The Color of Art Pigment Database: Pigment Metal, PM and Misc.

Artist's Paint and Pigments Reference: Color Index Names, Color Index Number and Pigment Chemical Composition

Miscellaneous

For Pigment Table Key Click Here or Scroll to the bottom of the page	Open Key in a New Window	Top ^
Metallic Pigments	Inert Pigments, Adulterants & Additives	Mineral Pigments & Unclassified
Oil Painting Mediums, Solvents and Siccatives	Watercolor Additives and Mediums	Acrylic Additives and Mediums

Jump to CI Pigment Metal Number:

PM1, PM2, PM3, PM4, PM5, PM6,
Bismuth Powder; Iron; Metallic Silver; Stainless Steel Powder

Where applicable, you can click on the artist paint or pigment company code found in the "Common Historic and Marketing Name Column" next to the pigments name. The links will take off site where you can find more specific paint, binder, and pigment properties, including MSDS sheets or a retailer that stocks that brand of paint or pigment. Just hit your back button to return. See the Key at the bottom of any page for the artist media or binder company codes and links to the brands websites. NOTE: *d* in italics indicates a discontinued paint or pigment, all other medium or binder codes in *italics* mean the pigment/paint is in the student grade, not the "artist's" professional premium paint. See the Key (at the bottom of the page) for artist media and binder codes.

Pigment Metal

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Oil Paint Mediums and Siccatives | Watercolor Mediums & Additives | Acrylic Mediums and Additives

Color Index Generic Name	CI Pigment Name	Common, Historic and Marketing Names	C.I. Constitution Number	Chemical Composition	Color Description † = Long Term Effects of Light	Opacity 1 = opaque 4 = trans.	Light Fastness I = excel. IV=Fugitive	Oil Absorption g/100g	☠	Side Notes
N/A	Bismuth Powder	Bismuth metal powder; Bismuth Powder [KP.p];	N/A	Bismuth; CAS 7440-69-9	Grey	-	-	-	A	-
N/A	Iron	Cast-iron powder [KP.p]; Iron Filings [KP.p]; Iron Powder	N/A	Iron	Grey to black	-	-	-	A	Rusts easily, could be used to make iron oxide pigments for artist paints.
N/A	Metallic Silver	Metallic Silver;	N/A	Powdered Silver	Metallic light Gray	1	I	L	A	-

		Silver								
N/A	Stainless Steel Powder	Stainless Steel Powder [KP.p]	N/A	Carbon reduced sponge iron powder (Ref); CAS 7440-44-0	Light silver grey	-	I	-	A-B*	* Can cause irritation of the eyes by direct contact
PM1	Aluminum Powder	AL Pigment; Aluminum; Aluminium Chromalux; Aluminum Powder [KP.p]; Gold [HO.o]; Horna Silver; Metallic Aluminum [OH.a]; Metalure; Pigment Metal 1; Silver [CR.ao.o | HO.o | MA.p | PF | RGH.o.p | SCH.o | WN.o];	77000	Powdered Aluminum* (Ref: Metallic Effect Pigments: Fundamentals and Applications by Wibling, ©2006, p. 12-13); Aluminum Powder (Ref at Boston Fine Arts CAMEO Database); Aluminum paint (Ref at Boston Fine Arts CAMEO); CAS 7429-90-5	Silvery metallic gray	1	I BWS 8;8;8	L	A-C* ICSC	* Uncoated aluminum in powder form can be explosive, and can be ignited by nothing more than a physical shock, the pigment powder is usually coated with a polymer to prevent ignition and is generally safe with the coating. Contact of the dry uncoated powder with water can liberate extremely flammable gases. It is entirely safe with the coating and when incorporated into artists paint.
PM2	Bronze Powder	Bronze Powder; Bronze powder, dark [KP.p]; Bronze powder, light [KP.p]; Copper [MA.p | SCH.p(br).p(wbr)]; Copper Bronze Powder; Ducat Gold [MA.p]; Gold [RGH.o.p]; Goldbronze; Metallic Brass [OH.a]; Metallic Bronze [OH.a]; Metallic Copper [OH.a]; Metalic Gold [MW.o]; Metalstar; Pale Gold [MA.p | SCH.p(br).p(wbr)]; Pigment Metal 2; Rich Gold [MA.p | SCH.p(br).p(wbr).]; Rich Pale Gold [SCH.p(br).p(wbr).]; Sequin Gold [MA.p]; Silver [SCH.p(br).p(wbr)]; Standart Dorado;	77400	Powdered Bronze; 80-90% Copper; 1% Zinc, Iron, tin (Ref)	Golden Metallic Yellow Brown*	1	I*	L	B	* Can corrode and turn greenish by exposure to moisture; More stable in oil paints or forms with polymer coatings.
PM2	Copper Alloy	Copper [GB.o | PF]; Copper Alloy; Copper Paste [KP.p]; Copper Powder [KP.p]; Gold [PF];	77400	Powdered Copper Alloy, Copper, zinc, aluminum, tin CAS 7440-50-8	Golden Metallic Yellow Brown*	1	I*	L	B	* Can corrode and turn greenish by exposure to moisture; More stable in oil paints or forms with polymer coatings.

		Pigment Metal 2								
PM3	Metallic Gold	Burnish Gold; Gold; Gold Dust; Gold Powder; Pigment Metal 3; Rosenoble Gold [KP.p]; Shell Gold; Painter's Gold [KP.p]	77480	Gold	Dark, Deep, Metallic Gold	1	I	L	A	Gold is completely inert to all known chemicals
PM4	Metallic Lead	Metallic Lead; Lead; Pigment Metal 4	-	Powdered Lead	Metallic Gray	1	I*	L	C	* Paints containing lead may darken when exposed to pigments containing free sulfides and/or atmospheric sulfides
PM5	Pewter	Pewter; Pewter Powder; Pigment Metal 5	-	Powdered Pewter (a tin alloy usually consisting of 80-90% tin with copper, antimony and sometimes lead) (Ref); CAS 7440-31-5	Yellowish silver grey	-	I	-	A	-
PM6	Metallic Zinc;	Blue Powder; Merrillite; Metallic Zinc; Pigment Metal 6; Zinc; Zinc Powder; Zinc dust [KP.p]	77945	Powdered Zinc (Ref); CAS 7440-66-6	Grayish White	2	I	6	B* ICSC	* Large concentrations of fine zinc powder can cause explosive reactions with air near sources of ignition. Fine zinc powder can react with water or acids giving hydrogen gas

Inert Pigments, Additives and Paint Fillers

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Oil Paint Mediums and Siccatives | Watercolor Mediums & Additives | Acrylic Mediums and Additives

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N/A	Alum	Alum; Alum Flour; Alum Meal; Alumen; Aluminium Sulphate; Alumstone; Baking Powder; Cube Alum; Kalinite;	N/A	Aluminum Potassium Sulphate (Ref: CAMEO Database at Boston Fine arts); Alum (Ref at Boston Fine Arts CAMEO); Hydrated potassium aluminium sulfate (Ref wikipedia); Aluminium sulphate	White powder	4	N/A	-	A MSDS	Used as a mordant, filler and base for lake pigments. It's use as a base for lakes has been largely replaced by Aluminum Hydroxide (PW24) in modern paints and lake pigments. Also used as Adulterant, filler and

		Kalunite (natural); Potash Alum; Potassium Alum, Soda Alum, Tawas;		Anhydrous: CAS 10043-67-1 Dodecahydrate: CAS 7784-24-9						extender; Almost completely transparent in oil paint; Aluminum Hydrate PW24 may be a better choice for the above uses.; Used as mordant in dyeing
N/A	Aluminum Stearate	Alumina Stearate [KA.p]; Aluminum Stearate; Aluminum octadecanoate; Aluminum tristearate; aluminum salt; Aluminium tristearate	N/A	Metallic Soap; The salt of aluminum hydroxide and stearic acid; Dihydroxy(octanoato-O)aluminum; Aluminum Stearate (Ref at Boston Fine Arts CAMEO); CAS 637-12-7	White powder	N/A	N/A	-	A	Used as filler and adulterant in artist paints; Used to stabilize tubed oil paints and provide a "buttery" consistency.; Only use smallest amount possible to get the desired effect. Often bee's wax is recommended as a stabilizer for studio use, instead of Aluminum Stearate.
N/A	Asbestine	Agalite; Asbestin; Asbestine; Asbestine Powder; Beaver White 200; Cosmetic Talc; French Chalk; Magnesium Silicate Talc; Linum Vivum; Snowgoose; Talc?	N/A	Natural Magnesium Silicate with a short fibrous structure; CAS 14807-96-6	Bright White to blue grey	1	I	28-33	B*	Used for Anti settling, filler and stabilizer (Ref); Used in paper manufacture; * Wear a NIOSH certified respirator whenever working with this pigment in dry form. Prolonged inhalation, can cause a variety of asbestosis.
N/A	Attapulgite	Attapulgite [KP.p]; Clay Mineral; Attapulgite; Kaopectate; Palygorskite	N/A	Colloidal magnesium-aluminium-hydro silicate; hydrated magnesium aluminium silicate; CAS 12174-11-7 CAS 71396-54-8 CAS 8031-18-3	Cream White	-	-	-	A	Viscosity building, gelling, thickening, protective colloid, suspending agent, adsorbent, bonding agent; Used as thickener in oils
N/A	Bleached Bee's Wax	Bleached Bee's Wax; Bee's Wax; Wax	N/A	Bleached wax from Bee honey combs	Translucent off-white	3-4	I	N/A	A	Used as a stabilizer in oil paints; Used to give "buttery" quality to oil paints; Used in mediums for oil paints; Used as a binder in encaustic painting; oil pastels and crayons;

										Used as a varnish
N/A	Bentonite	Calcium bentonite; Cat liter; Fuller`s Earth; Montmorillonite clay; Sodium bentonite;	N/A	Hydrous Aluminium Silicate, a swelling clay consisting mostly of Montmorillonite; Calcium bentonite CAS 1302-78-9	Off white to yellowish	4	N/A	N/A	A MSDS	Absorbs several times its dry mass in water; Used as thickener in oils
N/A	Bone Ash	Bone Ash; Hartshorn (deer antlers)	N/A	Calcined animal bones; Tricalcium phosphate with traces of calcium carbonate	Slightly greyish to brownish off white	2	I	-	A MSDS	White pigment; Thickening extender in lime paints
N/A	Borax	Borax [EP.p]; Sodium Borate; Twenty-Mule-Team Borax	N/A	sodium borate, sodium tetraborate, or disodium tetraborate, salts of boric acid.; (wikipedia Ref) sodium tetraborate decahydrate CAS 1303-96-4	white or off white	N/A	N/A	N/A	A MSDS ICSC	used in casein paints; Ingredient in enamel glazes
N/A	Carnauba Wax	Carnauba; Copernicia Cerifera Wax	N/A	Derived from the leaves of the Carnauba palm: Copernicia Prunifera	Off white	3-4	N/A	N/A	A	Used as varnish and as stabilizer. Harder that bees wax. Higher melting point.
N/A	Calcium Hydroxide	Bianco di San Giovanni [NP.p]; Builders Lime; Cal; Calcium Hydroxide; Hydrated Lime; Lime white; Pickling Lime; Portlandite; Slack Lime; Slaked Lime	N/A	Calcium Hydroxide (Ref wikipedia);	-	-	-	-	A MSDS	Used in making gesso, used in fresco, and to add "tooth" to paints.
N/A	Casein	Casein; Ultra Casein Powder [EP.p];	N/A	Milk Protein	off white powder	N/A	N/A	N/A	A	Used in making Casein paints or "Milk Paints"
N/A	Cellulose Gum	Akucell; Bermocoll; Bermodol; Cellulose Gum; CELFLOW®; Crystalline cellulose; CMC; GRINDSTED®;	N/A	Cellulose Gum; Carboxymethyl cellulose CMC is an anionic water soluble polymer. It is manufactured by reacting insoluble cellulose with sodium hydroxide and chloroacetic acid during which the hydroxyl groups are etherified and converted into carboxymethyl groups. These polymers are characterized by the degree of substitution (DS) and degree of polymerization (DP).	white or off white powder or crystals	4	-	-	A MSDS	Used as viscofiers and absorbents in food, food packaging, personal care products, cement, plaster, water-based paints, wallpaper, adhesives, detergents, etc. (Ref MSDS); Used in watercolors and other water based paints as Thickening agent, Stabilizing agent, Water retaining agent, Dispersing agent, Binding agent, Protective colloid, Emulsion

