Designation: D5067 – 16

Standard Specification for Artists' Watercolor Paints[1]

This standard is issued under the fixed designation D5067; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification establishes requirements for composition, physical properties, performance, and labeling of artists' watercolor paints.

1.2 This specification covers pigments, vehicles, and additives. Requirements are included for pigment identification, lightfastness, and consistency.

1.3 Table 1 lists some pigments meeting the lightfastness requirements in this specification. In order to identify other pigments that meet these requirements, instructions are given for test specimen preparation. Test methods for determining relative lightfastness are referenced.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D185 Test Methods for Coarse Particles in Pigments

D1210 Test Method for Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage

D4236 Practice for Labeling Art Materials for Chronic Health Hazards

D4303 Test Methods for Lightfastness of Colorants Used in Artists' Materials

E284 Terminology of Appearance

3. Terminology

3.1 *Definitions:*

3.1.1 *Colour Index Name, n*—consists of the category (type of dye or pigment), general hue, and an assigned number given to a colorant in the Colour Index[3] as an international identification system.

3.1.1.1 *Discussion*—For example, the Colour Index Name of one phthalocyanine blue pigment is Pigment Blue 15 (PB 15).

3.1.2 *Colour Index Number, n*—a five-digit number given in the Colour Index that describes the chemical constitution of a colorant.

3.1.2.1 *Discussion*—For example, the Colour Index Number of one phthalocyanine blue pigment is 74160.

3.1.3 Appearance terms used in this standard are defined in Terminology E284.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *watercolor paint, n*—a pigment dispersion in a water soluble gum/resin vehicle that dries water soluble and is intended primarily for transparent applications.

4. Significance and Use

4.1 This specification establishes quality requirements and provides a basis for common understanding among producers, distributors, and users.

4.2 It is not intended that all paints meeting the requirements be identical nor of uniform excellence in all respects. Variations in manufacture, not covered by this specification, may cause some artists to prefer one brand over another, either of which may be acceptable under this specification.

5. Labeling Requirements

5.1 *Pigment(s) Identification:*

5.1.1 Every label shall include for each pigment contained in the paint (*1*) the information underlined in Table 1 (which includes the Common Name, Colour Index Name, and any additional terms necessary to identify the form of the pigment) and (*2*) the appropriate Lightfastness Category.

[1] This specification is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.57 on Artist Paints and Related Materials.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] *Colour Index*, 3rd ed., The Society of Dyers and Colourists, London, 1971–75, five vols and revisions. Available from the American Association of Textile Chemists and Colorists, PO Box 12215, Research Triangle Park, NC 27709.

TABLE 1 Suitable Pigments List

NOTE 1—Underlined information and the lightfastness category in the table shall be included on every label.

Key:
Lightfastness Category:
Lightfastness I Excellent Lightfastness
Lightfastness II Very Good Lightfastness
Abbreviations Used for Colour Index Names:
BR Basic Red
NR Natural Red
PB Pigment Blue
PBk Pigment Black
PBr Pigment Brown
PG Pigment Green
PO Pigment Orange
PR Pigment Red
PV Pigment Violet
PW Pigment White
PY Pigment Yellow
Pigment Notations:
(CC) Concentrated cadmium pigments may contain up to 15 % barium sulfate for color control. Cadmium-barium pigments contain a much higher amount of barium sulfate.
(NA) Colour Index name or number not assigned.
(SM) Sensitive to moisture in direct sunlight.

