

SPECIALIZATION RESEARCH
POLYMER EMULSION PAINTS

Submitted by
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Since its emergence onto the fine art scene, polymer painting has been a new and better way to express one's self in painting.

Out of the development and search for a better and more efficient painting media, polymer emulsions and paints have emerged as the one constant. I believe these will remain a dominant media for many years.

Many painters, myself included, are now working in styles that are far removed from those of the past or are under circumstances radically different from those who formerly prevailed. To meet their new requirements, they have sought new materials from the number of industrial coating materials based on synthetic resins. These resins are the artists' principal medium that have been developed in this century, and they are the basis of all synthetic paints. The most widely used artists' paints, based on synthetic resins, are the so-called polymer paints. Due to the nature of my own work in which synthetic paints are used on a synthetic support of polyester, I felt an in-depth study into polymers was essential to a total understanding of the medium.

I. History of Polymers and Acrylics

The artist of today owes a great deal to science and industry. This joint effort in the field of research into

plastics has produced an entirely new range of paints which have many advantages over the old historical, time-tested, traditional types (oil, tempera, caseins, etc.).

In the first part of this century, an American, R. Baekland, found that by heating carbolic acid with formalin and sulfuric acid, he obtained a hard, brittle, fusible solid.¹ Although the uncured resins were soluble in alcohol, they were unsatisfactory as paint mediums because the film that was left, after the solvent had evaporated, was excessively brittle. In the fully cured state, the resin was completely insoluble.

Developments in other chemically related groups of resins such as the acrylics have produced plastic resin emulsions that are satisfactory for artists' use.

In 1911 synthetic plastic polymers (acrylics) were first produced and made commercially available in Germany by Otto Rhom. In the United States acrylics appeared in the 1930s, produced by Dupont de Nemours.² The use of synthetics as an art medium started with the Mexican Muralists as early as 1930 and has continued until today.

Allen D'Areangelo was introduced to the materials in 1958 in Mexico City, where synthetics were first really explored by artists.³

Polymer emulsions are no longer new. They have been produced now for around 50 years as a commercial paint and medium for the fine artist.

II. Acrylics Defined

According to The Painters' Dictionary of Materials and Methods by Frederic Taubes, "Acrylic Polymer Emulsion is an aqueous vehicle employing a plastic (acrylic) resin emulsified in water."⁴ It is used in the manufacture of acrylic paints (for which the emulsion is the binder) as a medium for acrylic painting, as an adhesive for restoration, and as a varnish to add durability and gloss or matt finishes to acrylic paintings.

The acrylic resin particles are suspended in water giving the emulsion a milky appearance. When the water evaporates, these particles fuse to form a cohesive film.

The term polymer simply describes the molecular structure of the emulsion in which a number of small molecules form a larger, stronger molecule, or polymer. This more durable molecular structure accounts for the strength and stability of the emulsion and of paints made with this medium. Acrylic medium is intended primarily for use with acrylic colors, but it may also be added to watercolor, gouache, casein, or any other water-soluble paints, which will then dry insoluble.⁵

Acrylic paints are normally a combination of pigment, acrylic polymer emulsions, and plasticizers or similar additives to give the pigment-emulsion dispersion the proper consistency for painting. Although all the brands of acrylic polymer colors are made from the same emulsion (polymerized acrylic resin), their manufacturers use a

variety of additives to enhance their working properties and stability.

III. Qualities

The polymer paints or mediums have a number of excellent qualities for which they have become popular. However, there are also disadvantages such as quick drying which is the quality that attracts and discourages new users. However, there are many more good points than drawbacks.

