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Standard Specification for Gouache Paints¹

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1. Scope

1.1 This specification establishes requirements for composition, physical properties, performance, and labeling of gouache 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 the standard. The values given in parentheses are for information only.

1.5 *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
- D476 Classification for Dry Pigmentary Titanium Dioxide Products
- D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels
- D1210 Test Method for Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
- D1535 Practice for Specifying Color by the Munsell System

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.

- 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
- 2.2 *Other Documents:*
- Colour Index³

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.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *gouache paint, n*—a pigment dispersion in a water soluble gum/resin vehicle that dries water soluble and is formulated primarily for relatively opaque and matte applications.

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

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.

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

TABLE 1 Suitable Pigments List

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

KEY			
<i>Lightfastness Category:</i>			
	I	Excellent 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	
AR		Acid Red	
BR		Basic Red	
<i>Pigment Notations in Parenthesis:</i>			
(CC)		Concentrated cadmium pigments may contain up to 15 % barium sulfate for color control. Cadmium-barium pigments contain a much higher content amount of barium sulfate.	
(DL)		May darken in strong light	
(LF)		Lightfast type	
(NA)		Colour index name or number not assigned	
(RS)		Red shade	
(BS)		Blue shade	
(SM)		Sensitive to moisture	
(SS)		Sensitive to hydrogen sulfide	
(OP)		Opaque type	
Color Index Name	Lightfastness Category	Common Name and Chemical Class	Color Index Number
YELLOWS			
<u>PY 3</u>	I	<u>Arylide Yellow I0G</u> , with option of adding the name Hansa Yellow Light, arylide yellow	11710
<u>PY 6</u>	I	<u>Arylide Yellow</u> , arylide yellow	11670
<u>PY 35</u>	I	<u>Cadmium (hue designation)</u> , concentrated cadmium zinc sulfide (CC), (SM)	77205
<u>PY 37</u>	I	<u>Cadmium (hue designation)</u> , concentrated cadmium sulfide (CC), (SM)	77199
<u>PY 42</u>	I	<u>Mars Yellow</u> or <u>Iron Oxide Yellow</u> , synthetic hydrated iron oxide	77492
<u>PY 43</u>	I	<u>Yellow Ochre</u> , natural hydrated iron oxide	77492
<u>PY 53</u>	I	<u>Nickel Titanate Yellow</u> , oxides of nickel, antimony and titanium	77788
<u>PY 65</u>	II	<u>Arylide Yellow RN</u> , with option of adding Hanas Yellow RN, arylide yellow	11740
<u>PY 74 2GX70</u>	II	<u>Arylide Yellow 2GX70</u> , Hansa Yellow 2GX70, arylide yellow (OP)	11741
<u>PY 109</u>	I	<u>Isindolinone Yellow G</u> , tetrachloroisindolinone	NA
<u>PY 110</u>	I	<u>Isindolinone Yellow R</u> , tetrachloroisindolinone	56280
<u>PY 139</u>	I	<u>Isindoline Yellow</u> , isindoline	NA
<u>PY 170</u>	II	<u>Diarylide Yellow</u> , diarylide yellow	21104
ORANGES			
<u>PO 5</u>	I	<u>Dinitraniline Orange</u> , dinitraniline (SM)	12075
<u>PO 20</u>	I	<u>Cadmium (hue designation)</u> , concentrated cadmium sulfo-selenide	77202
<u>PO 36</u>	I	<u>Benzimidazolone (hue designation) HL</u> , benzimidazolane	11780
<u>PO 43</u>	I	<u>Perinone Orange</u> , perinone (DL)	71105
<u>PO 73</u>	II	<u>Pyrrcle Orange</u> , Pyrrolopyrrol	NA
REDS			
<u>PR 5</u>	II	<u>Naphthol ITR</u> , naphthol ITR	12490
<u>PR 9</u>	II	<u>Naphthol AS-OL</u> , naphthol AS-OL	12460
<u>PR 14'</u>	II	<u>Naphthol AS-D</u> , naphthol AS-D	12380
<u>PR 101</u>	I	<u>Mars Red</u> or <u>Iron Oxide Red</u> , synthetic iron oxide	77491
<u>PR 108</u>	I	<u>Cadmium (hue designation)</u> , concentrated cadmium-seleno sulfide (CC)	77202
<u>PR 113</u>	I	<u>Cadmium Vermilion Red Light</u> , <u>Medium</u> or <u>Deep</u> , cadmium mercury sulfide (CC)	77201
<u>PR 122</u>	II	<u>Quinacridone (hue designation)</u> , γ quinacridone	73915
<u>PR 170 F3RK-70</u>	II	<u>Naphthol Red</u> , naphthol carbamide (DL)	12475
<u>PR 188</u>	I	<u>Naphthol AS</u> , naphthol AS	12467
<u>PV 19</u>	I	<u>Quinacridone (hue designation)</u> , γ quinacridone red	73900
VIOLETS			
<u>PV 14</u>	I	<u>Cobalt Violet</u> , cobalt phosphate	77360
<u>PV 19</u>	I	<u>Quinacridone (hue designation)</u> , quinacridone violet b	73900
<u>PV 23</u>	II	<u>Dioxadine (hue designation)</u> , carbazole dioxazine	51319
BLUES			
<u>PB 15</u>	I	<u>Phthalocyanine Blue</u> , or <u>Pthalo Blue</u> , copper phthalocyanine	74160
<u>PB 17:1</u>	II	<u>Phthalocyanine Blue Lake</u> , or <u>Pthalo Blue Lake</u> , trisulfonated copper phthalocyanine	74200:1
<u>PB 27</u>	I	<u>Prussian Blue</u> , Milori Blue, alkali ferric ferrocyanide	77510
<u>PB 28</u>	I	<u>Cobalt Blue</u> , oxides of cobalt and aluminum or cobalt aluminate	77346
<u>PB 29</u>	I	<u>Ultramarine Blue</u> , complex silicate of sodium and aluminum with sulfur, or sodium aluminosulphosilicate	77007
<u>PB 33</u>	I	<u>Manganese Blue</u> , barium manganate with barium sulfate	77112
<u>PB 35</u>	I	<u>Cerulean Blue</u> , oxides of cobalt and tin or cobalt stannate	77368

