Preferred Oil Paints and Pigments [1]

Hue	Common Name (s)	Pigment Index Name(s) [2]	Notes [3]	Hazards [4]	Opacity	Winsor and Newton / Gamblin	Williamsburg / Holbein	Michael Harding	Rublev
Yellow	Cadmium Yellow	PY35, PY37	"Sensitive to acidic environments; can be replaced by the less expensive cadmium-barium form." Cadmium-barium cadmium yellows use the pigments PY35:1 and PY37:1. High tinting strength.	"Avoid dust. Chronic exposure to respirable dust can cause organ damage and possible cancer; do not heat. Metal fumes toxic." A note on Cadmium from Winsor and Newton: "Cadmium itself is a heavy metal and is toxic but cadmium pigments are not classified as dangerous for use in line with EC classification. The level of soluble cadmium in the pigments is so low that no hazard warnings are needed and they pose no greater risk after swallowing or breathing in than other pigment types. Cadmium pigments are restricted for certain applications but this restriction does not apply to artists' colours."	Opaque	Cadmium Lemon	Cadmium Lemon	Cadmium Yellow Lemon	Cadmium Yellow Light
						Cadmium Yellow Medium	Cadmium Yellow Medium	Cadmium Yellow	Cadmium Yellow Medium
						Cadmium Yellow Deep (PY37)	Cadmium Yellow Deep	Cadmium Yellow Deep (PO20)	Cadmium Yellow Deep
Yellow	Lead-Tin Yellow, Massicot, Giallolino	n/a	Pigment not categorized or rated by the ASTM. Possesses similar characteristics of other lead-based paints. Lead-Tin Yellows can add a glow to skies and portraits. A cooler alternative to Naples Yellow. Lead-Tin Yellow Light is used by some artists instead of white. Low tinting strength.	Toxic. Avoid dust.	Semi-Opaque	n/a	n/a	Lead Tin Yellow Light	Lead-Tin Yellow Light
						n/a	n/a	Lead Tin Yellow Lemon	Lead-Tin Yellow
						n/a	n/a	n/a	Lead-Tin Yellow Dark
Yellow	Naples Yellow, Lead Antimonate	PY41	This is traditional, genuine Naples Yellow, which contains lead. Paints containing lead can be safely handled (see PW1 notes). Average tinting strength.	Toxic. Avoid dust.	Semi-Opaque	n/a	n/a	Genuine Naples Yellow Light	Naples Yellow
						n/a	Naples Yellow Deep (PBr24)	Genuine Naples Yellow Dark	Naples Yellow Dark
Yellow	Mars Yellow, Mars Orange, Yellow Iron Oxide, Yellow Ochre, Gold Ochre	PY42	"Dense; opaque; useful pigment; origin of term 'Mars' is uncertain." PY42 or "Mars Yellow" is made from synthetic iron oxides and is comparable to Yellow Ochre (PY43). Average tinting strength. The opaque Mars Yellows have fine particle size while Transparent Yellow Iron Oxides have extra fine particle size - the latter is superior for glazing.	"Avoid dust; no significant hazards."	Transparent	Transparent Earth Yellow	Transparent Yellow Iron Oxide	Transparent Oxide Yellow	Transparent Yellow Iron Oxide
					Opaque	Gold Ochre	Mars Yellow Light	Yellow Ochre	Mars Yellow
Yellow	Yellow Ochre	PY43	"Excellent natural equivalent of Mars pigments; semi-opaque to opaque, depending on source." PY43 is made from natural iron oxide. Average tinting strength.	"Avoid dust (iron), but hazards not significant."	Semi-Transparent	Yellow Ochre	Yellow Ochre Domestic	French Yellow Ochre	Blue Ridge Yellow Ocher (Semi-Opaque)
						n/a	Raw Sienna	n/a	n/a
						n/a	Italian Raw Sienna	n/a	Italian Raw Sienna
						n/a	Italian Lemon Ochre	n/a	Italian Yellow Earth
						n/a	Italian Yellow Ochre	n/a	Italian Dark Ocher
						n/a	Italian Orange Ocher	Yellow Ochre Deep	Orange Ocher
Yellow	Titanium Yellow, Lemon Yellow Hue	PY53	"Useful all-around pigment." Excellent lightfastness.	"Avoid dust; nickel is a skin sensitizer; do not heat - fumes associated with cancer."	Opaque	Nickel Titanate Yellow	Nickel Yellow	n/a	n/a
Yellow	Isoindolinone	PY109 or PY110	This pigment is often blended with other pigments. It has excellent lightfastness and brightness.	"Unknown; low acute toxicity; avoid dust."	Transparent	n/a	Isoindolinone Yellow	n/a	n/a

