



Designation: D5098 – 16 (Reapproved 2021)

Standard Specification for Artists' Acrylic Dispersion Paints¹

This standard is issued under the fixed designation D5098; 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' acrylic emulsion paints.

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

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.

1.5 *This pertains only to the test method section found in Sections 6 and 7, and Appendix X2. This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D185 Test Methods for Coarse Particles in Pigments

D279 Test Methods for Bleeding of Pigments

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.

Current edition approved Nov. 1, 2021. Published November 2021. Originally approved in 1990. Last previous edition approved in 2016 as D5098 – 16. DOI: 10.1520/D5098-16R21.

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.

D387 Test Method for Color and Strength of Chromatic Pigments with a Mechanical Muller
D476 Classification for Dry Pigmentary Titanium Dioxide Products
D602 Specification for Barium Sulfate Pigments
D1210 Test Method for Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
D1640 Test Methods for Drying, Curing, or Film Formation of Organic Coatings
D3168 Practice for Qualitative Identification of Polymers in Emulsion Paints
D4236 Practice for Labeling Art Materials for Chronic Health Hazards
D4303 Test Methods for Lightfastness of Colorants Used in Artists' Materials
D4838 Test Method for Determining the Relative Tinting Strength of Chromatic Paints
D4941 Practice for Preparing Drawdowns of Artists' Paste Paints
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 Index³ 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 specification are defined in Terminology E284.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *acrylic emulsion paint, n*—paint containing a stable aqueous dispersion of polymers or copolymers of acrylic acid,

³ *Colour Index*, 3rd ed., 5 Vols and Revisions. The Society of Dyers and Colourists, London, 1971–75. Available from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

TABLE 1 Suitable Pigment List

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

Key:
Lightfastness Category:

- Lightfastness I Excellent Lightfastness
Lightfastness II Very Good Lightfastness

Abbreviations used in Colour Index Names:

- 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:

- (AR) Alkali Resistant
(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.
(DL) May darken in strong light
(LF) Lightfast type
(NA) Colour index name or number not assigned
(RS) Red shade
(SM) Sensitive to moisture in direct sunlight
(SS) Sensitive to hydrogen sulfide

Colour Index Name	Lightfastness Category	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 35	I	Cadmium (hue designation), concentrated cadmium zinc sulfide (CC) (SM)	77205
PY 35:1	I	Cadmium (hue designation), cadmium zinc sulfide coprecipitated with barium sulfate (SM)	77205:1
PY 37	I	Cadmium (hue designation), concentrated cadmium sulfate (CC) (SM)	77199
PY 37:1	I	Cadmium-Barium (hue designation), cadmium sulfide coprecipitated with barium sulfate (SM)	77199:1
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 Orange, 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	77788
PY 65	I	Arylide Yellow RN, with option of adding Hansa Yellow RN, arylide yellow	11740
PY 73	I	Arylide Yellow GX, with option of adding the name Hansa Yellow GX, arylide yellow	11738
PY 74 (LF)	I	Arylide Yellow 5GX, with option of adding Hansa Yellow 5GX, arylide yellow	11741
PY 83 (HR70)	I	Diarylide Yellow HR70, diarylide yellow	21108
PY 97	I	Arylide Yellow FGL, arylide yellow	11767
PY 98	I	Arylide Yellow 10GX, with option of adding the name Hansa Yellow 10GX, arylide yellow	11727
PY 108	I	Anthrapyrimidine Yellow, anthrapyrimidine	68420
PY 109	I	Isoindolinone Yellow G, tetrachloroisindolinone	NA
PY 110	I	Isoindolinone Yellow R, tetrachloroisindolinone	56280
PY 112	I	Flavanthrone Yellow, flavanthrone	70600
PY 138	I	Quinophthalone Yellow, quinophthalone	56300
PY 139	I	Isoindoline Yellow, isoindoline	NA
PY 150	I	Nickel Azo Yellow, nickel complex azo	NA
PY 151	I	Benzimidazolone (hue designation) H4G, benzimidazolone	13980
PY 153	I	Nickel Dioxine Yellow, dioxine yellow nickel complex	NA
PY 154	I	Benzimidazolone (hue designation) H3G, benzimidazolone	11781
PY 175	I	Benzimidazolone (hue designation) H6G, benzimidazolone	11784
PY 184	I	Bismuth Vanadate Yellow, bismuth vanadate	NA
ORANGES			
PO 5	II	Dinitraniline Orange, dinitraniline (SM)	12075
PO 20	I	Cadmium (hue designation), concentrated cadmium sulfo-selenide (CC)	77202
PO 20:1	I	Cadmium-Barium (hue designation), cadmium sulfoselenide coprecipitated with barium sulfate	77202:1
PO 23	I	Cadmium Vermilion Orange, concentrated cadmium mercury sulfide (CC)	77201
PO 23:1	I	Cadmium-Barium Vermilion Orange, cadmium mercury sulfide coprecipitated with barium sulfate	77201:1
PO 36	I	Benzimidazolone (hue designation) HL, benzimidazolone	11780
PO 43(DL)	I	Perinone Orange, perinone	71105
PO 48	I	Quinacridone (hue designation), quinacridone	NA
PO 49	I	Quinacridone (hue designation), quinacridone	NA
PO 60	I	Benzimidazolone (hue designation) HGL, benzimidazolone	11782
PO 62	I	Benzimidazolone (hue designation) H5G, monoacetolone	11775
REDS			
PR 5	II	Naphthol ITR, naphthol ITR	12490
PR 7	I	Naphthol AS-TR, naphthol AS-TR	12420
PR 9	I	Naphthol AS-OL, naphthol AS-OL	12460
REDS (cont'd)			
PR 14	II	Naphthol AS-D, naphthol AS-D	12380