GREENS

<u>PG 7</u>		Phthalocyanine Green, or Phthalo Green, chlorinated copper phthalocyanine	74260
<u>PG 17</u>		Chromium Oxide Green, anhydrous chromium sesquioxide	77288
<u>PG 18</u>		Viridian, hydrous chromium sesquioxide	77289
<u>PG 19</u>		Cobalt Green, oxides of cobalt and zinc, or cobalt zincate	77335
<u>PG 23</u>		Green Earth, or Terre Verte, natural ferrous silicate containing magnesium and aluminum potassium silicates	77009
<u>PG 36</u>		Phthalocyanine Green or Phthalo Green, chlorinated and brominated copper phthalocyanine	74265

BROWNS^A

<u>PBr 7</u>		Burnt Sienna, calcined natural iron oxide	77492
<u>PBr 7</u>		Burnt Umber, calcined natural iron oxide containing manganese	77492
<u>PBr 7</u>		Raw Sienna, natural iron oxide	77492
<u>PBr 7</u>		Raw Umber, natural iron oxide containing manganese	77492
<u>PBr 11</u>		Magnesium Ferrite, synthetic iron oxide containing magnesium oxide	77495
<u>PBr 24</u>		Chrome Titanate Yellow, oxides of chrome, antimony and titanium	77310
<u>PBr 25</u>		Benzimidazolone Brown, monoazo benzimidazolone	12510

BLACKS

<u>PBk 1</u>		Jet Black, aniline black	50440
<u>PBk 6</u>		Lamp Black, nearly pure amorphous carbon	77266
<u>PBk 7</u>		Carbon Black, nearly pure amorphous carbon	77266
<u>PBk 9</u>		Ivory Black or Bone Black, amorphous carbon produced by charring animal bones	77267

WHITES^B

<u>PW 4</u>		Zinc White, zinc oxide with option of adding the name Chinese White	77947
<u>PW 5</u>		Lithopone, zinc sulfide coprecipitated with barium sulfate	77115
<u>PW 6</u>		Titanium White, titanium dioxide (rutile or anatase) with option of including some barium sulfate or zinc oxide	77891
<u>PW 7</u>		Zinc Sulfide, zinc sulfide	77975

^A Color Index Number 77491 can be used as an alternate to 77492 for PBr 7.

^B Information on white pigments is given in [Appendix X3](#).

5. Labeling Requirements

5.1 Pigment(s) Identification:

5.1.1 Every label shall include for each pigment contained in the paint 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.

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 X5.1](#), the word “Hue” in equal size letters shall follow in the title, on the front of the tube, and 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 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 in accordance with Test Methods [D4303](#) and the 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 X5.1](#).

5.1.8.1 The Common Name(s) of pigments in [Table X5.1](#) may be used by substituted pigments without the designation of “Hue” in the title.

5.1.8.2 Paints using pigments listed in [Table X5.1](#) may use the word “Genuine” in front of the title to differentiate them from substituted pigments.

5.2 Provide on the Label:

5.2.1 Identification of 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](#)).

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 8 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.