Yellow	Azomethine Yellow, Irgazin Yellow, Green Gold	PY129	A metal complex azomethine yellow derived from copper. Average tinting strength. Excellent for glazing.	"Unknown; low acute toxicity; avoid dust."	Semi-Transparent	Green Gold	Green Gold	Green Gold	n/a
Yellow	Quinophthalone Yellow	PY138	This pigment is sometimes blended with other pigments. It has excellent lightfastness and brightness. Cool undertones.	"Unknown; avoid dust."	Semi-Transparent	n/a	Holbein Permanent Yellow Lemon (also contains PY184)	n/a	n/a
Yellow	Nickel Azo Yellow, Indian Yellow Deep, Gamboge, Quinacridone Gold	PY150	A metal complex azomethine yellow derived from nickel. Yellower than Green Gold (PY129) and considered slightly more lightfast.	"Unknown; avoid dust."	Transparent	Indian Yellow Deep (made with linseed and safflower oil)	Nickel Azo Yellow	New Gamboge	n/a
Orange	Cadmium Orange	PO20	"Excellent but expensive and toxic pigment." High tinting strength.	"Cadmiums and their compounds should be considered toxic." Avoid dust.	Opaque	Cadmium Orange	Cadmium Orange (also contains PY35)	n/a	n/a
						Cadmium Orange Deep	n/a	Cadmium Orange	Cadmium Orange
Red	Indian Red, Venetian Red, Light Red Oxide, Mars Orange, Mars Red, Mars Violet, Violet Iron Oxide, Burnt Sienna	PR101	All of the paints using this pigment were noted as being "useful" or "very useful." The source of Indian Red, Venetian Red, and Light Red Oxide is processed natural mineral; Mars Red and Mars Violet are sourced from synethic inorganic material. Variable tinting strength depending on paint.	"No known hazards; avoid dust."	Semi-Transparent	Transparent Earth Red	Transparent Red Iron Oxide	Transparent Oxide Red	Transparent Oxide Red
					Semi-Opaque	India Red	Holbein Indian Red	Indian Red	n/a
					Opaque	Terra Rosa (Semi-Opaque)	Mars Red Light	Venetian Red (Semi-Opaque)	Mars Red Light
						Venetian Red			
						Light Red (made with linseed and safflower oil)	Mars Red	n/a	Mars Red
						Mars Violet Deep	Mars Violet	n/a	Mars Crimson
Red	Light Red, Iron Oxide Red, Venetian Red	PR102	"One of the best of the earth reds." Variable tinting strength.	"Avoid dust; inhalation of large amounts could cause silicosis."	Semi-Opaque	n/a	n/a	n/a	French Burnt Sienna
						n/a	n/a	n/a	French Red Ocher
						Transparent Red Ochre	Italian Pompeii Red	n/a	Ercolano Red
						n/a	Italian Rosso Veneto	n/a	Venetian Red
					Opaque	n/a	French Rouge Indien	n/a	Indian Red
						n/a	see PBr7	n/a	Italian Burnt Sienna
						n/a	n/a	n/a	Violet Hematite
Red	Vermilion	PR106	"Will darken in oil if impure or if exposed to polluted atmospheres; excellent hue but erratic; cadmiums do not replace its special hue and physical character." Average tinting strength.	"Mercury and sulfide content are potentially hazardous; avoid dust; do not heat - metal fumes toxic." Can chemically react and darken when mixed with copper-based pigments (i. e. Verdigris, Malachite), Orpiment (arsenic sulfide), and red lead (i.e. Minium or PR104).	Opaque	n/a	Holbein Vermilion	n/a	Vermilion
Red	Cadmium Red, Scarlet	PR108	"Excellent hue, with variety among different manufacturers." Alternatives include the less expensive PR113, Cadmium Mercury Red, which contains barium sulfate, and PR113:1, Cadmium-Barium Vermillion Red. High tinting strength.	"Many: in dry pigment form, organ damage, cancer, and so on; avoid dust."	Opaque	n/a	Cadmium Red Light	n/a	n/a
						Cadmium Red Light	Cadmium Red Vermilion	Cadmium Red Light	n/a
						Cadmium Red Medium	Cadmium Red Medium	Cadmium Red	Cadmium Red Light
						Cadmium Red Deep	Cadmium Red Deep	Cadmium Red Deep	Cadmium Red Medium
						n/a	Cadmium Red Purple	n/a	Cadmium Red Maroon
Red	Quinacridone Magenta	PR122	"Durable pigment." Average tinting strength. The combination of PR122 with Green Gold (PY129) in a 1:2 ratio produces a vibrant Transparent Oxide Red (PR101).	"Hazards unknown; avoid dust."	Transparent	Quinacridone Magenta	Quinacridone Magenta	Magenta	n/a