Colour Index Name	Lightfastness Category Watercolors	Common Name and Chemical Class	Colour Index Number
		YELLOWS	
PY 3	II	Arylide Yellow 10G, with option of adding the name Hansa Yellow Light, arylide yellow	11710
PY 31	I	Barium Chromate Lemon, barium chromate	77103
PY 34	I	Chrome Yellow Lemon, lead chromate and lead sulfate	77600
PY 35	I	Cadmium (hue designation), concentrated cadmium zinc sulfide (CC) (SM)	77205
PY 35:1	I	Cadmium-Barium (hue designation), cadmium zinc sulfide coprecipitated with barium sulfate (SM)	77205:1
PY 37	I	Cadmium (hue designation), concentrated cadmium sulfide (CC) (SM)	77199
PY 37:1	I	Cadmium-Barium (hue designation), cadmium sulfide coprecipitated with barium sulfate (SM)	77199:1
PY 40	II	Aureolin, with option of adding the name Cobalt Yellow, potassium cobaltinitrite	77357
PY 42	I	Mars Yellow or Iron Oxide Yellow, with option of adding the name Yellow Iron Oxide, synthetic hydrated iron oxide	77492
PY 42	I	Mars Orange or Iron Oxide Yellow, synthetic hydrated iron oxide	77492
PY 43	I	Yellow Ochre, natural hydrated iron oxide	77492
PY 53	I	Nickel Titanate Yellow, oxides of nickel antimony and titanium, or nickel titanate	77788
PY 65	II	Arylide Yellow RN, with option of adding the name Hansa Yellow (hue designation), arylide	11740
PY 97	II[A]	Arylide Yellow FGL, arylide yellow	11767
PY 109	II	Isoindoline Yellow G, tetrachloroisoindoline	56284
PY 110	I	Isoindoline Yellow R, tetrachloroisoindoline	56280
PY 117	I	Azomethine Yellow, copper organic complex	48043
PY 138	II	Quinophthalone Yellow, quinophthalone	56300
PY 150	I	Nickel Azo Yellow, nickel azo complex	12764
PY 153	II	Nickel Dioxine Yellow, dioxine nickel complex	48545
PY 154	I	Benzimidazolone Yellow H3G, benzimidazolone	11781
PBr 24	I	Chrome Titanate Yellow, oxides of chromium, antimony and titanium, or chrome titanate	77310
		ORANGES	
PO 20	I	Cadmium (hue designation), concentrated cadmium sulfo-selenide (CC)	77202
PO 20:1	I	Cadmium-Barium (hue designation), cadmium sulfo-selenide coprecipitated with barium sulfate	77202:1
PO 36	I	Benzimidazolone Orange HL, benzimidazolone	11780
PO 48	II	Quinacridone Gold, or Quinacridone Orange, quinacridone	73900
PO 62	II	Benzimidazolone Orange H5G, monoacetolone	11775
		REDS	
PR 101	I	Indian Red, synthetic red iron oxide (bluish hue)	77491
PR 101	I	Light or English Red Oxide, synthetic red iron oxide (yellowish hue)	
PR 101	I	Mars Red or Iron Oxide Yellow, with option of adding the name Red Iron Oxide, synthetic red iron oxide	77491
PR 101	I	Mars Violet or Iron Oxide Yellow, with option of adding the name Violet Iron Oxide, synthetic iron oxide (violet hue)	77015
PR 101	I	Venetian Red, synthetic iron oxide (yellowish hue)	77491
PR 104	I	Chrome Orange, lead chromate and lead molybdate	77605
PR 108	I	Cadmium (hue designation), concentrated cadmium-seleno sulfide (CC)	77202
PR 108:1	I	Cadmium-Barium (hue designation), cadmium seleno-sulfide coprecipitated with barium sulfate	77202:1
PR 170	II	Naphthol Red F3RK, napthol carbamide	12475
PR 179	I	Perylene (hue designation), perylene	71130
PR 188	II	Naphthol (hue designation) AS, naphtol AS	12467
PR 209	II	Quinacridone (hue designation), gamma quinacridone	73905
PR 216	I	Pyranthrone Red, halogenated pyranthrone	59710
PR 255	I	Pyrrol Red, diketo-pyrollo-pyrrol	NA
		PURPLES	
PV 14	I	Cobalt Violet, cobalt phosphate, cobalt ammonium phosphate	77360
PV 15	I	Ultramarine Red, complex silicate of sodium and aluminum with sulfur or sodium alumino-sulpho-silicate	77007

