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## Conservation: Hearings, Reports (1966-1973): Article 03

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#### LIGHTFASTNESS OF FELT-TIPPED MARKERS

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Feller, Robert L.\* Felt-tipped markers and the need for standards of lightfastness for artists' colorants. Bulletin of the American Group-III, 8, No. 1 (1967), pp. 24-26.

When artists' oil paints are purchased in America, few buyers may realize the significance of the words that appear on many tubes: "Statement of contents as recommended by the American Artists Professional League. Conforms to all requirements of Commercial Standard CS98-42 issued by the National Bureau of Standards." Twenty-five-year-old Standard CS98-42 relates principally to the nomenclature, lightfastness, and tinting strength of artists' oil paints. R. J. Gettens was the first Chairman of the National Bureau of Standards' Standing Committee on CS98-42, and Ralph Mayer is the current Chairman. The original Standard may be read in the back of The Artist's Handbook, by Mr. Mayer. The revised Standard, CS98-62, may be purchased for 15 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402. Save for this document regarding oil paints, the artist today does not have a standard for lightfastness for pigments and dyestuffs used in other mediums.

Recently, a question arose concerning the permanence of architectural renderings done in felt-tipped markers. This medium is based largely on dyes dissolved in a solvent, and dyes generally have a poor, or at least "suspect," reputation for lightfastness.

Felt-tipped markers perhaps may not be considered to be a fine arts material and are seldom sold primarily for that purpose. Yet today, creative work in this medium is being bought, sold, and exhibited in increasing numbers. It was considered worthwhile to survey the lightfastness of currently available markers. This would appropriately fit into our general program of study regarding the effects of light on museum and artists' materials.

The colorants in about 75 individual felt-tipped markers were tested, representing products from at least 8 different companies. More than half were found to possess little fastness to light; that is, half of the markers tested had a lightfastness equivalent to British Standard 1006:1961 Class 3 or lower when exposed to fluorescent lamplight. It is estimated that they would fade noticeably (at least to a BS2062:1961 Grey Scale Contrast of 3) in about 10 years on the walls of an art gallery that received about 100,000 footcandle hours of exposure per year of natural illumination. Many were capable of fading practically to complete colorlessness.

Among the colorants that were fast to light in these tests were most blacks, some of the blues, and an occasional yellow or green. The lightfast blues and greens may have been based on phthalocyanines. Yellows of good fastness are the Allied Chemical Company's National Dye, Wool Yellow Extra NS (for water-based inks) and the General Aniline and Film Corporation's Azosol Fast Yellow RCA (alcohol soluble).

Although manufacturers are continually bringing out new lines and improving the qualities of this popular new medium, the results of these tests suggest that an artist interested in the lightfastness of felt-tipped markers may wish to make a few comparative tests on his own.

The results are also of interest to conservators. They warn against the indiscriminate exposure of works in this medium to excessive light. Moreover, they suggest that disfiguring marks by felt-tipped markers may occasionally be bleached by light as well as by chemical means.

A convenient minimum standard for artists' colorants would consist of at least three classes of lightfastness, such as: (1) fugitive; (2) intermediate; and (3) lightfast. Those in the latter case would be suitable for fine arts use. The first class might consist of those having a lightfastness of BS1006:1961 Class 3 or less; the last perhaps those of lightfastness equivalent to BS1006:1961 Class 6.5 or better.

The establishment of standards of lightfastness is not a simple problem to solve because variations in the illumination, temperature, relative humidity, vehicle, and colorant concentration all influence the results of fading tests. Until more precise tests and specifications are devised, a sample of alizarin paint may serve as a convenient standard of comparison to be exposed along with the other materials being tested. Alizarin is a colorant widely available in a relatively standard form (a lake based on synthetic 1,2-dihydroxyanthroquinone rather than the natural madder extract). The alizarin should not be used at full strength but "let down" to a tint equivalent to a Munsell "value" of between 6 and 8. For convenience, the paint may be a mixture of alizarin in white lead or titanium white; or it may be a transparent wash or glaze of alizarin. The fading rates of such paint-outs will not be precisely the same, but the results should be reasonably close for most practical purposes. When in doubt, several different types of alizarin coatings can be used in the "control."\*\*\*\*

If a new pigment, exposed to diffuse daylight or fluorescent lamplight along with such an alizarin paint, fades appreciably faster than the alizarin, it should be discarded for work which requires pigments of the highest possible fastness to light. If it fades in less than one-quarter the time it takes for alizarin to fade, the colorant may be considered to be in the "fugitive" class.

Admittedly, much work would be required to establish a precise standard; but an alizarin paint can be a convenient "rule of thumb" standard that the artist, himself, can employ. When mixed with whites or applied as a glaze as suggested, it has a lightfastness equivalent to about BS1006:1961 Class 4 or 5 (noted previously in the Bulletin of the American Group-IIC, 4, No. 1 (1963), pp. 10-12).

The results of this brief survey of the lightfastness of felt-tipped markers emphasize again the need for well-recognized standards of lightfastness for artists' pigments and dyestuffs. One of the first requirements to change the present lack of such standards is to have the artist, himself, become aware of the problem. Should he then demand such standards, he will find the suppliers of his materials able and more than willing to meet the challenge.

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\*\* This was even true of one set which was labeled "permanent." The word "permanent" perhaps refers to their ability to withstand water rather than light, as the word does in the case of writing inks.

\*\*\* The use of tints of alizarin as a convenient control has also been suggested by Mr. Henry Levison in Russell Woody's book, Painting with Synthetic Media, New York, Reinhold, 1965, pp. 141-149.