				(Ref MSDS); Cellulose gum is the generic name of highly purified carboxymethyl cellulose (CMC), CMC is usually used to describe non-purified or lowly purified carboxymethyl cellulose. (Ref); (Ref wikipedia);						and foam stabilizer, and Film forming agent. (Ref);
N/A	Ceresine Wax	Ceresin; Mineral Wax; Ozokerite (crude Ceresine);	N/A	Ceresine is the purified end product of Ozokerite; a natural mineral wax.	Translucent white	2-4	N/A	N/A	A	Used as varnish; Used in wax mediums and stabilizer.
N/A	Ceramic Microspheres	3M Ceramic Microspheres; 3M Hollow Ceramic Microspheres	N/A	Various products and pigment sizes; Solid Spheres or hollow spheres of Alkali Alumino Silicate Ceramic	White	2-3	I	28-46*	A	Filler; reduces gloss; Improves hardness; Adds abrasion resistance.; *Various particles sizes available from 12 -40 microns. Oil absorption is less the larger the spheres.
N/A	Chlorite	Chlorite; Chlorite Clinochlore; Kaemmererite	N/A	Magnesium Silicate Hydroxide	Greenish to White; Natural forms can be green, white, yellow, red, lavender and black	4	-	35 - 45	A	Filler; Barrier properties
N/A	Clove Oil	Oil of Cloves	N/A	The essential oil from the clove plant, *Syzygium aromaticum*	Clear Liquid Strong smell of cloves	4	N/A	N/A	A	A preservative and odorant in aquatic mediums, watercolor, tempera and gouache.; A non-drying oil it is sometimes used in small amounts to slow the drying of oil paints, use very little or the oil paint will never dry.
N/A	Dextrin	Alpha Limit Dextrin; Amylodextrin; Aquaflake; Arabix; Avedex; Beta Limit Dextrin; British gum; Canary Dextrin; Cargill Yellow; Cellotriose; Cyclodextrin; Dextrin; Dextrin Powder;	N/A	"Dextrins are a group of low-molecular-weight carbohydrates produced by the hydrolysis of starch"-From Wikipedia (Ref) CAS 94700-07-9 CAS 100041-56-3; CAS 152232-07-0; CAS 199015-70-8; CAS 256933-14-9; CAS 37265-05-7; CAS 37265-06-8	White to yellowish powder; may come in liquid form	N/A	N/A	N/A	A	Used for sizing watercolor papers; Used as watercolor binder; Used as filler or to extend watercolors; Used for acid free glues and mounting; Improves Rheology of watercolor paints by thickening and smoothing paint adding a "buttery" quality.;

		Dextrin Powder (yellow); Dextrine; English Gum; Fantastick Yellow Dextrin; Fantastick White Dextrin; Fibersol; Maltodextrin; Microcrystalline cellulose; Modified Starch; Potato Dextrin; Sizing; Starch; Starch gum; Tapioca Malto-Dextrin; White Dextrin; Yellow Dextrin;								Used in making gouache; Used in various textile and dying operations. How to make dextrin from Corn Starch (Ref)
N/A	Diatomaceous Earth	Infusorial Earth	N/A	Fossilized remains of single cell algae	White powder	1	N/A	100 - 300	A	Often used to add "tooth" or texture
N/A	Dolomite	Dolomite	N/A	Carbonate of Calcium and magnesium	White Crystalline Powder	-	I	12 –14	A	-
N/A	Glass Microbeads	Ballotini; Glass Beads [DS.p]; Glass Microbeads; Glass Nanobeads	N/A	Very Small to microscopic glass beads	Translucent white beads	4	N/A	L	A	Adds texture and reflective qualities.; Used in road paint to make reflective.
N/A	Glass Powder	Powdered Glass; Glass Powder	N/A	Powdered Glass	White powder	4	N/A	L	B	Glass containing lead, manganese or cobalt might act as driers in oil paint
N/A	Glycerin	Crude Glycerin; Glycerin; Glycerine; Glycerine Oil; Glycerol; Ophthalgan; Osmoglyn; Pedia-Lax; Pure Glycerin; Vegetable Glycerine Oil	N/A	A Trihydroxy form of alcohol	Water clear thick liquid	N/A	N/A	N/A	A	Used as a plasticizer in water based paints: watercolors; gouache, tempera; and acrylics (not recommended for acrylics *see Ref below*), Used as filler or to extend watercolors; In watercolors it "reduces the native brittleness of the gum arabic and minimizes the cracking or chipping of dried paint"-Handprint.com (Ref); Used to extend drying time in acrylic paints. May have problems when used for that purpose. about.com (Ref)

										Used as moisturizer in handmade soaps; Used as a water-soluble lubricant
N/A	Gum Arabic	Gum Arabic [EP.p];	N/A		Fine or coarse off white to brown powders or in raw form as pellets called "tears" (Ref); Also found in liquid solutions in transparent light brown in high grades to dark brown in lower grades.	N/A	N/A	N/A	A MSDS	Used as a binder in artists watercolor paints.; Used as filler or to extend watercolors; Lots of great info on gum Arabic, paint binders and making watercolor artist paints at the awesome Handprint.com site.
N/A	Gum Tragacanth	Gum Tragacanth [EP.p];	N/A	gum from the Astragulus shrub		N/A	N/A	N/A	A MSDS	Used in making pastels;
N/A	Magnesium Carbonate	Magnesium Carbonate [KA.p];	N/A	Magnesium Carbonate; Magnesium carbonate, ($MgCO_3$) (Ref wikipedia Magnesium carbonate and Magnesite),	White	N/A	N/A	N/A	A	-
N/A	Methyl Cellulose		N/A			N/A	N/A	N/A	A	Used as plasticizer in watercolor paints; Used as a dispersant in watercolors; Used as a binder in pastels; Used to size watercolor papers
N/A	Nepheline Syenite	Minex*; Nepheline Syenite	N/A	*Refined Natural Nepheline Syenite; Sodium-potassium alumina silicate	pale blue to colorless translucent	4	N/A	21 - 29	A	Filler; extender; inert; helps with exterior durability
N/A	Laponite	Laponite RD	N/A	Hygroscopic; Aqueous sodium lithium magnesium silicate	White powder	4	N/A	N/A	A	Hygroscopic; Thickener for water based paints: Acrylics, Tempera, Watercolor, Gouache, Lime, Fresco
N/A	Oil of Spike Lavender	Lavender Oil*; Lavender Spike Oil; Oil of spike; Oil of Spike Lavender [LB.m]; Spike; Spike Lavender; Spike Lavender Oil [HO.o];	N/A	Oil extracted from the Spike lavender plant (Lavandula latifolia or L. spica)	Clear Liquid; strong smell of Lavender flowers	4	N/A	N/A	A**	Used as solvent and thinner in oils; Small amounts can be added as a preservative and odorant in aquatic mediums, watercolor, tempera and gouache * Two forms are distinguished, *lavender flower oil*, a

										colorless oil, insoluble in water, having a density of 0.885 g/mL that is not used in oil painting; and *lavender spike oil*, a distillate from the herb *Lavandula latifolia*, having density 0.905 g/mL. Lavender flower oil is a designation of the National Formulary and the British Pharmacopoeia. The term "Lavender Oil" usually, and more correctly, refers the *lavender flower oil*, an essential oil obtained by distillation from the flower spikes of certain species of lavender. This type is not used in oil painting. (Ref:wikipedia: Lavender Oil); **Flammable, keep away from ignition sources; Concentrated vapors can be harmful or explosive, use only in well ventilated area; Ingestion may cause injury or death.
N/A	Oxgall	Bacteriological Ox Bile; Bovine Bile; Aqua Oxgall [SCH]; Fel Bovinum; Fiele Di Bue; Ochsengalle [SCH]; Oxbile; Ox gall; Oxgall; Oxgall Liquid [DS | WN]; Ox Gall Medium [HO | MA];	N/A	Gall, usually obtained from cows and mixed with alcohol; "Bile is composed of fatty acids, bile acids, inorganic salts, sulfates, bile pigments, cholesterol, mucin, lecithin, glycuronicacids, porphyrins, and urea"; "The major composition of Oxbile is taurocholic and glycocholic acids"-USBiological (Ref)	Clear to slightly brownish or greenish liquid or hygroscopic powder; CAS 8008-63-7	4	N/A	N/A	A	Used as a wetting agent and increase paint flow in acrylic paints, watercolors and gouache.; May help prevent the crawling of ceramic glazes (Ref).
N/A	Phenol	Butylated hydroxy toluene; Carbolic acid [GEN]; Coal tar phenol; Dowicide A; Isopropyl phenol; Ortho-phenylphenol; Phenol [GEN];	N/A	Originally made from coal tar.: Phenols are a class of organic compounds that contains a six-membered aromatic ring, bonded directly to a hydroxyl group-Wikipedia Ref.;	Crystals, Powder or flakes; Usually sold as a pre diluted liquid solution.	N/A	N/A	N/A	B - D*	Antimicrobial, antiseptic, disinfectant, fungicide, pesticide; The main artist use is as a preservative for paints; When used as a preservative in watercolors, artist

		Phenylphenol [GEN]; Sodium Orthophenylphenate; *Many other chemicals of the phenol group and also may be found in many general preservatives, wood preservatives and pharmaceuticals*		Sodium Orthophenylphenate; Biphenylol sodium salt; O-phenylphenol; CAS 108-95-2; CAS 90-43-7; CAS 132-27-4						paints and coatings. Suggested Concentration: 0.05-1.0% by wt; Other interesting uses: Mainly used as a precursor to plastic production; Used as oral analgesics (ie, Chloraseptic, Carmex); Used for embalming; Used for execution in nazi death camps-Wikipedia Ref.; * Fairly safe in pre diluted solutions and the small amounts used in artist paints, but the pure chemical is highly toxic. Phenol MSDS sheet. Dowicide A - MSDS sheet
N/A	Polyethylene Glycol	Anti-Freeze; Ethylene glycol Polyethylene Glycol; Poly Glycol Ether; Propylene	N/A	Polyethylene Glycol	-	N/A	N/A	N/A	B	Used to slow drying time of acrylic paints; Used as Anti-freeze Used as binder in watercolors;
N/A	Propynyl Butyl Carbamate	Biodocarb [KP]; Carbamic Acid; Coatcide; Fungitrol; Guardsan; Glycacil; Iodocarb; Preventol; Propynyl Butyl Carbamate; Thompson's Wood Protector; Troysan Polyphase; *May be found in many preservatives, wood preservatives and pharmaceuticals*	N/A	Propynyl Butyl Carbamate; CAS 55406-53-6	Off white powder	N/A	N/A	N/A	C	Antimicrobial, antiseptic, disinfectant, fungicide, pesticide; The main artist use is as a preservative for paints and textiles; When used as a preservative in watercolors, artist paints and coatings. Suggested to use 0.5%, relative to solids content - Kremer Pigments Ref, MSDS Sheet
N/A	Pumice	Pumice [NP.p];	N/A	Volcanic Rock	Gray white	1	I	45	A	Mostly used to add "tooth" or texture
N/A	Sepiolith	Sepiolith	N/A	Hydrous magnesium silicate	White powder	4	N/A	N/A	A	Anti-settling agent and thickener for water based paints: Acrylics, Tempera, Watercolor, Gouache
N/A	Sodium Aluminium Silicate	Albite; Aluminosilicic acid, sodium salt; Aluminum Silicate;	N/A	Sodium Aluminium Silicate; Manufactured by the precipitation of	Translucent White to green	2-3*	I	H	A	* depends on binding medium, semi transparent in oils

		Aluminium Sodium Salt; Aluminum Sodium Silicate [SCH.p]; Fixwool; Jadeite; SODASIL®; Sasil; Sodium Aluminium Silicate; Sodium Aluminosilicate; Sodium Silicoaluminate; Sodium Silico Aluminate; Synthetic Zeolite; Zeolite		sodium silicate solution with aluminum sulphate. Not a specific compound but a group of related compounds consisting of sodium, aluminum, Silicate and oxygen; Used in foods as anti caking agent;(Ref: wikipedia); Used in water based / acrylic emulsion paints, internal and external applications. Also it is a Defoaming agent , matting / Flattening agent, Thickening and Thixotropic agent, Free flow / anti-caking agent in powder coatings. (Ref: Madhu Silica - PDF); Used as a filler (extender) and as a white pigment in paints, printing inks and paper, where it acts as a partial substitute for titanium dioxide. (Ref: SODASIL® P95, IQE); chemically inert, non-toxic CAS 1344-00-9						
N/A	Sugars	Corn Syrup; Dextrose; Honey; Glucose; Sugar; Sugar Syrup;		Sweet tasting carbohydrates		N/A	N/A	N/A	A	Used as a binder in watercolors; Hygroscopic: used as a humectant (retains water) in watercolor paints. Handprint (Ref); If too much is used, watercolors may be sticky after drying and reabsorb moisture.: "Used in excess, the sugars will also attract insects or mold"-Handprint (Ref);
N/A	Tixogel	Tixogel	N/A	Chemically changed Bentonite	White to yellowish brown	4	N/A	N/A	A	Thickener and stabilizer for oil paints
PW4	Zinc Oxide White	Blanc de Zinc [LB.o]; Chinese White [AS | DS.w | LK | MA.w.*w* | RT.w | WN.w.*w*]; C.I. Pigment White 4;	77947	Inorganic; Zinc Oxide; Making pigments: How to make Zinc White at	Translucent white; *Zinc Buff Yellowish light pale yellow † Lightens	2	I	10-22	A MSDS ICSC	Often Titanium White is mixed with Zinc White in artist's oil paints. Titanium White is said to be soft and "spongy" and Zinc White is said to be hard and