TABLE 1 *Continued*

Colour Index Name	Lightfastness Category Watercolors	Common Name and Chemical Class	Colour Index Number
PV 15	I	Ultramarine Violet, complex silicate of sodium and aluminum with sulfur or sodium alumino-sulphosilicate	77007
PV 16	I	Manganese Violet, manganese ammonium pyrophosphate	77742
PV 19	I	Quinacridone (hue designation), gamma quinacridone	73900
		BLUES	
PB 15	II	Phthalocyanine Blue or Phthalo Blue, with option of adding Red Shade, copper phthalocyanine	74160
PB 15:6	II	Phthalocyanine Blue, or Phthalo Blue, with option of adding Green Shade, copper phthalocyanine	74160:6
PB 27	I	Prussian Blue, with the option of adding the name Milori Blue, ferriammonium ferrocyanide	77510
PB 28	I	Cobalt Blue, oxides of cobalt and aluminum or cobalt aluminate	77346
PB 29	I	Ultramarine Blue, complex silicate of sodium and aluminum with sulfur	77007
PB 33	I	Manganese Blue, barium manganate with barium sulfate	77112
PB 35	I	Cerulean Blue, oxides of cobalt and tin or cobalt stannate	77368
PB 36	I	Cerulean Blue, Chromium or Cobalt Chromite Blue, oxides of cobalt and chromium, or cobalt chromite	77343
		GREENS	
PG 7	I	Phthalocyanine Green or Phthalo Green, chlorinated copper phthalocyanine	74260
PG 17	I	Chromium Oxide Green, anhydrous chromium sesquioxide	77288
PG 18	I	Viridian, hydrous chromium sesquioxide	77289
PG 19	I	Cobalt Green, oxides of cobalt and zinc, or cobalt zincate	77335
PG 23	I	Green Earth, or Terre Verte, natural ferrous silicate containing magnesium and aluminum potassium silicates	77009
PG 36	I	Phthalocyanine Green, Y. S. (yellow shade), chlorinated and brominated phthalocyanine	74265
PB 36	I	Cobalt Chromite Green or Cobalt Turquoise, oxides of cobalt and chromium, or cobalt chromite	77343
		BROWNS	
PBr 7	I	Burnt Sienna, calcined natural iron oxide	77491 or 77492
PBr 7	I	Burnt Umber, calcined natural iron oxide containing manganese	77491 or 77492
PBr 7	I	Raw Sienna, natural iron oxide	77491 or 77492
PBr 7	I	Raw Umber, natural iron oxide containing manganese	77491 or 77492
		BLACKS	
PBk 6	I	Lamp Black, nearly pure amorphous carbon	77266
PBk 7	I	Carbon Black, nearly pure amorphous carbon	77266
PBk 8	I	Charcoal Black or Vine Black, nearly pure amorphous carbon of vegetable origin	77268
PBk 9	I	Ivory Black or Bone Black, amorphous carbon produced by charring animal bones	77267
PBk 19	I	Gray Hydrated Aluminum Silicate, hydrated aluminum silicate	77017
		WHITES	
PW 4	I	Zinc White, zinc oxide with option of adding the name Chinese White	77947
PW 6	I	Titanium White, titanium dioxide (rutile or anatase) with option of including some barium sulfate or zinc oxide	77891

[A] These pigments were put into the lightfastness II category pending results of retesting.

5.1.2 The complete pigment identification given in Table 1, which also includes the Colour Index Number and a simple chemical description, shall be given by the producer in an appropriate electronic version or printed publication. Manufacturers are encouraged to put this complete identification on the container label when label size permits.

5.1.3 The Common Name shall be placed on the front of the label and shall be the name of the paint except as described in 5.1.5 and 5.1.6. Other identification may be placed elsewhere on the container.

5.1.4 The Colour Index Name may be spelled out in full or abbreviated depending on the size of the label. Example: Pigment Blue 15, or Pig. Blue 15 or PB 15.

5.1.5 *Substituted Pigments*—In the case of substituted pigments, except for those pigments listed in Table X2.1, the word "Hue" in equal size letters shall follow in the title, on the front of the tube, immediately after the name of the pigment that has been simulated.

5.1.6 Proprietary names or optional names may be used provided the Common Name(s) given in Table 1 is listed along with their Colour Index Names and the Lightfastness Category of the mixture somewhere on the label.

5.1.7 *Mixed Pigments*—Artists' paints containing more than one pigment comply with this specification if all colored pigments included in the mixture are on the suitable pigment list (Table 1) and provided the mixture itself has passed all other test requirements in this specification. The lightfastness category shall be that of the least lightfast pigment. This lightfastness category may be changed if the mixture is tested for lightfastness in accordance with Test Methods D4303 and results indicating a different category are submitted to ASTM Subcommittee D01.57 for evaluation.

5.1.8 *Historical and Discontinued Pigments*—Pigments that are either *(1)* primarily of a historical nature, or *(2)* have not been commercially manufactured for a minimum of 10 years or more, may be submitted to Subcommittee D01.57 for inclusion in Table X2.1.

5.1.8.1 The Common Name(s) of pigments in Table X2.1 may be used by substituted pigments without the designation of "Hue" in the title.