First, polymer emulsions offer almost unlimited versatility. They can duplicate almost any technique accomplished with traditional media. They can be used thinly in the manner of transparent watercolor, or with the vast range of oil painting techniques. Polymer emulsion paints can also be used to emulate the effects of casein, tempera, egg tempera, or gouache. They may be made uniformly semimatt or glossy by mixing them with the appropriate mediums. Other additives such as gesso, modeling paste, gel medium, and retarder make the technique almost limitless. Acrylics can be used not only for painting but also for printing techniques, sculpture, and murals. The characteristics of the polymer emulsions were especially suited to the mural painting of Thomas Hart Benton titled "Independence and the Opening of the West." (Figure 1)

Second, polymer emulsions are fast-working, fast-drying media. This fact is a disadvantage to some as well as an advantage to others. Some painters are irritated by these restrictions. The advantages of quick drying are faster

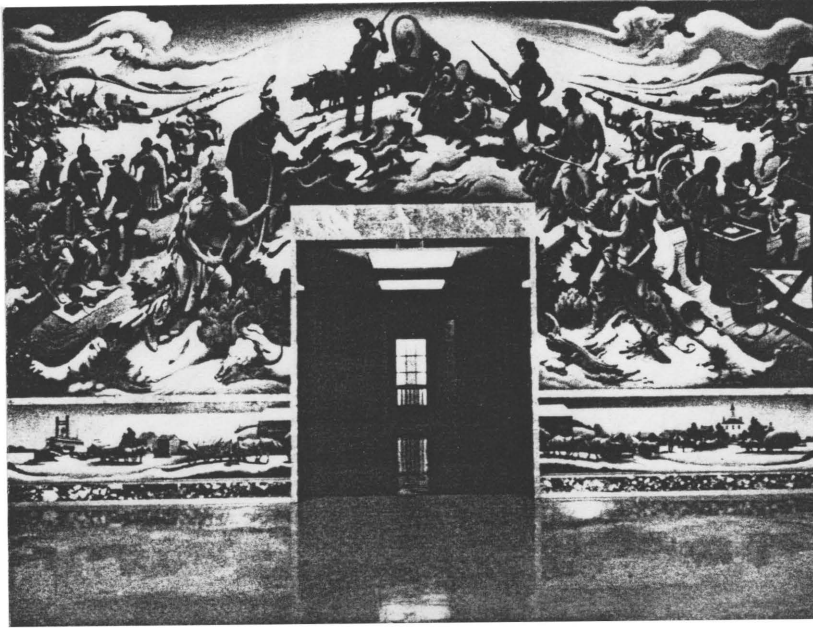


Figure 1. Benton, "Independence and the Opening of the West." Woody, Russell O., Jr. Polymer Painting and Related Techniques. New York: Van Nostrand Reinhold Co., 1978, p. 91, Figure 61.

overpainting, faster completion time, and an immediate restatement of ground. Because of this, they are a faster teaching material. Many artists such as Syd Solomon first started to use polymer paints as a fast-drying underpaint media and then finish with washes and glazes of oil. Solomon has worked with synthetics since 1940.⁶

Third, acrylic paints are permanent under normal conditions of light, temperature, and atmosphere. The polymer paint film will not crack, flake, or yellow with age. They are waterproof when dry permitting corrections without mudding color.

Acrylics are the only water-based artists' colors and mediums that are flexible. They will flex with the movement of the surface on which they are painted and can withstand expansion and contraction caused by temperature change. As an example of these qualities, I use my own work, which depends on a permanent medium. Painting on a clear film of polyester resin, my work depends on the nonyellowing and flexibility factors of the acrylics.

Fifth, synthetic media open a whole new world of esthetic expression. They have characteristics of their own that artists have only begun to exploit. They offer a luminosity and transparency of color previously unknown in a medium. For example, Adolph Gottlieb likes the acrylic resin lucite as the basis for a synthetic painting medium because he has not been able to duplicate the effects it makes possible with any other substance.⁷ This adaptability

to new forms is inherent and generates exploration and excitement.

In his book, Painting With Synthetic Media, Russell O. Woody states: "Polymer emulsions may seem very tame in comparison (to holograms, lasers, and computers) and more traditional than new. But polymer emulsions are the forerunner of all that is to come. They are the perfect medium of the future now."⁸

Finally, acrylics offer great adhesiveness to supports. They will adhere to most any nonoily surface and to themselves opening a wide variety of applications and effects. Not only will they adhere to any support but also can be painted directly without priming. Therefore, they can be used on drawing paper. Helen Frankenthaler, using polymer emulsions for their special aqueous quality, first investigated them for their permanency on raw, unsized canvas.⁹ (Figure 2)

Other qualities such as relative inexpensiveness, ease of availability, and absence of toxicity are other reasons why acrylics are the media of today.