Red	Perylene, Winsor Red Deep	PR123 or PR149	"Good hue though weak chroma in tints; used in auto paints, alkyd resin enamels, vinyl and acrylic lacquers, printing inks, plastics." Average tinting strength. Often labeled Permanent Alizarin.	"Hazards unknown; avoid dust."	Transparent	Perylene Red	n/a	Crimson Lake	n/a
Red	Pyrrole Red, Bright Red, Ferrari Red	PR254	"Notable pigment: a duplication of the cadmiums, and a nearly opaque organic." High tinting strength.	"Hazards unknown; avoid dust."	Transparent	Bright Red	Pyrrole Red	Pyrrole Red	n/a
Purple	Cobalt Violet	PV14	"Widely used in many applications; weak tinter with dull chroma; cobalt arsenate... rarely found today (and toxic), was formerly the pigment used for this hue." Currently made with cobalt phosphate or cobalt ammonium phosphate.	"Skin, eye, and respiratory irritant; avoid dust - inhalation can cause lunge damage; an animal carcinogen."	Semi-Transparent	n/a	n/a	Cobalt Violet Light	n/a
						Cobalt Violet	Cobalt Violet Deep	Cobalt Violet Dark	n/a
Purple	Ultramarine Violet, Ultramarine Red	PV15	"A weak pigment but with good chroma and lightfastness; sensitive to alkalines, acids, and some metals." Average tinting strength.	"No significant hazards; avoid dust."	Transparent	Ultramarine Violet	Ultramarine Violet	Ultramarine Violet	Ultramarine Violet
Purple	Manganese Violet, Permanent Mauve	PV16	"Good but expensive hue; sensitive to alkalines; increasingly rare." Very weak tinting strength.	"Chronic inhalation can cause nervous system damage; avoid dust."	Semi-Transparent	Manganese Violet	Manganese Violet	Manganese Violet	n/a
Purple	Quinacridone Violet, Quinacridone Red, Quinacridone Rose, Permanent Carmine, Permanent Magenta, Permanent Rose	PV19 or PR192	"High-quality pigment widely used in industry; performs well in artists' paints." Quinacridone Red can serve as "a substitute for alizarin crimson." Average tinting strength.	"Hazards unknown; avoid dust."	Transparent	Quinacridone Red	Quinacridone Red	Quinacridone Rose	n/a
						Quinacridone Violet	Quinacridone Violet	n/a	n/a
Purple	Dioxazine Purple, Winsor Violet	PV23RS (red shade)	"Excellent hue with good tinting strength and lightfastness; PV23BS (blue shade) has less lightfastness."	"May be contaminated with dioxins; avoid dust."	Transparent	Dioxazine Purple	Egyptian Violet	Deep Purple (Dioxazine)	n/a
Blue	Phthalo Blue	PB15 or PB16	"Most widely used pigment in artistic and industrial applications; must be greatly extended because of very high tinting strength." PB16 is the "same as PB15 but with better resistance to solvents; will flocculate if improperly formulated in a paint system; will bronze if used full strength."	"May be contaminated with PCBs and dioxins, which cause cancer and birth defects; avoid dust."	Transparent	Manganese Blue Hue (PB15:4)	n/a	n/a	n/a
						n/a	Phthalo Blue (PB15:3)	Phthalo Blue Lake (PB15:3, a green shade)	n/a
						Phthalo Blue (PB15:1, a red shade)	n/a	Phthalo Blue Lake (PB15:1, a red shade)	n/a
Blue	Indanthrone Blue	PB60	"Excellent lightfastness in tints but loses chroma when reduced too greatly; expensive." Darkest blue.	"Hazards unknown; avoid dust."	Semi-Transparent	Indanthrone Blue	Indanthrone Blue	Indanthrone Blue	n/a
Blue	Prussian Blue	PB27	"Some dispute over name: Milori variety is said to be more stable but Prussian name is better known; widely used and reliable pigment, unstable in alkaline vehicles and high heat." High tinting strength. George O'Hanlon from Natural Pigments has stated Prussian Blue is most stable as a glaze and is not as lightfast when mixed with Lead White (PW1) or Titanium White (PW6).	"Only slightly toxic, but can emit highly toxic hydrogen cyanide gas when exposed to acid, high heat, or strong UV light; avoid dust."	Semi-Transparent	Prussian Blue	Prussian Blue	Prussian Blue	Prussian Blue
Blue	Cobalt Blue	PB28	"Unique hue, valuable in violet mixtures; expensive; sometimes imitated by mixtures of ultramarine." Excellent permanence and lightfastness. Low tinting strength.	"Inhalation can cause pneumonia and other lung damage; avoid dust."	Semi-Transparent	Cobalt Blue	Cobalt Blue	Cobalt Blue	n/a
					Opaque	Cobalt Teal	n/a	n/a	n/a