5.1.8.2 Paints using pigments listed in Table X2.1 may use the word "Genuine" in front of the title to differentiate them from substituted pigments.

5.2 Provide on the label the identification of the gum/resin used.

5.3 *Lightfastness*—The label shall contain the word "Lightfastness" followed by the appropriate rating, I or II, as given for each pigment in Table 1, or else one of these corresponding icons (Fig. 1).

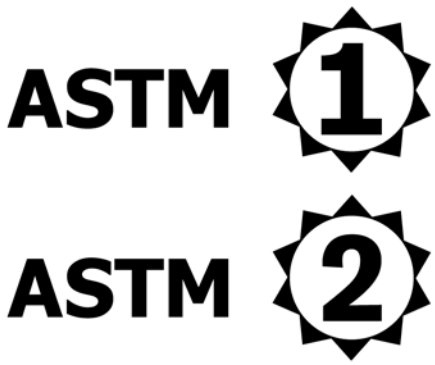

FIG. 1 Lightfastness Rating

5.3.1 Lightfastness I pigments, when made into paint specimens as described in Section 7 and exposed, tested, and rated in accordance with Test Methods D4303, shall have a color difference (ΔE^*_{ab}) of 4 or less CIELAB units between the specimens measured before and after exposure.

5.3.2 Lightfastness II pigments, when made into paint specimens as described in Section 7 and exposed, tested, and rated in accordance with Test Methods D4303, shall have a color difference (ΔE^*_{ab}) of more than 4.0 but not more than 8.0 CIELAB units between the specimens measured before and after exposure.

5.3.3 Pigments were placed in a lightfastness category on the basis of either known historical performance in art works or the ratings from four lightfastness tests conducted as described in Test Methods D4303. Results from further tests on these, or other pigments, are solicited by Subcommittee D01.57.

5.3.3.1 The lightfastness category of a pigment shall be changed if results from several further tests conducted in accordance with Test Methods D4303 and approved by ASTM Subcommittee D01.57, establish a different lightfastness category than the one given in Table 1.

5.3.3.2 Additional pigments shall be placed in Table 1 after they have been tested for lightfastness in accordance with Test Methods D4303 and the test results submitted to ASTM Subcommittee D01.57 for evaluation, provided the results demonstrate that the pigments have the lightfastness ratings required for Lightfastness I or Lightfastness II, as described above.

5.3.4 For information and to establish nomenclature, pigments in Lightfastness III, IV, V, categories are given in Table X1.1 in Appendix X1. However, such pigments are not to be used in paint conforming to this specification.

5.4 *Toxicity*—All products and labeling must conform to the Federal Hazardous Substances Act and to Practice D4236.

5.5 *Statement of Conformance*—"Conforms to ASTM Specification D5067," or "Conforms to ASTM D5067," or "Conforms to the quality requirements of ASTM D5067." This statement may be combined with other conformance statements, such as, "Conforms to the quality and health requirements of ASTM Specification D5067 and Practice D4236."

5.6 *Address*—Include on the label (*1*) the name and address of the manufacturer or importer and (*2*) the country of manufacture.

6. Quality Assurance for Artists' Watercolor Paints

6.1 *Conditions not Covered in This Specification That Affect Artists' Watercolor Paints:*

6.1.1 *Substrate*—The effective pH of the paper used will affect the long-term color of the applied watercolor.

6.1.2 *Environmental Conditions*—Factors such as temperature, humidity, airflow, and light conditions affect application properties, drying time, and adhesion.

6.1.3 *Storage*—With aging and elevated temperatures there may be a change in consistency and a discernible separation of vehicle.

6.2 *Vehicles*—Only water soluble gums/resins shall be used.

6.3 *Pigments*—Pigments used in watercolors shall be limited to those in Table 1. Their lightfastness rating shall be the numeral given in the same row.

6.4 *Additives*—Thickeners, preservatives, surfactants, and humectants may be used to achieve consistency, prevent microbe deterioration, and control application results.

6.5 *Inerts*—Inerts shall only be used to produce desirable working qualities.

6.6 *Preparation of Sample*—For paste and fluid paints, empty the contents of the previously unopened container onto a glass slab and mix thoroughly with a spatula to a homogeneous sample. For cake paints, take a piece of the cake on a glass slab and add water and mix until a homogeneous paint is formed.

6.7 *Coarse Particles*—Paints shall be free of oversize particles and shall form a uniform film. The maximum content of coarse particles shall be 1 weight % as determined by Test Methods D185.