		French White; Hubbocks White; Mixing White [WN.a]; Neo-Zinc White [HO]; Permanent Chinese White [MR.o | SCH.w]; Permanent White; Pigment White 4; Sinopia Zinc White, transparent [SI.p]; Silver White; Snow Flowers; Snow White; Tint White [SE.a]; Transparent Mixing White [LQ.a]; Transparent Mixing White (Zinc White) [LQ.a]; Zinc Buff Yellowish* [WL.o.p]; Zinc Flowers; Zinc Oxide [GEN | KA | NP.p]; Zinc Mixing White [TA.a]; Zinc White [GEN | BX.o.w | CAS.k | CH | DR | DS.a.o.p | DV.k.o | GB.o | GO.a.ab.af.ag.ao | GR.o.o.wo | GU | HO.o | KA..o.p | KP.p | LB.o | LK | MA.a.g.o.o(artis).p | MG.a.g.o | MH.o | MR.o | MW.o | OH.a.o | PF.o | RGH.o.p | RT.o | SCH.a.g.o, SCHM.o | SE.t | SV | UT.o | WL.o.p | WN.o.w]; Zinc White Oxide [GB.p]; Zink White [SCH]		webexhibits.org; CAS 1314-13-2, CAS 91315-44-5	slightly, becomes brittle					"brittle". Together they supposedly cancel out each others cons.; New studies suggest zinc white may lead to premature cracking in oil colors (Ref), The studies may or may not pertain to mixtures with Titanium White in artist paints.
PW5	Lithopone	Albanol; Beckton White; Blanc de Titane [LB.o]; Cariton white; Charlton white; C.I. Pigment White 5; Diamond White; English White; Graves White; Griffith's White; Griffith's Patent Zinc White;	77115	Inorganic; "an insoluble mixture of barium sulfate and zinc sulfide that precipitates upon mixing solutions of barium sulfide and zinc sulfate. The precipitate is recovered by filtration, then calcined" (britannica.com Ref); "Complex co-precipitate, but not a compound, of calcium sulfate and zinc sulfide" (Ref	White	1-2	I	14	A	Sometimes used as a base for Lake pigments.; Added to artist, and so-called "designer" or "Illustrator" gouache paints to make a pigment more opaque and to lighten the hue, this is often not indicated on the art supply manufacturer's labels.;

		Jersey Lily White; Knight's White; Lithopone [GEN | KA.p | KP.p | SCH]; Lithopone Silver; Lithopone White [SE]; Marbon White; Mixing White [SCH]; Navin's White; Oleum white; Opaque White [LK]; Orr's White; Orr's Zinc White; Pigment White 5; Ponolith; Ross' white; Snow White; Structure White; Sulphogen White; Transparent White [LA.a]; White; White smalt; Zinc Baryta White; Zinc Mixing White [DR]; Zinc Sulfide [MA.p]; Zinc White [DR | HO.a | WN.g]		Color index 3rd Ed., V.4, Inorganic colorants CI 77115); Barium sulfate (28 - 30%) and zinc sulfide (68 - 70%) with trace amounts of zinc oxide; CAS 1345-05-7						Often used as a extender in cheap white paints.; Used as a white pigment or adulterant in artist paints, student grade paints and many light colored artist convenience mixes especially in economy priced paints.
PW6	Titanium White	Aeroweiss DS [SCH]; Anatase; Antique White [HO.w]; Buff Titanium [CAS.k | DB.o]; China white [PF.w]; Chinese White [HO.ag.w | MG.w]; Chalk White; C.I. Pigment White 6; Double White [MA.o(HD)]; Fast Drying Titanium White [CR.o]; Flake White Hue [DV.k]; Heavy Body White [SCH.a]; Inorganic Oxide White; Kronos Titanium Dioxide; Mixing White [WN.a];	77891	Inorganic; Titanium Dioxide (Ref at Boston Fine Arts CAMEO); Anatase (natural Mineral) (Ref at Boston Fine Arts CAMEO); Titanium (IV) Oxide Anatase; Titanium (IV) Oxide Rutile; Titanium (IV) Oxide Brookite LBNLPigment Database Spectral radiative properties; Inorganic Oxide White; Titanium Dioxide White; Titanium White (i); Titanium White (ii); Making pigments: Titanium White at webexhibits.org;	Purest White	1	I	18-30	A MSDS MSDS	* Often Titanium White is mixed with Zinc White in artist's oil paints. Titanium White is said to be soft and "spongy" and Zinc White is said to be hard and "brittle". Together they supposedly cancel out each others cons. This Pigment Database only has artist paints or pigments that are single pigment and not mixed. The term Titanium White has been used for almost any white pigment containing titanium, according to M. Laver in her chapter on Titanium White, in the book *Artists' Pigments: A Handbook of Their History & Characteristics*, Vol 3, 1997. Some other pigments associated with the name

		Inorganic Synthetic Opaque White; Opaque White [LK | SCH]; Permanent White [HO.g.wo | UT.w | WN.g]; Permanent White EX [HO.o]; Permanent White SF [HO.o]; Pigment White 6; Primary White [HO.g]; Quick-Dry White [HO.o]; Quick Drying White [HO.o]; Radiant White [GB.o]; Santorini White [MA.o(Med)]; Sinopia Titanium White Rutile [SI.p]; Super White [MA.o(artis)]; Tinting White [CR.a.o]; Titanium Buff [GO.a.ab.af.ag.ao | GU]; Titanium Dioxide [NP.p]; Titanium Dioxide White; Titanium Opaque White [SCH.w]; Titanium White* [GEN | AS | BX.o.w | CAS.k | CH | CL | CR.a.o | DB.a | DR | DS.a.o.p.w | DV.af.k.w | EP.p | GO.a.ab.af.ag.ao | GU | HO.a.ag.o.w.wo | JO.a | KA.ad.o.p | LA.a | LB.o | LK | LQ.a | MA.a.a.o.p | MG.a.w | MR.o | MT | OH.a.o | PF.o.o.w | RGH.o.p | RT.a.a.wo | SCH.a.g | SE.a.t | SQ.a | TA.a | UT.a | WL.o.p | WN.a.a.k.w]; Titanium White Dioxide [GB.p]; Titanium White Extra Opaque [OH.a]; Titanium White No. 1 [MH.o]; Titanium White No. 3 (with driers) [MH.o]; Titanium White		CAS 13463-67-7							Titanium White are Barium titanate, Lead Titanate, Potassium Titanate, Titanated lithopone, Titanium lithopone, Titanium phthalate, Titanium silicate and Zinc titanate.

		(opaque) [HO]; Titanium White (Opaque White) [WN]; Titanium White Rutile [KP.p]; Titanox; Translucent White [SCH.o]; Transparent Titanium White [RT.w]; Unbleached Titanium [RGH.o.p | SQ.a | TA.a | WL.o.p]; Warm White [SQ.a | TA.a]; White [AS | DR | HO | LA.a | MA | SE]; White Permanent [MW.wo]; White (Titanium) [DV]; XSL Titanium White; Zinc White Imitation [PF.o];								
PW7	Zinc Sulphide White	Chinese White; C.I. Pigment White 7; Matting; Opaque White [SCH.o]; Pigment White 7; Sphalerite; Wurtzite; Zinc blende; Zinc Buff [WL.o]; Zinc sulfide [KP.p; MA.p]; Zinc Sulphide White; Zinc White[RT.a.a | WL.o];	77995 77975	Inorganic; Zinc Sulphide White; CAS 1314-98-3	White to yellowish	1-2*	I	11-13	A**	Phosphorescent and electroluminescent properties, often used to make fluorescent and glow-in-the-dark paints; "It is often used for "invisible ink" that glows with exposure to ultraviolet light."- Dick Blick site reference; *Transparency increases the smaller the particles; **may have traces of lead
PW14	Bismuth Oxychloride	Bismuth White; Bi-Flair; Biluna Bismuth Oxy; Blanc d'Espagne; Blanc de Perle; Chloride Crystals; C.I. Pigment White 14; Liquid Mirror [TA.a]; Magistery of Bismuth; Pigment White 14	77163	Bismuth Chloride Oxide; Bismuth Oxychloride; CAS 7787-59-9	Silvery white with pearlescent or iridescence properties	-	-	L	A*	Used to add pearlescent and iridescence to paints; Often used in cosmetics to produce pearlescent shine; Often used to add metallic or pearlescent properties to paints.; *Can cause allergies and other claimed skin problems when used as cosmetic
PW15	Tin Oxide	Cassiterite;	77861	Tin(IV) Oxide;	white to gray	1	I	-	A*	Used to give subtle

		C.I. Pigment White 15; Flowers of Tin; Flowersoftin; Pigment White 15; Stannic Anhydride; Stannic Oxide; Stannous Oxide; Tin Dioxide; Tin Oxide; White Tin Oxide		Tin Monoxide; Tin III Oxide; Tin Dioxide; Tin Oxide; Tin Peroxide (Chemical references) Cassiterite (natural tin oxide ore) -mindat.org (Ref): CAS 18282-10-5]	with slight pearlescent sheen				MSDS	pearlescent properties to artist paints and pigments; Used in ceramic glazes; Used as a polishing agent for glass and metals; * Respiratory irritant, wear a mask when working with dry pigment.
PW18	Chalk	Aragonite [KP.p]; Alba Albula [KP.p]; Alabaster White; Aragonite; Bianco Carrara White Marble Dust [NP.p]; Bianco di Sangiovanni; Bianco san Giovanni; Biancho Secco; Bianco Verona White Marble Dust [NP.p]; Bologna Chalk [NP.p]; Calcite [NP.p]; Calcite White [KP.p]; Calcium Carbonate; Carrara marmor dust [KP.p]; Carrara Marble, White [KP.p]; Chalk [GEN | NP.p]; Chalk from Bologna [KP.p]; Chalk from Champagne [KP.p]; Chalk from Ruegen [KP.p]; C.I. Pigment White 18; Coarse calcium carbonate chalk [KA]; English White; Extra-fine calcium carbonate chalk [KA]; Gilders Gesso; Gilders Whiting; Grey Chalk from Sarti [SI.p]; Lime White; Limestone;	77220 + 77713	Inorganic; Natural Calcium carbonate with Magnesium carbonate as an impurity; Making pigments: lime white at webexhibits.org CAS 471-34-1	White to cream/blue/gray off white	1-4*	I	15-20	A MSDS	Can be affected by acids; Generally used as extender, thickener, matting agent in artist paints and to add tooth to traditional gesso and acrylic gesso and primers; Used as a base for some lake pigments Used to neutralize acids in artist papers and painting conservation; Added to watercolors to make Gouache in artist, designer and illustrator paints. Used to make watercolor gouache paints matte and more opaque, but usually not indicated on the art suppliers literature; Used in making pastels and other colored chalks and drawing sticks; Promotes thru drying and other claimed benefits to an oil paint film, *see Calsite Sun Oil and Chalk Putty*. More info on Calsite mediums from NP. ; Added to lead white to make the soft translucent mixing white *Ceruse* (Ref); Marble (chalk) in solid form is used for sculpture, pottery, architecture and many other arts. * Opaque in water

		Marble; Marble Dust [GEN | DS.p | EP.p | KP.p | SI.p | UT]; Marble Dust Italian [KP.p]; Marble Flour [EP.p]; Marble Flour Extra Fine [EP.p]; Marble Meal [EP.p]; Paris White; PCD French Chalk [SI.p]; Pigment White 18; Powdered Marble [SCH]; Saint John's White; Sarti Chalk Greyish [KP.p]; Stone Chalk [KP.p]; Tailor's Chalk; Travertine; Troy White; Troyes White; Veroneser White [KP.p]; Veronese White Marble[KP.p]; White Chalk [KP.p]; White Earth from Carrara [MA.o]; Whiting [GEN | GB.o.p | SI.p]; Whiting Chalk [EP.p]; Yellow Chalk from Sarti [SI.p]									media, but nearly transparent in oil Binder.;
PW18	Precipitated Chalk	Calcium Carbonate [KP.p]; Calcium Carbonate Coarse [KA.p]; Calcium Carbonate CP; Calcium Carbonate Extra fine [KA.p]; Calcium Carbonate (precipitated chalk) [GU]; Calcium carbonate (USP); Calcium monocarbonate; Calcium trioxidocarbonate; C.I. Pigment White 18; Pigment White 18; Levigated chalk; Precipitated Chalk [DS.p].	77220	Pure Calcium Carbonate; CAS 471-34-1	White	1-4*	I	55	A MSDS	See above for artist uses.

