



ACRYLIC PAINTS

~ AN INTRODUCTION

Acrylics have developed rapidly in the last 50 years and now offer an excellent alternative to traditional painting media.

Acrylics have some definite advantages compared with oil paints; low odour, the use of water instead of solvents, and consistent drying times (with oil paints the drying time is affected by both the pigment and the choice of medium). Work can progress rapidly and the acrylic painting mediums are manufactured to be completely compatible. However, acrylic paints have no history ~ while paints like oils, watercolours etc. have centuries of usage to demonstrate their performance and permanence, acrylics do not. Artificial ageing tests and other research can give some idea of their stability but they cannot guarantee that this is how they will really survive the centuries ahead. So far acrylic paintings seem to be performing extremely well, but problems with their permanence have arisen when the medium has been abused or used without an awareness of its limitations.

Another important difference is the artist's dependence on the the manufacturer of acrylic paints: traditional paints can be prepared by the artist and most artists will know the main ingredients that go to make up a commercial tube of paint. The manufacture of acrylic paints, however, requires a knowledge of polymer chemistry not readily available to artists and manufacturers of acrylic paints are very reticent about disclosing the composition of their paints. With acrylic painting the artist has to trust that the manufacturer will provide artists with a reliable product of the best quality and performance.

There are two main types of polymer dispersion (often referred to as emulsion) paints used by artists: PVA colours and acrylic colours (both of these paints are frequently referred to simply as "acrylics"). They are both "dispersion" paints; that is the "polymer" is dispersed in water together with the pigment. The polymer dispersion is the binder for the pigment in the same way that linseed oil is in oil paint.

ACRYLIC COLOURS

These are made from a combination of two (or more) different polymers selected to give the best balance of hardness and flexibility. Because the flexibility is provided by one of the polymer components rather than by an external plasticiser, loss of flexibility with age does not occur. The acrylic resins used are considered to be very permanent and have an excellent resistance to discolouring. The "softening point" of these paints is similar to that for PVA colours. Paints labelled "Artists Quality" are usually of this type.

PVA COLOURS

These use a single polymer (PVA or polyvinyl acetate, more properly abbreviated to PVAC). PVA colours have a low "softening point" or "glass transition temperature" at around 15 - 25 degrees C. High temperatures can cause the paint to stick to anything it touches and this problem can also occur if pressure is applied to the paint surface. The surface of the paint is relatively soft and will hold any dirt that sticks to it.

ACRYLIC PAINTS ~ AN INTRODUCTION (continued)

This type of paint is not suitable for outdoor situations because

- a) the strong light conditions can cause yellowing, or weakening of the paint film
- b) it is more porous than many other paints and it will hold, moisture causing the paint film to cloud or possibly separate from its support.

The only advantage of this type of paint is that it is more economical than an acrylic paint.

Mixing other water-based paints such as poster colour or gouache with a PVA medium will produce a paint with similar characteristics. But it will not be as stable if it doesn't have the correct balance of paint to medium, or if incompatible pigments have been used (the alkaline acrylic medium can react with certain pigments). It is not recommended for use in any work required to be permanent.

GLOSSARY

POLYMER ~ all polymers are composed of extremely large molecules formed by the linking together of many small molecules. They are now available in a wide range which have been designed to have very particular characteristics.

COPOLYMER ~ a substance formed of a combination of two (or more) different polymers

ACRYLIC DISPERSION ~ a fluid, gel or paste composed of the acrylic polymer dispersed in water and held in suspension by a stabiliser. As the water evaporates, the polymer particles meet and bind together to form a solid.

ACRYLIC SOLUTION ~ the acrylic polymer is dissolved in a solvent such as acetone or white spirit and solidifies as the solvent evaporates. This produces a slightly clearer film than a polymer dispersion. Many acrylic varnishes are of this type.

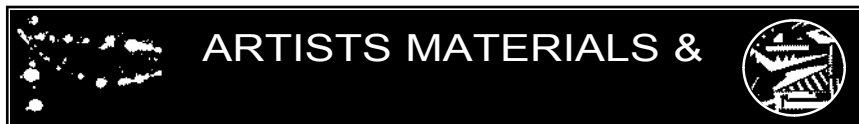
THERMOPLASTIC ~ a polymer is said to be thermoplastic because it becomes softer and more flexible with a rise in temperature. Above its glass transition temperature it behaves more like a liquid than a solid. The polymers used in acrylic paints are generally thermoplastic.

GLASS TRANSITION TEMPERATURE ~ Acrylic polymers do not melt at one point, but gradually change over a range of temperature. The glass transition temperature is well below the melting point ~ It is the point at which the material changes from a brittle material to a flexible, more rubbery material.

For more information
about acrylic paints we recommend reading
"The Painters Handbook" by Mark Gottsegen

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