Blue	Ultramarine Blue	PB29	"Reliable and brilliant; lapis often specified in medieval paintings; weak tinting strength, and makes dull violets with reds." The original source for ultramarine blue is the semiprecious gem, lapis lazuli; the modern source is typically complex silicate of sodium and aluminum with sulfur. Ultramarine Blue tints periwinkle when mixed with Titanium White (PW6).	"Hazards unknown; avoid dust."	Transparent	Ultramarine Blue	Ultramarine Blue	Ultramarine Blue	Ultramarine (Green Shade) Ultramarine (Red Shade)
					Semi-Transparent	n/a	n/a	Lapis Lazuli	Lazurite (Lapis Lazuli)
Blue	Manganese Blue	PB33	"Reliable; weak tinting strength; affected by sodium and aluminum sulfates." Stopped being made in the 1990s. Phthalo Blue (PB15) produces Manganese Blue hues when combined with Titanium White (PW6).	"Possibly significant chronic health hazard for various organ systems; avoid dust."	Transparent	n/a - see PB15:4 for closest match			
Blue	Cerulean Blue	PB35	"Reliable and inimitable though expensive hue." Often referred to as "sky blue" and the "original" Cerulean Blue. Very lightfast. Low tinting strength.	"Inhalation can cause pneumonia and other lung damage; avoid dust."	Semi-opaque	Cerulean Blue (made with linseed and safflower oil)	Cerulean Blue	n/a	n/a
Blue	Cobalt Chromite, Cerulean Blue	PB36	A greener variation of PB35. Cobalt Chromite (PB36) is "a variety of cobalt blue (PB28) made with chromium to give it the cerulean hue." Low to average tinting strength. Has less color clarity than PB35.	"May be contaminated with PCBs and dioxins, which cause cancer and birth defects; avoid dust."	Semi-opaque	Cerulean Blue	Cerulean Blue French	Cerulean Blue	Cobalt Chromite Blue
Green	Phthalo Green	PG7 or PG36 (yellow shade)	"Widely used in artistic and industrial applications; flocculates in some paint systems; very strong tinter that must be extended." PG7 is similar to Viridian (PG18).	"May be contaminated with PCBs; inhalation may induce allergic reactions; avoid dust."	Transparent	n/a	Phthalo Green Yellowish	Phthalo Green Yellow Shade	n/a
						Phthalo Green	Phthalo Green	Phthalo Green Lake	n/a
Green	Chromium Oxide Green, Oxide of Chromium	PG17	"Excellent all-around colorant, but with low chroma and weak tinting strength; used in industrial plastics, enamels, ceramics, printing inks for currency."	"Chromium content may irritate skin and cause severe allergies; chronic exposure may cause asthma or lung cancer; avoid dust."	Opaque	Chromium Oxide Green	Chromium Oxide Green	Oxide of Chromium	Chromium Oxide Green
Green	Viridian, Emerald Green, Guignet's Green	PG18	"Brighter than PG17 but still with low chroma and weak tinting strength; widely used in industry."	"Chromium content may irritate skin and cause severe allergies; chronic exposure may cause asthma or lung cancer; avoid dust."	Semi-Transparent	Viridian	Viridian	Viridian	Viridian (Semi-Opaque)
Green	Cobalt Green	PG19	Average tinting strength.	"Inhalation can cause pneumonia and other lung damage; avoid dust."	Semi-Transparent	Cobalt Green	n/a	Cobalt Green Deep	n/a
Green	Green Earth, Italian Terre Verte	PG23	"Weak, transparent colorant but of unusual hue... the classical underpainting color for flesh tones in medieval egg temperas." Low tinting strength. Great for glazing.	"No known hazards; avoid dust."	Transparent	Terre Verte (also contains PG18)	French Terre Verte	Terre Verte	Verona Green Earth
						n/a	Italian Terre Verte	n/a	Antica Green Earth