		Also all the names above for natural chalk are often used.								
PW18:1	Dolomite	Ankerite; Aragonite; Calcite; C.I. Pigment White 18:1; Dolomite [KP.p]; Dolomitic Limestone; Egyptian Dolomite; Huntite; Magnacite; Pearl Spar; Pigment White 18:1; Spanish White [KP.p]; Sugar Dolomite [KP.p];	77220:1 + 77713:1	Inorganic; Natural Calcium carbonate with Magnesium carbonate; Mineral (Ref); (Ref); (Ref); As pigment (Ref); Making pigments: lime white at webexhibits.org CAS 7000-29-5; CAS 546-93-0	White to pale pink to yellowish white	1-4*	I	12 –14	A MSDS	* Nearly transparent extender in oils
PW19	Kaolin	Aluminum Silicate Hydroxide; Argilla; Bentone; Bentonite [KP.p]; Bolus Alba; Brick Dust; Caolin; China Clay [DS.p; KP.p]; China clay, kaolin [KA]; C.I. Pigment White 19; Devonshire Clay; Electros; English Caolin; Hydrated Aluminium Silicate Kaolin [GU]; Kaolinite; Natural White Earth [KP.p]; Neokaolin; Organoclay [NP.p]; Paper Clay; Pipe Clay; Pyrophyllite; Pigment White 19; Porcelain Clay; Supreme White; Vicenza Earth [NP.p]; White Bole; White Bolus;	77004 77005	Inorganic; White Clay Rock, mostly natural hydrated Aluminium Silicate with Impurities of Magnesium, Iron carbonates, Ferric hydroxide, Mica, Quartz-sand, etc. (Ref Colorindex 3rd Ed., V.4, Inorganic colourants CI 77004) Kaolin (Ref at Boston Fine Arts CAMEO Art Materials Database); *** Organoclay is a derivative of a bentonite. CAS 8047-76-5	Bright White; can have blue, green, red, orange or brown undertones*	1-4**	I	26 - 55***	A MSDS MSDS ICSC	* Calcined Kaolin produces whiter shades.; ** Opacity depends on manufacture, binder and other mineral properties.; *** Oil absorption varies some by manufacture method & particle size. Purity and other natural mineral properties may have some effects. *see inert pigments*

		White Heart; White Kaolinite [NP.p];								
PW20	Mica	Biotite; C.I. Pigment White 20; Fine Mica [GU]; Gold Coarse Mica [GU]; Glimmer White; Interference Blue [OH.a?*]; Interference Green [OH.a?*]; Interference Lilac [OH.a?*]; Interference Red [OH.a?*]; Iridescent Pearl White [WL.o]; Iridescent White [MA.p]; Lepidolite; Metallic White [HO.ag]; Mica [GEN]; Mica Powder [SI.p]; Mica Titanate; Mica White [KP.p]; Moon White [MA.o(HD)]; Mother Of Pearl [TA.a]; Muscovite; Muscovite Mica [KP.p]; Muscovite Mica, brilliant [KP.p]; Muscovy Glass; Natural Mica, Pearlescent Powder [KA.p]; Pearl Blue [HO.a]; Pearl Lustre; Pearl White [HO.a.g]; Pearlescent White; Phlogopite; Pink Mica [GU]; Pigment White 20; Russet; Silver [HO.w]; Stardust Blue [MA.o(HD)?*]; Stardust Purple [MA.o(HD)?*]; Super Sparkle White	77019	Inorganic; Hydrous Aluminium Potassium Silicate; Mica Titanate (micronized mica flakes); "a type of natural quartz, which occurs in the form of compressed thin sheets or plates that divide easily" (Ref THE ARTIST'S HANDBOOK by Pip Seymour); $H_2KA_{l3}(SiO_4)_3$ CAS 12001-26-2	Translucent pearlescent or shimmering off-white	4	I	45-50	A MSDS	Adds metallic, iridescent and pearlescent properties to paints.; Natural Mica and larger particles may harm oil paint film, very fine particles and micronized Mica Titanate is more suitable for oil (Ref). ?* may have small amount of other pigment added for tint.

		Mica Powder [EP.p]; Titanated Mica; White Coarse Mica [GU]; White Fine Mica [GU]; White Medium Mica [GU]; White Muscovite; Zinnwaldite; *Also many colors with Iridescent, Pearl, or Metallic prefix or suffix.*								
PW21	Barium Sulfate (Synthetic)	Artificial Barite; Barite [NP.p]; Barium Sulfate [KA]; Barium White; Baryta White; Blanc Fixe [KP.p | SCH]; C.I. Pigment White 21; Constant White; Hepatite; Italian Gesso [NP.p]; Permalba; Pigment White 21; Pigment White 22 (natural); Precipitated Barium Sulphate; Sulfate de Baryum; Sulfato de Bario; Synthetic Barium Sulfate; Tyrol White	77120	Inorganic; Synthetic Barium Sulfate: used as a white pigment, more often as as an extender or adulterant. The natural mineral baryte is roasted with coal, burning off the carbon monoxide and sulfur dioxide. The product is then dissolved in water and filtered. The pure barium sulfate can then be precipitated out with sodium sulfate. (Ref Pigment Compendium, *by Nicholas Eastaugh, Valentine Walsh, Tracey Chaplin and Ruth Siddall*, Copyright © 2008, p.44-45); Barium Sulfate (Ref at Boston Fine Arts CAMEO Art material Database); CAS 7727-43-7	White	2-3*	I	15-25	A** ICSC	*Used as an filler, extender, to improve handling, increase opacity (in watercolor and gouache), and/or adulterant in oil colors.; Barium Sulfate or Blanc Fix is very heavy and when used in paints may make the tube feel heavy. Because of that it is often used to adulterate Lead White, or added to paints as a adulterant filler simulating a high pigment load (Ref THE ARTIST'S HANDBOOK by Pip Seymour); Used as a base for more opaque lake pigments; ** Pure Barium Sulfate is not soluble so it is safe, but poorly made synthetic Barium Sulfate may have free soluble barium compounds as impurities that are very poisonous (Ref). I Recommend only getting from a reliable source. *see inert pigments*
PW22	Barytes (Natural Barium Sulfate)	Barita (Esp.); Barite (Fr., Port.) [NP.p]; Baritina (Esp.); Barium sulfate; Barium white;	77120	Inorganic; Natural Barium Sulfate: Usually white or off white, impurities may tint it a wide variety of colors. (Ref Pigment	White to off white	2-3*	I	11	A**	Used as an filler, extender, to improve handling, increase opacity (in watercolor and gouache), and/or adulterant in oil colors. Also used as

		Barus (Gr.); Baryt (Deut., Pol., Sven.); Baryta; Baryta White; Baryte; Barytes; Barytine; Basofor; Bologna Stone; Bolognian Spar; Bologna white; C.I. Pigment White 22; Calk; Cauk; Cawk; Desert Rose; Heavy Spar; Mineral White; Natural Barium Sulfate; Pigment White 21; Pigment White 22; Ponderous Spar; Schwerspat (Deut.); Sulfate de Baryum; Sulfato de Bario; Tiff; Tyrol white *Also see Pigment White 21 above*		Compendium, *by Nicholas Eastaugh, Valentine Walsh, Tracey Chaplin and Ruth Siddall*, Copyright © 2008, p.46); Natural Barium Sulfate Ore (Pigment White 22) (Ref: Natural Pigments); Barite (Ref at Boston Fine Arts CAMEO Materials Database); CAS 7727-43-7						a base for more opaque lake pigments; Barium Sulfate or Blanc Fix is very heavy and when used in paints may make the tube feel heavy. Because of that it is often used to adulterate Lead White, or added to paints as a adulterant filler simulating a high pigment load (Ref THE ARTIST'S HANDBOOK by Pip Seymour); ** Barium Sulfate is not soluble so it is safe, but poorly made Barium Sulfate, or raw natural Barium Sulfate may have impurities or free soluble barium compounds that are very poisonous (Ref)
PW23	Alumina Blanc Fixe	Alum; Alumina Blanc Fixe; Aluminium Hydrate; Blancopone; C.I. Pigment White 23; Gloss White; Pigment White 23	77122	Aluminum hydrate, Barium sulfate; Co-precipitate of about. 25% aluminium hydroxide and 75% barium sulfate (Ref Color index 3rd Ed., V.4, Inorganic colorants, chemical constitution number CI 77122) used as "clear oil colour" (Ref Color Index Third Ed)	White Crystalline Powder	1-4*	I	-	A** ICSC	Used as an filler, extender, to improve handling, and/or adulterant in oil colors. Also used as a base for lake pigments; * Depends on binder or medium, opaque to semi-opaque in water colors, nearly transparent in oil paints ** Barium Sulfate is not soluble so it is safe, but poorly made Barium Sulfate may have free soluble barium compounds that are very poisonous (Ref)
PW24	Aluminium Hydroxide	Alumina; Alumina Hydrate	77002	Aluminum Hydroxide can have varying amounts of basic	Translucent White powder*	3-4**	I	33-55***	A MSDS	*see inert pigments

		[KA.p]; Alumina Trihydrate; Aluminum Hydrate; Aluminum Hydrate White; Aluminum Hydroxide[1]; Aluminum Hydroxide Fine [KP.p]; Aluminum Hydroxide Medium [KP.p]; Aluminum Oxide Trihydrate; Aluminum Trihydrate [NP.p]; Aluminum White; C.I. Pigment White 24; Gloss White; Hydrated Alumina; Hydrated Aluminum Oxide; Transparent Blender [DS.o]; Transparent White; Trihydroxyaluminum; Alumina White; Pigment White 24		aluminium sulfate (Ref Colorindex 3rd Ed., V.4, Inorganic colourants CI 77002); Alumina Trihydrate (Ref at Boston Fine Arts CAMEO Database); Aluminum hydroxide, is a metallic salt and soap of aluminum. CAS 21645-51-2					ICSC[1]	**Transparent in oils *** Oil absorption depends on particle size One of the most common metallic bases for precipitating dyes to make lake pigments (Ref wikipedia). Often used as a filler, extender and adulterant to increase volume of a paint or pigment. Used this way it lowers the tinting strength of the mixed pigment. In the case of very strong colors like the Pthalo's it is not considered an adulterant, it is also added in small amounts to improve paint handling. Very often it is used to greatly extend pigments in cheaper paints and pigments where it is considered an adulterant. Overuse may cause some yellowing and darkening in oil paints. (Ref The Artist's Handbook by Pip Seymour); (Ref The Artist's Handbook by Ralph Mayer)
PW24	Gibbsite (Natural form of Aluminum Hydroxide)	Aluminum Hydroxide; Bayerite; Boehmite; C.I. Pigment White 24; Diaspore; Doyleite; Gibbsite; Hydrargillite; Natural Aluminum Hydroxide; Nordstrandite Pigment White 24	-	Natural Aluminum Hydroxide with varying amounts of basic aluminium sulfate CAS 21645-51-2	Brown tinted Translucent Flakes	4	I	33	A	Can be used the same as Aluminum Hydroxide, but may could have impurities and be more opaque or off color in artist paints.
PW25	Gypsum	Anhydrous sulfate of lime**; Alabastar [NP.p]; Alabaster Gypsum; Alabaster White	77231	Inorganic; Hydrated calcium sulfate (Ref); (Gypsum Ref at Boston Fine Arts); (Alabaster Ref at	White	1-3*	I	18-22	A	*Nearly transparent in oils used as an extender, filler and/or adulterant;

		[KP.p]; Albarine; Annalin**; Atlas Spar; Bologna White; C.I. Pigment White 25; Crown Filler; Gesso; Gypsum; Lady's Ice; Light Spar; Mineral White; Magnesia White?; Native Calcium Sulfate; Natural Gypsum; Natural Calcium Sulfate; Natural Sulfate of Lime; Pigment White 25; Plaster of Paris**; Precipitated Calcium Sulfate; Puritan Filler; Satin Spar; Silk Spar; Selenite; Specular Stone; Sulfate of Lime; Terra Alba [DS.p; KP.p | NP.p];		Boston Fine Arts); CAS 91315-45-6 CAS 10101-14-4 ** Anhydrous form of calcium sulfate or calcined gypsum						Used in traditional artists gesso.; May make brittle gesso? (Ref); High quality pure Calcium Sulfate Terra Alba available from Natural Pigments. Alabaster Natural Hydrated Calcium Sulfate also from Natural Pigments
PW26	Talc	Agalite; Alberene® Soapstone; Asbestine; C.I. Pigment White 26; French Chalk [DS.p}; Lard Stone; Mistron®; Nicron®; Pigment White 26; Pot Stone; Steatite; Soapstone; Spanish Chalk; Tailors Chalk; Tak; Talc [GU | KA.p]; Talcum [SCH]; Talcum Powder [SI.p];	77718 + 77019	Inorganic; Mixed Hydrated Silicate of Magnesium with varying impurities of Calcium, Iron and other compounds; Hydrated Magnesium Silicate (Ref Boston Fine Arts); CAS 14807-96-6 CAS 8005-37-6	Slightly off white to light grey	1-3*	I	30 - 45	A MSDS ICSC	*Nearly transparent in oils used as an extender, filler and to change rheological properties of paints