TABLE 1 Continued

Colour Index Name	Lightfastness Category	Common Name and Chemical Class	Colour Index Number
	Acrylic		
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)	77491
PR 101	I	Mars Red or Mars Orange or Iron Oxide Red or Iron Oxide Orange, with option of adding the name Red Iron Oxide, synthetic red iron oxide	77491
PR 101	I	Mars Violet or Iron Oxide Violet, 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 102	I	Light Red, calcined yellow ochre	77492
PR 106	I	Vermilion, mercuric sulfide (DL)	77766
PR 108	I	Cadmium (hue designation), concentrated cadmium-seleno sulfide (CC)	77202.1
PR 108:1	I	Cadmium-Barium (hue designation), cadmium seleno-sulfide coprecipitated with barium sulfate	77202:1
PR 112	II	Naphthol AS-D, naphthol AS-D	12370
PR 113	I	Cadmium Vermilion Red Light, Medium or Deep, concentrated cadmium mercury sulfide (CC)	77201
PR 113:1	I	Cadmium-Barium Vermilion Red Light, Medium or Deep, cadmium mercury sulfide coprecipitated with barium sulfate	77201:1
PR 119	I	Naphthol Red, naphthol	NA
PR 122	I	Quinacridone (hue designation), γ quinacridone	73915
PR 123	II	Perylene (hue designation), perylene	71145
PR 149	I	Perylene (hue designation), perylene	77137
PR 168	I	Brominated Anthanthrone, brominated anthanthrone	59300
PR 170 F3RK-70	I	Naphthol Red, naphthol carbamide	12475
PR 170 F5RK	II	Naphthol Crimson, naphthol carbamide	12475
PR 171	I	Benzimidazolone (hue designation), monoazo benzimidazolone	12512
PR 175	I	Benzimidazolone (hue designation), benzimidazolone	71513
PR 179	I	Perylene (hue designation), perylene	71130
PR 181	I	Thioindigoid Magenta, thioindigoid	73360
PR 188	I	Naphthol AS, naphthol AS	12467
PR 190	I	Perylene (hue designation), perylene	71140
PR 192	I	Quinacridone (hue designation), γ quinacridone red	NA
PR 194	I	Perinone Red Deep, perinone	71100
PR 202	I	Quinacridone (hue designation), quinacridone	73907
PR 206	I	Quinacridone Burnt Orange, quinacridone	NA
PR 207	I	Quinacridone (hue designation), quinacridone red	73900
PR 209	I	Quinacridone Yellow Red, quinacridone red γ	73905
PR 242	I	Disazo condensation	20067
PR 254	I	Pyrrole Red, pyrrolopyrrol	73902
PR 255	I	Pyrrole Scarlet, pyrrolopyrrol	NA
PV 19	I	Quinacridone (hue designation), γ quinacridone red	73900
PURPLES			
PV 15	I	Ultramarine Red, complex silicate of sodium and aluminum with sulfur, or sodium aluminosulphosilicate	77007
PV 15	I	Ultramarine Violet, complex silicate of sodium and aluminum with sulfur, or sodium aluminosulphosilicate	77007
PV 19(DL)	I	Quinacridone (hue designation), quinacridone violet b	73900
PV 23 (RS)	II	Dioxazine Purple, carbazole dioxazine	51319
PV 31	I	Isoviolanthrone Violet, isoviolanthrone	60010
BLUES			
PB 15	I	Phthalocyanine Blue or Phthalo Blue, copper phthalocyanine	74160
PB 16	I	Phthalocyanine Blue, metal free phthalocyanine	74100
PB 22	I	Indanthrone Blue, indanthrone	69810
PB 27	II	Prussian Blue with option of adding the name Milori Blue, ferri-ammonium 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, or sodium aluminosulphosilicate	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 aluminum, or cobalt chromite	77343
PB 60	I	Indanthrone Blue, indanthrone	69800
GREENS			
PG 7	I	Phthalocyanine Green or Phthalo Green, chlorinated copper phthalocyanine	74260
PG 10	I	Green Gold with option of adding the name Nickel Azo Yellow, nickel chelated azo	12775
PG 17	I	Chromium Oxide Green, anhydrous chromium sesquioxide	77288
PG 19	I	Cobalt Green, oxides of cobalt and zinc, or cobalt zincate	77335
PG 23	I	Green Earth or Terra Verte, natural ferrous silicate containing magnesium and aluminum potassium silicates	77009
PG 26	I	Cobalt Green, cobalt chromite	77344
PB 36	I	Cobalt Chromite Green or Cobalt Turquoise, oxides of cobalt and chromium, or cobalt chromite	77343
PG 36	I	Phthalocyanine Green, chlorinated and brominated phthalocyanine	74265
PG 50	I	Light Green Oxide, oxides of nickel, cobalt, and titanium	77377
BROWNS			
PBr 6	I	Mars Brown or Iron Oxide Brown with option of adding the name Brown Iron Oxide, synthetic brown iron oxide or mixture of synthetic iron oxides	77499