In general, polymer paints and mediums offer techniques that are easier than those of traditional media, and they minimize the artists' concern about technical or mechanical matter.

Many outstanding artists have turned to polymers. They include magic realists, abstract expressionists, op and pop artists, hard-edge painters, new realists, muralists, commercial users, and many other contemporary artists.

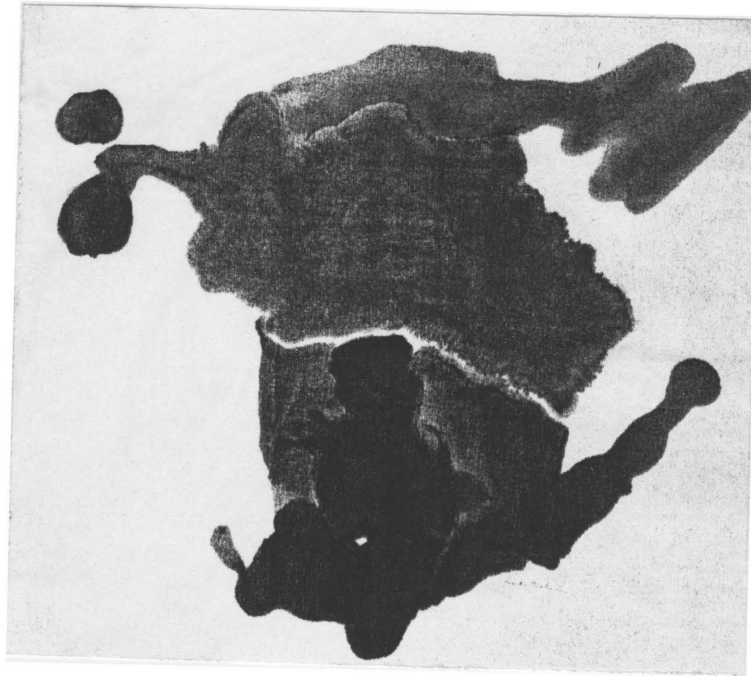


Figure 2. Frankenthaler, "Blue Causeway." Woody, Russell O., Jr. Painting with Synthetic Media. New York: Reinhold, 1965, p. 31, Plate 5.

Along with those I have mentioned, the list includes such artists as Elaine and William de Kooning, Nicholas Krushenik, James Brooks, Leo Manso, Toby Joysmith, Richard Anuszkiewicz, and Helen Van Wyk.

Since prehistoric times, man has been using paint or pigments to make images and designs on more or less flat surfaces. The acrylic (plastic) paints and techniques are the most recent additions to what has been a continuous development of materials available to the artist. The use of acrylic resins gives yet more freedom. There are fewer laws to be observed and more possibilities than ever before. In my research into acrylic paints and techniques, I have found by understanding the medium, one can make the most of these possibilities.

ENDNOTES

¹Lynton Lamb, Materials and Methods of Painting (New York: London Oxford University Press, 1970), pp. 102-103.

²Kenneth Jameson, Painting, A Complete Guide (New York: Viking Press, Inc., 1975), p. 72.

³Russell O. Woody, Jr., Polymer Painting and Related Techniques (New York: Van Nostrand Reinhold Co., 1978), p. 11.

⁴Frederic Taubes, The Painters' Dictionary of Materials and Methods (New York: Watson-Guption, 1971), p. 15.

⁵Ibid., p. 10.

⁶Woody, Polymer Painting, p. 89.

⁷Russell O. Woody, Jr., Painting with Synthetic Media (New York: Reinhold, 1965), p. 124.

⁸Woody, Polymer Painting, p. 10.

⁹Ibid., p. 7.

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