		Talcum White [KP.p]; Talk; Vertal;								
PW27	Amorphous Silica	Pigment White 27; Silica; Sand; Quartz	77811	Inorganic; Silica CAS 7631-86-9	White to off white transparent crystals	4	N/A	20 - 50	A	Filler; Flatting agent; Usually added to paints or grounds for tooth or texture.
PW27	Silica	C.I. Pigment White 27; Cristobalite Powder [KP.p]; Diatomaceous Earth [GU]; Diatomaceous Silica; Diatomic Earth; Diatomite; Fossil Flower; Fuller's Earth; Infusorial Earth; Microdol; Mountain Crystal [KP.p]; Pigment White 27; Precipitated amorphous silica; Rock Crystal [KP.p]; Silica; Silicon Dioxide; Sand; Tripoli; Quartz; Quartz Powder [KP.p]; Tripolite;	77811	Inorganic; Two types: Hydrous = diatomaceous earth; Anhydrous = silica (Ref Color Index Third Ed); Silicon Dioxide (amorphous) or anhydrous silica is pure chemical form; Natural Diatomaceous Earth is the Hydrous form made up of the fossilized skeletal remains of aquatic plants called diatoms (Ref); CAS 7631-86-9	White to off white	1-4*	I	L	A	Used mostly to add tooth or texture; *Transparency depends on binder and particle size, also the crystalline structure.
PW27	Fumed Silica	AERODISP®; AEROSIL®; CAB-O-SIL®; Dry Water*; Fumed Silica [KA.p | NP.p]; Fumed Silica Gel; Fumed Quartz; Nanospheres; PERFORM-O-SIL; Pigment White 27; PROFUSIL (Fumed Silica); Pyrogenic Silica	77811	Inorganic; Silicon Dioxide; (Ref); CAS 69012-64-2	White Translucent Powder	4	N/A	150 - 300	A**	Used to alter Rheology of artist paints, printing inks and industrial coatings,; (Ref); Used in thixotropic gel mediums for artists paints; viscosity stabilizer; emulsifier; Filler; Flatting agent; Anti-caking agent; Prevents pigment flocculation.; * water encapsulated in fumed silica,;

										** Wear respirator until combined with oil when grinding oil paints.
PW28	Calcium Silicate	Anhydrite; Calcium Silicate; Calcium Metasilicate; C.I. Pigment White 28; Baysical K; Pigment White 28; Wollastonite (mineral)	77230	Inorganic; Calcium Metasilicate; Calcium Silicate; CAS 10101-39-0; CAS 10101-41-4; CAS 13397-24-5; CAS 26499-65-0; CAS 7778-18-9	White to light cream	2-3*	I	M	A	*Depends on binder and particle size
PW28	Hydrated Calcium Silicate	C.I. Pigment White 28; Hydrated Calcium Silicate; Pigment White 28;	77230	Inorganic; Hydrated Calcium Silicate	Bright White	4	I	H	A	-

Miscellaneous Historic Pigments, Mineral Pigments, Unclassified and Exotic Pigments

Metallic Pigments | Inert Pigments and Additives | Mineral Pigments & Unclassified | Page Top^
Oil Paint Mediums and Siccatives | Watercolor Mediums & Additives | Acrylic Mediums and Additives

Color Index Generic Name	CI Pigment Name	Common, Historic and Marketing Names	C.I. Constitution Number	Chemical Composition	Color Description † = Long Term Effects of Light	Opacity 1 = opaque 4 = trans.	Light Fastness I = excel. IV=Fugitive	Oil Absorption g/100g		Side Notes
N/A	Amazonite	Amazonite; Amazonite HAKUSUI-MATSU [KP.p]; Amazonite Genuine [DS.o.w]; Amazon Jade; Amazon stone; Potassium Feldspar; K-feldspar	N/A	Green variety of microcline feldspar, a potassium aluminum silicate containing lead (Ref); Color thought to be from copper, iron or lead salts (Ref), (Ref).	Light green to dark turquoise green	4	I	-	A-B**	* more info on the Dan Smith PrimaTek™ artist paints and other mineral pigments at the watercolor Handprint.com site **Trace amount of lead
N/A	Apatite	Apatite; Blue Apatite Genuine* [DS.w] Green Apatite; Green Apatite Genuine* [DS.w]	N/A	Calcium fluorine-chlorine-hydroxyl phosphate; often with manganese and cerium; Calcium Fluoro Phosphate, Calcium Chloro Phosphate, Calcium Hydroxyl Phosphate. (Ref), (Ref)	Dark, Navy Blue; yellow green; olive green; light yellow	3	I	-	A	* more info on the Dan Smith PrimaTek™ artist paints and other mineral pigments at the watercolor Handprint.com site
N/A	Azurite	Azurita; Azurite;	77420	Natural basic carbonate of	Bright blue to greenish blue	4	I**	23	B	* more info on the Dan Smith

		Azurite (coarse grade) [NP.p]; Azurite-Deep Blue [KP.p]; Azurite-Deep, Very Fine [KP.p]; Azurite (fine grade) [NP.p]; Azurite GUNJYOU [KP.p]; Azurite Genuine [DS.w*]; Azurite-Greenish Grey-Blue [KP.p]; Azurite MP Deep [KP.p]; Azurite MP exclusive [KP.p]; Azurite MP, extra deep [KP.p]; Azurite MP greenish light [KP.p]; Azurite MP Pale [KP.p]; Azurite Natural [KP.p]; Azurite-Standard [KP.p]; Azurite-very fine [KP.p]; Azurro; Azurium Citramarinum; Azzurrite; Blue Bice; Blue Mountain; Blue Verditer; Bice; Bremer Blue; Cendre Bleu; Cendres Blue; Coeruleum; Copper Glaze; Lapis Armenius; Lapis Azurite [OH]; Mountain blue; Pigment Blue 30; *see Pigment Blue 30*		copper; Hydroxo copper carbonate; Copper Carbonate Hydroxide; Blue Verditer and bice are synthetic basic copper carbonate. (Ref); (Ref)						PrimaTek™ artist paints and other mineral pigments at the watercolor Handprint.com site **Light fast in artist paints but may be decomposed by acids and may be blackened by sulfur compounds and Sulfide paints (Ref): May sometimes darken or become greenish in oil binders. (Ref): Courser grades are deeper blue getting lighter the smaller the particle size. (Ref).
N/A	Bauxite	Alumine hydratée des Baux; Aluminum Ore; Bauxite; Bauxite Mummy [NP.p*]; Bauxite Ore; Beauxite; Cliachite; Karst Bauxite; Kliachite; Kljakite; Lateritic Bauxite; Mummy [NP.o]; Mummy Bauxite*	N/A	Bauxite is the primary ore of aluminium; Mixture of gibbsite, boehmite and diaspore Geology.com (Ref); Aluminum ore; Wikipedia (Ref): Comprised of iron and aluminium hydroxides and oxides mindat.org (Ref)	Dull reddish brown	3	I	-	A	* Lots more info at the Natural Pigments website. ** More info on the Dan Smith PrimaTek™ artist paints and other mineral pigments at the watercolor Handprint.com site

		[DS.w**]; Mummy Violet [NP.p]; Pigment Brown 7; Wocheinite								
N/A	Black Hematite	Black Hematite; Black Iron Ore; Bloodstone; Bloodstone Genuine [DS.w*]; Heliotrope; Hematite [DS.o*]; Iron Black; Psilomelane	N/A	Natural Black Iron Oxide (Ref)	Violet Red or Silvery Black; Reddish gray when made into a powder	4	I	-	A	* more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.
N/A	Bloodstone	Bloodstone; Bloodstone Genuine [DS.w*];	N/A	Green jasper with red spots of iron oxide; Chalcedony quartz	Reddish gray when made into a powder	4	I	-	A	* more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.
N/A	Bronzite	Bronzite; Bronzite Genuine* [DS.w]; Burnt Bronzite Genuine* [DS.w];	N/A	"A ferriferous variety of enstatite" -Wikipedia; Silicate of magnesia and iron (Ref) from Mindat.org	Coppe-bronze brown with metallic lustre	4	I	-	A	* more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.
N/A	Cavansite	Cavansit; Cavansite [KP.p]; Cavansite, extra fine [KP.p];	N/A	Calcium vanadium silicate	Pale greenish sky blue	-	-	-	A	-
N/A	Cinnabar	Chinese red; Cinnabarite; Llimpi Merkurblende; Mercurblende; Minium; Nium; Quecksilbersulfidrot; Sulfur Red Mercury; Vermeil Zinnober; Vermillion; Vermilion	N/A	Mercury Sulfide	Bright Scarlet to to red brown	1	I-III*	L	C	Natural mineral of Vermillion (Ref); *light fastness seems to be affected by origin, hydrothermal silica, preparation method and impurities. (Ref); (Pic);
N/A	Conichalcite	Conichalcite [KP.p]	N/A	Natural mineral, Copper arsenic carbonate; 24,5 % copper and 28 % arsenic. MSDS; (Ref); (Ref); (Ref and Pic)	Dull pale green	-	-	-	D* MSDS ICSC	Contains arsenic and copper use extreme caution when handling the dry pigment. Even when made into paint it is still very poisonous.
N/A	Cuprous oxide/Copper Red	Copper Red; Cuprous oxide	77402	Cuprous oxide; Copper Oxide	Red	-	-	-	A MSDS	-

N/A	Coral	Black Coral; Blue Coral; Coral Pink [KP.p]; Precious coral; Red Coral; Sango Matsu	N/A	Mostly calcium carbonate. Composed of skeletons from colonies of soft-bodied marine animals of the class Cnidaria Anthozoa.	White; off-white; reddish; pink; blue; and black	2-4*	I	-	A	Red (precious coral) is the most valuable; and makes a delicate pink pigment. Used mostly in Japan. * semi-opaque in watercolors but would be nearly transparent in oil colors.
N/A	Egg Shells	Eggshell White; Calx de tistis ovorum; Shell White	N/A	Powdered egg shells; mostly calcium carbonate; Brown eggs contain Ooporphyrin with a small amount of biliverdin with 2-3% eggshell pigment	White; light brown*; light blue*	1	I*	-	A	"an incomparable white that can not be surpassed by lead white or any other white in the world if it is made carefully and well" - *Secrets di Don Alessio Piemontese* (Secrets of Alessio Piemontese), 1557. (Ref); * Any coloring other than white is probably fugitive
N/A	Egyptian Mummy	Caput Mortuum; Cardinal Purple; Egyptian Brown; Egyptian Mummy; Hafkenscheid Mumie; Mummy; Mummy; Mummy Brown; Mummy Powder	N/A	The ground up bodies of mummies, containing asphaltum and embalming resins*	Dark Dull violet Brown	4	III	-	A	* I'm skeptical as to whether this artists color was ever really mummies or just rumors or marketing snake oil (Ref). Usually imitated with asphaltum or earth brown pigments in modern artist paints. Natural Pigments has some information on mummy pigment here; More info on Asphaltum and mummy used in historical artist paints from www.old.amolf.nl
N/A	Epidote	Epidot; Epidote [KP.p]; Epidote, greenish extra [KP.p]; Pigment green 23	N/A	Calcium aluminium iron sorosilicate	Golden yellowish green	4	I	-	A	*"It has a hue that could be described as a golden pea green, and when mixed with white has a low tinting power but is quite lovely. However, the texture is unpleasantly gooey"* - Margret Short
N/A	Fuchsite	Fuchsite [KP.p]; Fuchsite Genuine* [DS.w]; Chrome-mica; Chromian Muscovite;	N/A	Greenish variety of muscovite (Ref), (Ref); Phyllosilicate Chrome-muscovite	Green to iridescent green; Iridescent Reddish	4	I	-	A	*more info on the Dan Smith PrimaTek™ artist paints and other mineral pigments at the watercolor site Handprint.com.