Green	Light Green Oxide, Cobalt Teal, Cobalt Turquoise	PG50	Excellent permanence and lightfastness. Average tinting strength.	"Can cause severe skin allergies, and inhalation can cause lung damage; avoid dust."	Opaque	n/a	Cobalt Teal Greenish	Cobalt Teal	n/a
						Cobalt Turquoise Light (made with safflower oil)	Cobalt Teal Bluish	Cobalt Teal Blue Shade	
Brown	Mars Brown	PBr6	"Excellent stable pigment; low chroma; better than the natural equivalents; origin of 'Mars' name uncertain." Average tinting strength.	"No significant hazards unless contaminated with manganese or other toxic ingredients; avoid dust."	Semi-Opaque to Opaque	n/a	Dutch Brown	Red Umber	n/a
						n/a	n/a	Raw Umber	n/a
						n/a	Van Dyke Brown (also contains PBk9)	Burnt Umber	Mars Brown (PBr43)
Brown	Burnt Sienna, Burnt Umber, Raw Sienna, Raw Umber, Brown Ochre	PBr7	"Excellent pigment; hue varies and depends on source and method of processing; low tinting strength; inexpensive." Can cause "sinking in" due to its absorbent clay content. Opaque alternatives to PBr7 that don't sink in can be created with Winsor and Newton Terra Rosa (PR101), Michael Harding Venetian Red (PR101), or Rublev Ercolano Red (PR102) + Phthalo Blue (PB15) or Ivory Black (PBk9).	"No significant hazards unless contaminated with manganese or other toxic ingredients; avoid dust." If there is Manganese content, "Chronic inhalation can cause degenerative nervous system disease; avoid dust."	Semi-Transparent	Raw Sienna	n/a - see PY43	Raw Sienna	Cypress Raw Umber Light
						n/a	Italian Burnt Sienna	Italian Brown Ochre	Italian Brown Ocher
						Burnt Sienna	French Burnt Umber	Burnt Sienna	French Burnt Umber
							Red Umber		Cypress Raw Umber Medium
						Raw Umber (Green Shade) (made with linseed and safflower oil)	Italian Raw Umber	Italian Green Umber	Italian Green Umber (Semi-Opaque)
						Raw Umber	Raw Umber	n/a - see PBr6	French Raw Umber (Semi-Opaque)
						Burnt Umber	Burnt Umber	Transparent Oxide Brown	Cypress Raw Umber Dark
						Van Dyke Brown	n/a - see PBr6	Van Dyke Brown (PBr8)	Cypress Burnt Umber
Black	Ivory Black, Bone Black	PBk9	"This is the only blue black, called 'cool'; same limitations as other carbon blacks." Ivory Black is often referred to as the blackest of the blacks. Average tinting strength.	"No significant hazards if pure; avoid dust."	Semi-Opaque	Ivory Black	Ivory Black	Ivory Black	Bone Black
Black	Mars Black	PBk11	"Excellent pigment, generally better performer than other blacks, but weak tinting strength." More of a very dark charcoal than black color. Suitable for vegans.	"No significant hazards unless contaminated with impurities; avoid dust."	Semi-Opaque	n/a	German Earth	Vine Black	Roman Black
					Opaque	Mars Black	Mars Black	n/a	Natural Black Oxide