6.8 *Fineness of Dispersion*—Determine the fineness of dispersion by Test Method D1210. For paste paint, on a glass plate, using a spatula, mix the paint with an equal volume of water until homogeneous. The maximum allowable grind reading is 40 µm (1.5 mils).

6.9 *Consistency*—Paints shall be smooth and easily solubilized with water to a homogeneous color.

6.10 *Freeze-Thaw Stability*—Using a freezer that has a temperature of −7°C (20°F) or lower, subject the paint to five freeze-thaw cycles. A freeze-thaw cycle shall consist of freezing the paint to a solid state (minimum of 18 h) and then thawing the paint to room temperature (minimum of 5 h). The paint shall then meet the requirements of 6.7, 6.8, and 6.9.

7. Lightfastness Determination

7.1 If a pigment is not listed in Table 1, test specimens of a watercolor containing the pigment shall be prepared. These test specimens shall be tested in accordance with the requirements for exposure and evaluation given in Test Methods D4303.

NOTE 1—A report of the results of these tests may be submitted to Subcommittee D01.57 for inclusion of the pigments in Table 1. The report shall include information on test conditions and instruments used and shall be accompanied by the test specimens (which will be returned).

7.2 *Materials:*

7.2.1 *Filter Paper,* 15.0-cm (6-in.) diameter, ashless.[4]

7.2.2 *Drawdown Bar* with 75-µm (3-mil) aperture.

7.2.3 *Posterboard,* lightweight, approximately 20 mils (0.5 mm) thick, having a glossy finish on one side.

7.2.4 *Distilled Water.*

7.2.5 *Acrylic Latex Adhesive.*

7.3 *Preparation of Test Paints:*

7.3.1 The pigment to be tested may be milled in a soft paste consistency. If a prepared artists' paint of known composition is available it may be used for this test instead of preparing a standard.

7.3.2 Dilute the watercolors with water and drawdown on paper until the spectrophotometric measurement of the dry paint shows from 35 to 45 % reflectance at the wavelength of maximum absorption for that pigment. The wavelength of maximum absorption is located at the point of lowest reflectance on the spectral curve between 420 and 620 nm. If using a tristimulus filter colorimeter, the lowest of the three filter readings is the region of maximum absorption and the dilution should be adjusted so that a reading of 35 to 45 % reflectance is obtained with this filter. The diffuse white reference standard for all measurements should have an absolute reflectance between 97 and 100 %.

7.3.3 Use an applicator with a 75-µm (3-mil) aperture to make a drawdown on the filter paper. Tape the filter paper to a smooth surface such as a piece of glass. Place the drawdown bar just above the upper edge of the paper so it is ready to use. Pour a small amount of the diluted paint, which is thoroughly mixed, onto the top of the filter paper. Using the drawdown bar, draw the paint down, running the excess off the edge of the filter paper at the bottom. Quickly untape the filter paper and hang it to dry at room temperature. There will be a dark puddle area where the paint was originally applied, but the remaining part of the paper will be uniform in color for use in obtaining spectrophotometric measurements.

7.3.3.1 Prepare four specimen panels for each pigment under test. Two are used in the first lightfastness tests and two are retained in subdued light, one for visual comparisons with the exposed panels and one in case a third test is needed to supplement results from the first two tests, as described in Test Methods D4303.

7.3.3.2 Apply the test paints to the filter paper as described in 7.3.3. The panels should be air dried for 2 h and then put in an oven at 50°C for overnight drying.

7.3.3.3 Cut the uniform color section of the filter paper drawdown panel into 38-mm (1½-in.) square panels. Adhere the panels to the light posterboard (see 7.2.3) using a thin coat of an acrylic-latex adhesive. The size of the posterboard shall conform to the dimensions of the exposure equipment test racks.

8. Exposure

8.1 Conduct exposure tests, calculate mean color difference, and assign pigments to lightfastness categories as described in Test Methods D4303.

9. Keywords

9.1 lightfastness; quality requirements; specimen preparation; watercolors

[4] The sole source of supply of the filter paper, Whatman No. 42 known to the committee at this time is Fisher Scientific, 711 Forbes Ave., Pittsburg, PA 15219. If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1] which you may attend.