		Chrommuscovite; Gaebhardite; Green Muscovite								
N/A	Garnet	Almandine; American Ruby**; Bohemian Ruby**; Carbuncle; Garnet Genuine*** [DS.w]; Garnet Powder Red [KP.p]; Garnet Sakura-Nezumi [KP.p]; Garnet Sand Red; Pyrope; Red Garnet; Rocky Mountain Ruby**	N/A	Garnet mineral; CAS 1302-62-1	Light to deep blueish pink*	4	I	-	A	Rhodonite (see below) is a variety of Garnet; * Garnets exist in all colors except blue; ** Not a real ruby; (Pyrope Ref); (Almandine Ref); *** more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.
N/A	Guanine	Fish Silver [KP.p]; Guanin; Guanine; Natural Pearl Essence	N/A	Guanin, Iminoxanthin, 2-Amino-6-oxypurin; Pearl essence extracted from scales of fish, mostly from herring and sardines.; CAS 73-40-5	Iridescent white to silver	4	-	-	A	-
N/A	Iriodin®	Ancient Gold [SCH.a]; Classic Gold [SCH.a]; Renaissance Gold [SCH.a]; Red Gold [SCH.a]; Iriodin® Iriodin® 500 Bronze; Iriodin® 221 Fine Satin Blue; Iriodin® 530 Glitter Bronze; Iriodin® 355 Glitter Gold; Iriodin® 300 Gold Pearl; Iriodin® 120 Lustre Satin; Iriodin® 504 Red Iriodin® 502 Red-Brown Iriodin® 303 Royal Gold; Iriodin® 323 Royal Gold Satin; Silver [SCH.a];	N/A	Micronized Mica covered with a thin layer of metal oxides	Iridescent white, reddish, greenish, blueish, silver, gold**	-	-	-	A	** Tint depends on metal that coats the mica.
N/A	Iron Pyrite	Fool's Gold; Iron Sulfide; Pyrite Powder [KP.p];	N/A	Iron Pyrite; Iron Sulfide	Metallic Golden Yellow to lustrous greenish gray	-	-	-	A MSDS	Used to color beer bottles
N/A	Jadeite	Jade; Jadeite: Jadeite Genuine [DS.w*];	N/A	Silicates Containing Aluminum and other Metals (Ref);	Deep Green	3	I	-	A	Semi-precious stone;

		Jade, medium [KP.p];		Aluminium-rich pyroxene						* Dan Smith PrimaTek™ artist paint
N/A	Kinoite	Hydrated Calcium Copper Silicate; Calcium Kupfersilicat	N/A	Natural Crystalline Hydrated Calcium Copper Silicate; (Ref), (Ref)	light azure blue	4	I	-	B	Similar to Egyptian Blue PB31; Utah, Arizona, USA largest sources; (Ref); (Pic)
N/A	Kyanite	Kyanite; Kyanite Genuine [DS.w]; kyanos	N/A	Aluminum Silicate* (Ref), (Ref), (Ref); Kyanite is a polymorph with the two other minerals: Andalusite and Sillimanite	Deep blue** to blue gray	4	I	-	A	Gemstone; * Chemically similar to Lapis Lazuli; ** Although usually blue, Kyanite can also be bright green
N/A	Lapis Lazuli	Armenian Blue; Genuine Lapis Lazuli [WL.o]; Genuine Lapis Lazuli (natural Ultramarine) [DS.a.o.w]; Lazurite (Lapis Lazuli) [NP.p]; Lapis Lazuli [GEN | OH]; Lapis Lazuli (Afghanistan, standard) [NP.p]; Lapis Lazuli (Baikal, Russia) [NP.p]; Lapis Lazuli from Chile [KP.p]; Lapis Lazuli Genuine [GEN | DS.a.o.w* | DV]; Lapis Lazuli, greyish-blue [KP.p]; Lapis Lazuli (premium) [NP.p]; Lapis Lazuli, pure [KP.p]; Lapis Lazuli, sky-blue [KP.p]; Lapis Lazuli (standard) [NP.p]; Lapiz Ultramarine; Lazuline Blue; Pigment Blue 29*; Ultramarine [GEN]; Ultramarinum; *see Ultramarine Blue PB29*	77007	Lazurite, extracted from the semi-precious stone Lapis Lazuli. Sodium Calcium Aluminum Silicate Sulfate (Pic); (Ref); (Ref)	Bright violet blue to deep blue	4	I	39	A	Natural Mineral of PB29 Ultramarine Blue.; * more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.
N/A	Cobalt Red	Cobalt Red; Magnesium Cobalt Oxide	N/A	Magnesium cobalt oxide	Red	-	-	-	-	-
N/A	Malachite	Bremen Green; Chrysocolla; Hungarian Green;	N/A	Natural Basic copper(II) carbonate; (Ref), (Ref) as pigment;	Bright green	2-3	I	-	B	Can be effected by acids

		Iris green; Malachite [KP.p]; Malchite, Arabian [KP.p]; Malachite Fibres [KP.p]; Malachite (fine grade) [NP.p]; Malachite Genuine [DS.o.w]; Malachite MATSUBA-ROKUSYOU [KP.p]; Malachite natural [KP.p]; Malachite MP [KP.p]; Mineral Green; Mountain Green; Olympian Green; Pigment Blue 30; Verde Minerale; Vert de Montagne *See Copper Carbonate Hydroxide PG39 and Green Bice*		(Ref), (Ref) as mineral.						
N/A	Metal Oxide Coated Mica	Bronze [HO.ag.a(gesso) | SCH.o.o(Mus)]; Bronze (Imitation) [DR.a]; Burnished Copper [CR.a(jo)]; Copper (Imitation) [CR.ao.o | DR.a]; Classic Gold [SCH.o]; Gold [HO.ag.a(gesso)]; Interference Blue [OH.a | WL.o.p]; Interference Green [OH.a | WL.o.p]; Interference Lila [OH.a]; Interference Red [OH.a | WL.o.p]; Interference Violet [TA.a.af | WL.o.p]; Iridescent Bright Gold [OH.a]; Iridescent Bronze [OH.a | TA.a.af | WL.o.p]; Iridescent Burnt Sienna [DV.w]; Iridescent Copper [DV.a | TA.a.af | WL.o.p]; Iridescent Copper Light [DV.a]; Iridescent Deep Copper [OH.a]; Iridescent Gold [DV.a]; Iridescent Gold Deep [TA.a.af]; Iridescent Hansa Yellow [DV.w];		Metal Oxide Coated Mica; Usually coated with titanium or iron but other metals and pigments are used to give it an overall color or hue. The transparent mica flakes are coated with a thin layer of metal oxide, usually titanium dioxide. The refractive and reflective surface layer that coats the less refractive and transparent mica results in pearlescent effects and luminescent sheen from light interference. (Ref: The preparation and characteristics of pigments based on mica coated with metal oxides, *by Va´clav Stengl, Jan S˘ubrt, Snejana Bakardjieva, Andrea Kalendova, Petr Kalenda*, 2003): (Ref: Surface Treatment for Mica-Based Pearls, *by David Schlossman, Frank*	Many colors with Pearlescent, Iridescent or metallic effects depending on added pigments or metal coating material.	1-3*	I**	-	A***	* depends on added pigments and other formula ingredients ** the pure coated mica is light fast, but the light fastness of the color depends on the dyes and pigments mixed in to any specific formula. *** The pure coated mica is generally safe but it can also depend on the added dyes and pigments, although toxic pigments are not usually used in the paints made from it.

Iridescent Light Copper [OH.a];

Iridescent Naphthol Red [DV.w];

Iridescent Pale Gold [TA.a.af | WL.o.p];

Iridescent Pearl [DV.a | OH.a];

Iridescent Pearl White [WL.o.p];

Iridescent Pewter [OH.a | WL.o.p];

Iridescent Phthalo Blue [DV.w];

Iridescent Phthalo Green [DV.w];

Iridescent Raw Sienna [DV.w];

Iridescent Royal Gold [OH.a];

Iridescent Silver [OH.a];

Metal Oxide Coated Mica;

Mother of Pearl [TA.a.af];

Pale Gold [CR.a(jo).ao.o];

Pearl Black [DR.a];

Pearl Blue [HO.a];

Pale Gold [HO.a.ag];

Pearl Copper [HO.g];

Pearl Gold [HO.a.g];

Pearl Green [HO.a];

Pearl Pink [HO.a];

Pearl Red [HO.a];

Pearl Silver [HO.a];

Pearl Sparkle [HO.a];

Pearl White [CR.a(jo). | HO.a.g];

Pearl Yellow [HO.a];

Pearlescent Black [OH.a];

Pearlescent Blue [OH.a];

Pearlescent Crimson [OH.a];

Pearlescent Delft Blue [OH.a];

Pearlescent Green [OH.a];

Pearlescent Jade [OH.a];

Pearlescent Lemon [OH.a];

Pearlescent Magenta [OH.a];

Pearlescent Orange [OH.a];

Pearlescent Purple [OH.a];

Pearlescent Scarlet [OH.a];

Pearlescent Turquoise [OH.a];

Mazzella, David Cornelio, Shirley Wang, Pascal Delrieu Ph.D. and Yun Shao Ph.D., Kobo Products, Inc. 2004)

(Ref: BASF effect pigments):

(Ref: Patent no. US4146403 A):

		Pearlescent Vermillion [OH.a]; Pearlescent Violet [OH.a]; Pearlescent White [OH.a]; Pearlescent Yellow [OH.a]; Rich Gold [CR.a(jo).ao.o]; Rose Gold [CR.a(jo)]; Silver [CR.a(jo) | HO.a(gesso)]; Silver (Metallic) [DB.a]; Tinting White [CR.ao.o.]; Toning Grey Mid CR.ao.o];								
PW20	Mica	Biotite; Fine Mica [GU]; Gold Coarse Mica [GU]; Iridescent Pearl White [WL.o.p]; Lepidolite; Metallic White [HO]; Mica [GEN]; Mica Powder [SI.p]; Mica Titanate; Mica White [KP.p]; Mother Of Pearl [TA.a]; Muscovite Mica [KP.p]; Muscovite Mica, brilliant[KP.p]; Natural Mica, Perlescent Powder [KA]; Pearl White [HO]; Phlogopite; Pink Mica [GU]; Pigment White 20; Russet; Titanated Mica; White Coarse Mica [GU]; White Fine Mica [GU]; White Medium Mica [GU]; Zinnwaldite; *Also in mixtures of many colors with Iridescent, Pearl, or Metallic prefix or suffix.*	77019	Inorganic; Aluminium potassium silicate; Mica Titanate (micronized mica flakes) CAS 12001-26-2	Translucent; iridescent with red and greenish varieties	4	I	45-50	A	Adds metallic, iridescent or pearlescent properties to paints.; Natural Mica and larger particles may harm oil paint film, very fine particles and micronized Mica Titanate is more suitable for oil (Ref).
N/A	Oyster Shells	Shell White; Gohun	N/A	Powdered oyster shells; probably mostly calcium carbonate with smaller amounts of mother of pearl	White may have a slight iridescence	3	I	-	A	Has been used in Japan for centuries
N/A	Piemontite	Piedmontite;	N/A	Monoclinic Crystal	Deep Scarlet;	3	I	-	A	* more info on the

		Piemonite; Piemontite; Piemontite Genuine* [DS.w]		Silicate with high concentration of manganese; Aluminosilicates of Manganese (Ref)	Violet brown; red; brown red; reddish-black; black					Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.
N/A	Purpurite	Iron Manganese Phosphate; Manganese Violet (natural); Pigment Violet 16; Purpurite [KP.p]; Purpurite Genuine* [DS.o.w]	N/A	Mostly Manganese (III) Phosphate may have impurities of iron; Natural form of manganese phosphate, Pigment Violet 16 (PB 16) (Ref), (Ref), (Ref)	Pink to deep reddish violet to lavender violet	2-3	I	23-26	B	Rare mineral (Ref); * more info on the Dan Smith PrimaTek™ artist paints and other mineral pigments use for art at the watercolor Handprint.com site
N/A	Realgar	Arsenic Rouge; Eolite; Realgar [GEN | NP.p]; Realgarite; Red Arsenic; Red Orpiment; Rejalgar; Risagallo; Risigallum; Ruby Sulfur; Ruby Sulphur; Sandaracha	N/A	Natural mineral; Arsenic Sulfide	Bright Orange Red †hue shift towards yellow	1	III*	-	D	Said to be incompatible with lead or copper pigments (Ref); *exposure to sunlight may convert some pigment into Pararealgar, a yellow pigment (Ref)
N/A	Red Jasper	Radiolarian Rock; Red Jasper [KP.p]	N/A	Amorphous quartz, colored red by iron (III) (Ref); Impure Silica The Red coming mostly from Iron Oxides (Ref); (Ref)	Deep red	4	I	-	A	(Ref)
N/A	Rhodonite	Fowlerite; Rhodonite; Rhodonite Genuine* [DS.o.w]	N/A	Mineral Rhodonite; Crystalline manganese inosilicate	Brilliant rose pink to brownish grey	4	I	-	A	Semi precious stone sometimes used as a jewel; (Ref and Pic); (Lots of Pics); Rhodonite is the official gem of Commonwealth of Massachusetts; * more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site;
N/A	Serpentine	Serpentine; Serpentine Genuine* [DS.w];	N/A	Mineral; hydrous magnesium iron phyllosilicate;	Deep olive green with red-brown undertone	3	I	-	A	Soft rock hard to grind;

		Stichtite		Magnesium Iron Silicate Hydroxide (Ref)						* more info on the Dan Smith PrimaTek™ artist paints and other mineral pigments use for art at the watercolor Handprint.com site
N/A	Siderite	Aerosiderit; Aerosiderita; Aerosiderite; Bemmelenit; Bemmelenita, Bemmelenite; Chalybit; Chalybita; Chalybite; Eisenpath; Fer Carbonaté; Gyrit; Gyrita; Gyrite; Iron Spar; Junckérit; Junckérita; Junckérite; Pelosiderit; Pelosiderita; Pelosiderite; Sidérose; Siderit; Siderite [GEN; NP.p]; Sparry Iron; Spatformig Jernmalm, Spathic Iron; Spathose Iron; Thomaît; Thomaîta; Thomaîte; Weißeisenerz	N/A	Natural carbonate of iron; (Ref and Pic); (Ref and Pic); (Ref and Pic)	Light yellowish brown reddish brown to gray	1	I	M	A	Reactive with acids (Ref)
N/A	Silver Chromate	Silver Chromate	77825	Formed by combining silver nitrate (AgNO3) and potassium chromate (K2CrO4). (Ref)	Brownish red to red	-	-	-	C	-
N/A	Sodalite	Sodalite [KP.p]; Sodalite Genuine* [DS.w]; Sodalite SHIUN-MATSU [KP.p]; Pigment Blue 29	N/A	Component of Lapis Lazuli; Sodium Aluminum Silicate Chloride; Mineral (Ref); (Pics)	light pale violet blue to dark blue	2	1	-	1	Similar to Lapis Lazuli (Ref); * more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.

