearlescents and metallics can be combined with dyed or pigmented pulps as well. When using them with added pigments, first complete the coloring including the retention agent and add the pearlescents

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or metallics afterwards. You may or may not need to add retention agent, see if all the pigments are evenly dispersed and then decide. Colored pulps tend to slow the flow of the pearlescents and metallics, but be patient, the effects can be beautiful. Make sure, however, to choose your metallic and pigment combinations carefully. For example, not all colors will look best with gold, copper or bronze. Violet, blue, green, and black tend to look nice with silver or pearl. Red, orange, yellow, and brown may be most attractive when combined with gold tones. The best suggestion is to try everything in every possible way, this is the only way to be sure about which combinations you prefer.

To combine pearlescents and metallics or mix different metallics together, add another pearlescent or metallic mid-way through the vat of pulp. For a really great effect, mix the basic pearl or gold with their respective "sparkle" forms.

You can use several different methods to dry your newly formed sheets. Some papermakers iron their papers dry in order to get an immediate test of the color, to get a smooth, flat sheet, because of a lack of drying space or because of impatience. Unfortunately, ironing tends to lessen the effects of the pearlescents and metallics so I wouldn't recommend it if you want a dramatic result. If you couch directly onto a silk-screen or Plexiglas sheet for restraint drying, the side of the sheet that is directly on the screen or plexi will have a slightly reduced effect. A good way to counteract this diminished effect is by pressing the sheets, this can create an even and luminous paper surface.

Your pearlescent and metallic papers will look too beautiful to use or be practical, but rest assured they will accept pen, ink or paint as well as any other handmade papers. Watercolor, Luma Colors or Dr. Martin's dyes will actually enhance the effect of the pigments when painted on the papers. Good luck and have fun!

Safety Information:

All Pearlescent pigments contain mica in quantities from 54% to 90% of their weight. Mica dust is unsafe to breathe. Dust masks should be worn when measuring out pigments and ventilation provided to avoid build up of dust. Effects of acute overexposure are a persistent cough and difficulty in breathing. There are no recognized effects of chronic overexposure. In emergency, consult a physician. These pigments are stable and have no hazardous decomposition products, nor will hazardous polymerization occur. If spilled, use general cleaning methods and dispose of properly. Pigments should be stored tightly sealed, in a cool dry area.

These products contain silica and titanium oxide. Some products contain iron oxide. Lung injury (pneumoconiosis) is associated with high exposure to high concentration of these dusts over long periods of time. It is not judged the exposure conditions that would result from the use of these products in papermaking operations to pose any danger. Nevertheless, the artist should wear a dust mask when mixing these pigments with pulps.

***For more health information contact CHEMTREC at 1-800-424-9300 or your local poison control center.**

Data safety sheets on this product are on file; a set of data safety sheets for the products we sell is available for \$20.00. For more information on art hazards and safety, consult the Center for Occupational Hazards, 5 Beekman St. New York, NY 10038.

Please read for your protection: Warranty information

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