APPENDIXES

(Nonmandatory Information)

X1. LIGHTFASTNESS III, IV, V

X1.1 The pigments in Table X1.1 are not sufficiently lightfast to be used in paints that conform to this specification. These pigments are listed here solely to establish common terminology. It is recommended that the Lightfastness Category and the underlined information in Table X1.1 be given on product labels. Pigments in Lightfastness Category III may be satisfactory when used full strength or with extra protection from exposure to light.

Lightfastness III, ($\Delta E^* > 8, < 16$); fair lightfastness
Lightfastness IV, ($\Delta E^* > 16, < 24$) poor lightfastness
Lightfastness V, ($\Delta E^* > 24$) very poor lightfastness

TABLE X1.1 Lightfastness III, IV, V

Colour Index Name	Lighfastness Category	Common Name and Chemical Class	Colour Index Number
PY 1	V	Arylide Yellow G, with option of adding the name Hansa Yellow Medium, Monoazo: acetocoetyl	11680
PY 1.1	III	Arylide Yellow G Lake, with option of adding the name Hansa Yellow Medium, Monoazo: acetocoetyl	11680
PY 74LF	III	Arylide Yellow 5GX, Monoazo: acetocetyl	11741
PY 100	V	Tartrazine Yellow, Monoazo: heterocyclic hyroxy	19140:1
PY 110	III	Isoindolinone Yellow R, Aminoketone: isoindolinone	56280
PR 2	V	Napthol Red FRR, Monoazo: 3-hydroxy-2-naphthanilide	12310
PR 5	III	Naphtol Red ITR, Monoazo: 3-hydroxy-2-naphthanilide	12490
PR 7	III	Naphthol Red AS-TR, Monoazo: 3-hydroxy-2-naphthanilide	12420
PR 9	III	Naphthol Red AS-OL, Monoazo: 3-hydroxy-2-naphthanilide	12460
PR 83	IV	Alizarin Crimson, Anthraquinone: 1,2-dihydroxy anthraquinone lake	58000
PR 83 FE	V	Alizarin Maroon FE, Anthraquinone: 1,2-dihydroxy anthraquinone lake	5800
PR 106 (DL)	III	Vermilion, Mercuric sulfide	77766
PR 112	III	Naphthol Red AS-D, Monoazo: 3-hydroxy-2-naphthanilide	12370
PR 122	III	Quinacridone Magenta, γ quinacridone	73915
PR 177	III	Anthraquinoid Red, Anthraquinone	65300
PR 188HF3S	III	Naphthol Red AS, Monoazo: 3-hydroxy-2-naphthanilide	12467
NR 4	V	Carmine, natural carmine	75470
NR 9	IV	Madder Lake, natural madder	75330/75420
BR 12	V	Phloxine Lake, Methine: basic red dye	48070
PV 2	IV	Rhodamine 3B Lake, Xanthrene: PTMA sale of BV 11 dye	45175:1
PV 5AL	V	Alizarin Maroon AL, Anthraquinone: salt of acid dye (aluminum)	58055:1
PV 23BS	IV	Dioxazine Purple, Oxazine: carbazole	51319
PV 23RS	III	Dioxazine Purple, Oxazine: carbazole	51319
PB 66	IV	Indigo Blue, Indigoid: synthetic indigo	73000
PG 8	III	Pigment Green B, Nitroso: ferric-nitroso-beta-naphthol	10006
PG 12	IV	Naphthol Green B, Nitroso: barium salt of AG 1	10020:1

X2. HISTORICAL AND DISCONTINUED PIGMENTS

X2.1 ASTM Subcommittee D01.57 has designated the pigments in Table X2.1 as either *(1)* primarily of a historical nature, or *(2)* having not been commercially manufactured for a minimum of 10 years or more. In addition, the Common Names were no longer associated solely with a specific pigment and were currently being used as general color terms. As such, the underlined Common Names may be used by substituted pigments without "Hue" appearing after the name.

TABLE X2.1 Historical and Discontinued Pigments

Colour Index Name	Lightfastness Category	Common Name and Chemical Class	Colour Index Number

X2.2 Pigments not having a Lightfastness Category of I or II are not sufficiently lightfast to be used in paints that conform to this specification. In addition, pigments that have not been tested for lightfastness are not considered suitable for artists' use and their use does not conform to this specification. Those pigments are listed here solely to establish common terminology. It is recommended that the Lightfastness Category and the underlined information in Table X2.1 be given on product labels. Pigments in Lightfastness Category III may be satisfactory when used full strength (without dilution with white) or with extra protection from exposure to light.