White	Lead White, Flake White, Foundation White, Stack Lead White, Cremnitz White	PW1	"Traditional white for oil paints due to excellent drying characteristics; irreplaceable, but slowly disappearing as less toxic substitutes are developed." Natural Pigments, the maker of Rublev, commented: "Nitrile, vinyl, and latex gloves are adequate skin protection from lead white paint. Please be aware that ingestion is the main route of exposure to lead paint. There are no toxic fumes or vapors from lead white paint. You can clean your palette of lead white paint the same as you do with any other color." Average to high tinting strength.	"Lead is toxic by all routes of entry; avoid dust."	Semi-Transparent	n/a	Flake White	Cremnitz White	Lead White #1 (Opaque)
					Opaque	n/a	n/a	Foundation White (also contains PW6)	Lead-Titanium White (also contains PW6)
White	Titanium White	PW6	"Excellent all-around colorant in wide use; extension improves films in oil; rutile variety is more opaque; anatase variety chalks in exterior use and is bluer." Titanium White on its own is considered the brightest of the whites and forms a strong paint film though not as strong as Lead White. High tinting strength.	"No significant hazards; avoid dust."	Opaque	Titanium Buff	Unbleached Titanium (PW6:1)	Unbleached Titanium Dioxide (PW6:1)	n/a
						Titanium White	Titanium White	Titanium White No 2	Titanium White

[1] This list can be a helpful starting point. It shouldn't be considered complete or authoritative as I have created it for my own reference. All of the paints listed have an American Society for Testing and Materials (ASTM) Lightfastness rating of I (excellent) and are extremely permanent (AA) or permanent (A). In general, only single pigment paints are listed. Pigments are occasionally mislabeled or outdated online; I rely on manufacturer websites for the most up-to-date information. All of the paints listed here use linseed oil as their binder unless otherwise noted. Learn more about Lightfastness here: https://justpaint.org/astm-lightfastness-testing-for-oil-paints

If you have any questions regarding your own specific situation and goals, please reach out to the manufacturers directly:

Winsor and Newton contact page: https://www.winsornewton.com/na/contact-us

Gamblin contact page: https://gamblincolors.com/contact

Williamsburg: https://goldenartistcolors.com/contact-us-3step

Holbein: https://holbeinartistmaterials.com/contact-us

Michael Harding contact page: https://www.michaelharding.co.uk/contact

Natural Pigments (Rublev) contact page: https://www.naturalpigments.com/contact

[2] Pigment Index Names:
PY = Pigment Yellow
PO = Pigment Orange
PR = Pigment Red
PB = Pigment Blue
PBr = Pigment Brown
PBk = Pigment Black
PG = Pigment Green
PV = Pigment Violet
PW = Pigment White

[3] The quoted information in Notes and Hazards is from the Revised and Expanded edition of The Painter's Handbook by Mark David Gottsegen, pages 155-197. Purchase a copy here: https://amzn.to/3dQyXEI

Other great resources for pigment and medium information include:

Traditional Oil Painting:
https://amzn.to/47fNLpW
https://traditionaloilpainting.com

The Oil Painter's Color Handbook:
https://amzn.to/3WnhQQM

[4] "Avoid dust" mainly refers to the pigments in their raw powder form (i.e. prior to being blended with linseed oil or another binder). Paint from a tube has been blended and generally does not pose the same risks as the powdered pigment. Sanding artwork can create dust, however, and precautions such as wearing an N100 mask (aka particulate respirator) along with nitrile or latex gloves will reduce the risk of inhaling and ingesting dust. I have an example of a particulate respirator listed here: https://www.nikitacoulombe.com/artsupplies

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