PB32	Smalt	Dumont's blue; Esmalte; Pigment Blue 32; Royal Smalt (superior fine grade) [NP.p.w]; Smalt [KP.p | NP.p | WNd]; Smalte; Smalt Genuine [DS.w]; Starch Blue	77365	Pulverized and ground potassium glass colored blue by cobalt; Potassium Cobalt Silicate	Mid-Blue	4	I*	25	B	Very transparent in oil paints, may be too transparent to be useful. * Lightfast but may fade due to chemical processes. Studies suggest it may not fade if ratio of potassium to cobalt is 1:1 or higher; high potassium smalt available from Natural Pigments
N/A	Stringhamite	Stringhamite	N/A	Hydrous copper calcium silicate	Alpha form-light grey blue; beta form-light blue; gamma form-dark blue	4	I	-	B	Natural mineral; Similar in chemical structure to Egyptian Blue PB31 and Kinoite; found near other copper ore deposites; Utah, Arizona, USA largest sources; (Pic)
N/A	Sugilite	Royal Azel; Royal Lavulite; Royal Purple Sugilite; Purple Turquoise; Luvulite; Gem Sugilite; Royal Lazelle; Sugilite Genuine* [DS.w];	N/A	Semi-precious gem; Potassium Sodium Lithium Iron Manganese Aluminum Silicate.; (Ref)	Grayish lavender to pink to a deep reddish purple**	4	I	-	A	Ornamental semi-precious stone used for jewelry; Little info of it's use as a pigment is available. Can be attained from some sources for use in cosmetics; * more info on the Dan Smith PrimaTek™ artist paints and other mineral pigments use for art at the watercolor Handprint.com site; ** seems to lighten the finer it is ground.
N/A	Tigers Eye	African Cat's-eye; Australian Tiger's Eye; Burnt Tiger Eye; Burnt Tigers Eye Genuine* [DS.o.w]; Cat's-eye; Crocidolite; Golden Tigers Eye; Marra mamba tiger iron; Tigereye; Tiger Eye; Tigers Eye; Tigers Eye Genuine* [DS.o.w];	N/A	Quartz silicon with yellowish and brown parallel layers, a mixture of Chalcedony and Riebeckite (Ref). The yellow-gold color is due to iron oxides.	Brown gold with yellowish to red- violet undertone	3	I	L	A	* more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor site Handprint.com.

		Tiger-Eye TYOUJICHA, No. 12 [KP.p.p]; Tiger iron								
N/A	Turquoise	Calaite; Chalchihuitl; Chalcosiderite; Faustite; Kingman Green Turquoise Genuine [DS.w*]; Sleeping Beauty Turquoise Genuine** [DS.o.w]; Turquoise; Turquoise, sky-blue [KP.p];	N/A	Natural mineral turquoise; hydrous phosphate of copper and aluminium (Ref); Chalcosiderite (Ref); Faustite (Ref); (Pics); More mineral info can be found here.	Bluish green to greenish blue	3	I	-	A	Semi precious stone often used for jewelry especially by Native Americas; * more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.; ** Sleeping Beauty Mine web site
N/A	Vesuvianite	Blue Jade; Cyprine; Cyprine (blueish variation); Californite (green variation); Idocrase; Vesuvianite [KP.p]; Vesuvianite-jade (green variation); Xanthite (purple variation)	N/A	Metamorphic silicate mineral; Complex of iron-manganese-silicate.	Light green, brown, yellow, purple or blue	-	I	-	A	-
N/A	Vivianite	Angelardite; Anglarite; Blue Iron Earth; Blue Iron Ore; Blue Ochre [BR | NP.o.p]; Blue Ochre (Vivianite)** [NP.o.p]; Angelardite; Anglarite; Glaucosiderite; Mullicite; Native Prussian blue; Ocre Blu; Ocre martiale bleue; Odontolite; Paravivianite; Phosphate of Iron; Vivianite [KP.p]; Vivianite - Blue Ochre* [DS.w];	N/A	Hydrated Iron Phosphate	Mid to greenish dark blue sometimes with with reddish undertone	3	I*	-	A MSDS	*Lightfast but may turn yellowish due to the effects of environment or other pigments; (Ref); * more info on the Dan Smith PrimaTek™ artist paints and other minerals used for art pigments at the watercolor Handprint.com site.; ** More info on this pigment can be found at Natural Pigments.
N/A	Volkonskoite	Green Stone; Russian Green; Volkonskoite [KP.p];	N/A	Dichrome Trioxide Mineral (Ref), (Ref);	-	-	I	-	-	-
N/A	Zoisite	Zoisite;	N/A	Calcium Aluminum Hydroxy	Dark, dull green; Blue;	3	I	-	A	Used as a gemstone;

		Zoisite Genuine [DS.w]; Tanzanite		Sorosilicate (Handprint.com)	Lavender; Pink**					* More info on the Dan Smith PrimaTek™ artist paints and other mineral pigments used for art at the watercolor Handprint.com site; **Many varieties of shades and colors.;

Oil Painting Mediums, Solvents, Drying Oils and Non-Drying Oils, Oil Paint Driers/Siccatives

Metallic Pigments | Inert Pigments and Additives | Mineral Pigments & Unclassified | | Page Top^
Oil Paint Mediums and Siccatives | Watercolor Mediums & Additives | Acrylic Mediums and Additives

Name	Usage	Common, Historic and Marketing Names	C.I. Constitution Number	Chemical Composition	Color Description † = Long Term Effects of Light	Opacity 1 = opaque 4 = trans.	Light Fastness I = excel. IV=Fugitive	Oil Absorption g/100g	☠	Side Notes
Alkyd Resin	Binder; Medium; Siccative; Drier;	Alkyd medium; Alkyd Resin [WL.om]; Fast drying medium; *Also various brands of imitation copal or resin varnishes and mediums*	N/A	Alkyd resins are the reaction product of an oil or fatty acid; polyol(s) and polyacids	Clear & colorless in it's self it takes on the color of the oil used; Weak yellowish to reddish, brownish	N/A	N/A	N/A	A	When added to oil paints it accelerates drying; Used as paint binder to make faster drying oil paints
Aluminium	Auxiliary Drier; Soaps used to modify rheology	Various salts/soaps (see chemical composition)	N/A	Aluminum distearate; Aluminum stearate; Aluminium alkoxide; Oxoaluminium; Aluminium trimethoxypropoxide ethylacetoacetate; Boron-aluminium; Oxide of Aluminum	Usually a white powder or flakes	4	N/A	N/A	A	Usually used as an auxiliary drier; Promotes through drying; Use .2 - .6% metal
Bee's Wax	Used as a stabilizer in oil paints; Used to give "buttery" quality to oil paints; Used in mediums for oil paints; Used as a binder in	Bleached Bee's Wax; Bee's Wax; Pure Beeswax Blocks [WL.om]; Pure Beeswax Pellets [WL.om]; Wax;	N/A	wax from Bee honey combs, often bleached to remove the hony color.	Translucent off-white	3-4	I	N/A	A	

	encaustic painting; oil pastels and crayons; Used as a varnish									
Balsams (group)	Plasticizer; Glossing Agent; Rheology Modifier; Fixative;	Balsam of fir; Balsam fir gum; Canada Balsam [NP.om]; Canada Turpentine; Copaiba Balsam*; Fir resin; Fir gum; Larch Turpentine; Strasbourg Turpentine; Venetian Turpentine; Venice Turpentine balsam fir gum" is mainly used in North America. In Europe, the product is called "Canada Balsam." It is also variously identified as turpentine, fir resin and fir gum.	N/A	Balsam is a term used for various aromatic scented plant products, extracted from various trees and shrubs. (Ref: Merriam-Webster.com); The Balsam turpentines, used by artists, are natural resins and essential oils, called oleoresins, . traditionally used as plasticizers and added in small amounts to painting mediums in oil or encaustic techniques. Balsams are also used as a varnish, though not recommended for the final varnishing of a painting. Although they are called turpentines, they are not the same as the distilled gum spirits of turpentine used as a solvent and thinner. Balsams are composed of approximately 80% resin acids, and only 20% terpenes. (Ref:Kremer Pigments); The Balsams are Insoluble in water. Small amounts are sometimes added to oil painting mediums as a plasticizer or glossing agent. Canada balsam, Canada turpentine or Balsam of fir: comes from the Canada balsam fir, *Abies balsamea*; Copaiba Balsam*: From tropical South American tree *Copaifera landsdorfii*; It is not in the conifer family,	Viscus fluid, pale greenish amber to deep amber brown	4	N/A	N/A	B-C**	* *Copaifera landsdorfii* is a tropical rainforest tree, commonly known as the diesel tree or kerosene tree. It is not part of the the conifer family, as most of the other balsams used by artists are. The main compound in the oil of *Copaifera* is copaiba, an oleoresin or terpene, which is useful in the production of oil products such as lacquers. Copaiba can be used as biodiesel fuel. The tree is also the main source of copaene, another terpene. (Ref:wikipedia:*Copaifera landsdorfii*); **Canada balsam is listed on the U.S. Food and Drug Administration (FDA) Generally Recognized as Safe (GRAS) list. When handled with care, the balsams are not usually considered more toxic than other household chemicals; Flammable, keep away from ignition sources; Concentrated vapors can be harmful, use only in well ventilated area; Ingestion may cause injury or death. May cause allergic reactions

				as most of the other balsams used by artists are. Venetian Turpentine, Venice Turpentine or Larch Turpentine: *Larix decidua* or also known as the European Larch						
Binding Medium; Oil Binder;	Binder; Medium;	Binding Medium; Ready to Use Oil Binder [SCH.om]; Acrylic Binder;	N/A	Generic term for a solution of various ingredients used in paint making that bind the pigments together and to the surface or substrate. It can also be used as a diluent, and to thin paints without losing adhesion. It can be bought pre-made or made up in the artists studio. In oil paints the binding media will usually consist of linseed oil or other drying oil like walnut, Safflower or poppy along with other ingredients to improve handling properties. Commercial products may have dispersion agents, wetting agents, stabilizers and preservatives. see the Recipes, Formulas and Mediums page for some Acrylic binding media recipes.			N/A	N/A		
Black Oil	Siccative Drier; Medium	Walnut Black Oil; Linseed Black Oil; Leaded Oil	N/A	Litharge; Masticot or other lead salts cooked into linseed or walnut oil so that drying lead soaps are formed	Dark brown coffee colored oil	N/A	N/A	N/A	C	Can be used as a medium or in medium recipes to speed drying of oil paints.
Calcium	Auxiliary Drier; Siccative;	Various salts/soaps (see chemical composition)	N/A	Calcium 2-Ethylhexoic; Calcium abiotate; Calcium rosinate; Calcium Naphthenate; Calcium Octoate	Various; White to yellow to brown	N/A	N/A	N/A	A	Usually used as an auxiliary drier; use .1 - .3% metal
Canada Balsam	Plasticizer; Glossing Agent; Rheology Modifier; Leveling Agent; Glazing Medium;	Balsam of fir; Balsam fir gum; Canada Balsam [NP.om]; Canada Turpentine; Canadian Balsam;	N/A	Canada balsam is extracted from blisters in the bark of the Balsam Fir or Canadian Balsam, *Abies balsamea*, a small to medium size fir tree native to Canada and Northern America;	Clear transparent slightly greenish pale gold viscus fluid	4	N/A	N/A	B-C**	There may be some commercially available brands of Canada Balsam that are adulterated with either colophony (pine rosin) and/or gum spirits of turpentine. One method of detecting colophony is by heating in a water bath until all the the

	Retouch Varnish; Fixative; Also used as an optical glue and for mounting specimens in microscopy	Fir resin; Fir gum;		Small amounts are sometimes added to oil painting mediums as a plasticizer or glossing agent. Canadian balsam increases the gloss of oil paints and slows down drying time, allowing for a slow and meticulous technique. (Ref: Kremer Pigments)						volatile terpenes have been reduced, leaving only the dry resin. In pure Canada Balsam, the dry resin will have an acid value of 120 to 125, If colophony is present, the acid value will be around 165. An acid reading of over 130 is a strong indication that it has been adulterated with colophony or crude turpentine. (Ref: Natural Pigments; Canada Balsam); Historically, Native Americans have applied Canada balsam to the skin as a poultice to treat burns and wounds. During the Civil War, balm of balsam fir was reportedly used to treat combat injuries. The essential oil of Canada balsam has been used for coughs and colds. There is insufficient evidence to determine the safety, suitability or effectiveness for the above medical uses. **Canada balsam is listed on the U.S. Food and Drug Administration (FDA) Generally Recognized as Safe (GRAS) list. When handled with care, the balsams are not usually considered more toxic than other household chemicals; Flammable, keep away from ignition sources; Concentrated vapors can be harmful, use only in well ventilated area; Ingestion of large amounts may cause injury or death. May cause allergic reactions
Cerium	Siccative; Drier	Cerium Acetate; Cerium Carbonate; Cerium Drier; Cerous Naphthenate; Cerium Octoate; Cerium Oxide; Cerium	N/A	Rare earth metal; Cerium (IV) 2-ethylhexanoate; lanthanum, neodymium cerium; Cerium octoate; Various other salts/soaps	Salts are red through to yellowish; White to cololess	N/A	N/A	N/A	A	Promotes through drying; Good polymerisation action; Said to be superior to zirconium & lead.; Use .1 - .3% metal

		Stearate; Cerous 2-ethylhexanoate; Cerous acetylacetonate Cerous Naphthenate; Cerous Oxalate Rare Earth; *Various other salts/soaps*								
Chromium Octoate	Siccative; Drier	Chromium Octoate	N/A	Chromium Octoate	Violet Liquid	N/A	N/A	N/A	N/A	"New type of drier with better efficiency" *(Ref)*
Cobalt	Siccative; Drier	Cobalt dryer	N/A	Cobalt Acetate; Cobalt Linoleate; Cobalt (II) octoate; Cobalt Octoate; Absorption; Cobalt Tallate; Cobalt 2-Ethylhexoic; Cobalt Sulfate	Various; Usually a bluish to purplish Liquid; Cobalt Napthale-nate: yellow to brown resinous liquid; Cobalt (II) octoate: reddish liquid	N/A	N/A	N/A	B	Considered the safest active drier for the paint film.; Said to be the most active top drier; When adding to paint use .02 - .1% metal
Cobalt-zirconium-calcium octoate	Drier Mixture; Medium; Siccative	CoZiCa Drier [EH]	N/A	Common mixture of metalic salts/soaps with siccative properties, CoZiCa is a registered trademark by ECO-House	Weak blue tint	N/A	N/A	N/A	B MSDS	Combined driers enhance through-drying
Clove Oil	Non-Drying Oil; Drying Inhibitor	Oil of Cloves	N/A	The essential oil from the clove plant, *Syzygium aromaticum*	Clear Liquid Strong smell of cloves	4	N/A	N/A	A	A preservative and odorant in aquatic mediums, watercolor, tempera and gouache.; A non-drying oil it is sometimes used in small amounts to slow the drying of oil paints, use very little or the oil paint will never dry.
Damar	Used to make Damar Varnish and retouching varnish; Used in Encaustic Paints as hardener	Damar; Damar Crystals [WL.om]; Damar Flakes; Damar Tears;		Natural Resin						
Damar Varnish	Varnish; Also added to mediums; When diluted it is used as retouch varnish	Damar Varnish [MA.om];	N/A	A traditional picture varnish made from natural resins, when diluted with turpentine it is used as a retouch varnish.	Amber syrupy fluid	N/A	N/A	N/A	B	
Impasto Medium	Used to thicken paints, especially in	Impasto Medium [WL.om];	N/A	Usually made marble dust, barium sulphate (Blanc Fix), Calcium	usually translucent white to clear	2-3	N/A	N/A	B	

	alla prima, and impasto techniques; Used to extend paint without thinning			Carbonate, Glass Micro Beads, and/or other thickening agents and used to extend paint without altering its consistency and create texture						
Iron	Auxiliary Drier; Siccative;	Various salts/soaps (see chemical composition)	N/A	Iron Octoate; Iron-2-ethylhexanoate	Dark red brown or blackish	N/A	N/A	N/A	A	Usually used as an auxiliary drier; Promotes rapid drying by polymerization; Use .04 - .2% metal
Lanthaum Octoate	Siccative; Drier	Lanthaum Octoate	N/A	Lanthaum Octoate	Light Yelow	-	-	-	-	Efficiently promotes through drying *(Ref)*
Lead	Siccative; Drier;	Various salts/soaps (see chemical composition)	N/A	Lead Acetate; Lead Naphthenate; Lead Monoxide; Lead Tallate; Lead Octoate; Lead 2-Ethylhexoic; Lead borate; Lead linoleate; Lead oleate; Lead resinate; Lead stearate The influence of lead ions on the drying of oils: A study of lead in oil paintings.	Various; Yellow to red to brown; White to grey	N/A	N/A	N/A	C	Not all lead soaps/salts are driers; Promotes through drying; Promotes polymerisation of drying oils; Addition of a calcium drier may minimize darkening due to sulfate reactions.
Lead Acetate	Siccative; Drier	Sugar of Lead; lead diacetate; plumbous acetate; Lead sugar; Salt of Saturn; Goulard's powder	N/A	Lead Acetate, Made by treating Lithage with Acetic acid	White crystals	N/A	N/A	N/A	C	-
Lead Naphthenate	Siccative; Drier	Lead Octoate; Naphthenic acid lead salt; Cyclohexane carboxylic acid; Lead Naphthenate [NP]; Lead Salt	N/A	Lead salt added to solution of sodium naphthenate	Yellow to brown resinous liquid	N/A	N/A	N/A	C	Combustible
Lead Monoxide	Siccative; Drier	Litharge; Chrysitin; Lead Monoxide; Lead Ocher; Masticot; Plumbic Ochre; Plumbous oxide	N/A	Prepared by heating lead metal in air at 600 C or thermal decomposition of lead nitrate or lead carbonate	Litharge is the red form; Masticot is the yellow form	2-4*	N/A	N/A	C	*varies with binder; used as semi-opaque pigment in watercolor, said not to be practical as a pigment in oil due to it's drying action and transparency

Lead Octoate	Siccative; Drier	Lead Octoate	N/A	Lead Octoate	Yellow Liquid	N/A	N/A	N/A	C	Promotes through polymerization, improved flexibility and resistance to water and salt. *(Ref)*
Lead oil Ground	Used as a ground or gesso for oil paints	Gesso; Lead oil Ground [WL.om];	N/A	Traditional Oil paint Gesso, usually made with basic lead carbonate and marble dust or Calcium Carbonate.	White	1	N/A	N/A	C	
Linseed Oil (alkali-refined linseed oil)	Binder; Drying Oil; Used to thin oil paints; Increases the flow; Increases transparency; Increases gloss; Used in oil painting mediums	Artist's Refined (alkali-refined linseed oil) Linseed Oil; Alkali-refined Linseed Oil [WL.om]; Alkali-refined Flaxseed Oil;	N/A	alkali-refined linseed oil (Flaxseed); One of the most common Binders in oil paints;	Light amber; Viscus fluid	N/A	N/A	N/A	A	
Linseed Oil (refined cold-pressed)	Binder; Drying Oil; Used to thin oil paints; Increases the flow; Increases transparency; Increases gloss; Used in oil painting mediums	Artist's Refined (cold-pressed) Linseed Oil; Cold Pressed Linseed Oil [WL.om]; Cold-Pressed Flaxseed Oil;	N/A	Cold press oil refined from Linseed oil (Flaxseed oil); One of the most common Binders in oil paints;	Light amber; Viscus fluid	N/A	N/A	N/A	A	
Manganese	Siccative; Drier Oxidizer; Polymerizer;	Various salts/soaps (see chemical composition)	N/A	Manganese Acetate; Manganese Carbonate; Manganese Octoate; Manganese Oxalate; Manganese Rosinate; Manganese Peroxide; Manganese Vitriol; Manganese Tallate; Manganese Napthenate; Manganese 2-Ethylhexoic; Manganese vitriol; Manganous chloride tetrahydrate; Manganous chloride anhydrous	Various; Ordinarily brownish	N/A	N/A	N/A	B	Acts as both an oxidizer and polymerizer; Said to promotes polymerization to a greater degree than Cobalt; When adding to paint use .02 - .1% metal

Mastic	Used to make varnish; Added to some mediums	Gum Mastic; Mastic Gum; Mastic Tears;	N/A	Mastic is a natural triterpenoid resin and one of the oldest resins used in the history of art. Harvested from pistachio trees (Pistacia Lentiscus) grown in Europe, India, South Africa, and Turkey. Mastic is used as a varnish, medium and paint additive. It is soluble in turpentine solvents. Said to have a tendency to yellow and degrade over time. (Ref: Art Conservation, University of Delaware); (Ref: Various Uses of Gum Mastic in the Middle Ages, by The Lady Jutte Haberlein, © 2008 by Joan Bahur - DOC file) *See Mastic Varnish below below*	Amber syrupy fluid some yellowing is reversible by exposure to the sun.	4	N/A	N/A	B** MSDS	* an emulsion of linseed oil, mastic resin, gum arabic and black oil **flammable Said to cause cracking and may "bloom" in humid conditions
Mastic Varnish	Varnish; Added to some mediums	Concentrated Mastic Gum Varnish [SE.om]; Mastic Gum Varnish [SE.om]; Mastic Varnish [KP.om | OH.om | NP.om]; Mastic Varnishe [MA.om]; Maroger Medium* [Rob.om]; Van Eyck Gel [SE.om]; Concentrated Mastic Varnish	N/A	Mastic is a natural triterpenoid resin and one of the oldest resins used in the history of art. Harvested from pistachio trees (Pistacia Lentiscus) grown in Europe, India, South Africa, and Turkey. Mastic is used as a varnish, medium and paint additive. It is soluble in turpentine solvents. Said to have a tendency to yellow and degrade over time. (Ref: Art Conservation, University of Delaware); Traditional Varnish, but not in use much anymore unless an antique appearance is desired; Made by dissolving Gum Mastic or Mastic Tears in heated turpentine. In order to prevent the mastic from agglutinating together, warm powdered glass, or warm fine white quartz sand, may be added to the	Amber syrupy fluid some yellowing is reversible by exposure to the sun.	4	N/A	N/A	B** MSDS	* an emulsion of linseed oil, mastic resin, gum arabic and black oil **flammable Said to cause cracking and may "bloom" in humid conditions

				resin before it is mixed with the solvent. The spirit of turpentine should be absolutely free from moisture, the mastic may be in tears, or, preferably, have been purified and dried (Ref: The Chemistry Of Paints And Painting", by Arthur H. Church); Removable, and used in conservation and restoration. (Ref: Chapter II - Traditional Artists' Varnishes, *by Lance Mayer* 1995, at the AIC, The American Institute for Conservation of Historic & Artistic Works); (Ref: wikipedia); (Ref: cad-red.com) (Ref: Aging and yellowing of triterpenoid resin varnishes e Influence of aging conditions and resin composition, ©2008 Elsevier Masson SAS.) (Ref: Various Uses of Gum Mastic in the Middle Ages, by The Lady Jutte Haberlein, © 2008 by Joan Bahur - DOC file)						
Oil Ground	Ground or gesso for oil paints	Gesso; Lead oil Ground [WL.om]; Oil Ground; Titanium Oil Ground [WL.om];	N/A	Traditional Oil paint Gesso, usually made with basic lead carbonate and marble dust or Calcium Carbonate. Some modern versions use the less toxic Titanium White in place of Lead White for the white pigment	White	1	N/A	N/A	C	
Oil of Spike Lavender	Thinner and Solvent in oil paints; Odorant;	Lavender Oil*; Lavender Spike Oil; Oil of spike; Oil of Spike Lavender [LB.om]; Spike; Spike Lavender; Spike Lavender Oil [HO.om];	N/A	Oil extracted from the Spike lavender plant (Lavandula latifolia or L. spica)	Clear non viscus liquid; Strong smell of Lavender flowers	4	N/A	N/A	C** MSDS	Primarily used as solvent or thinner in oil paints and mediums; Small amounts (less than 2%) can be added as a preservative and odorant in aquatic mediums, watercolor, tempera and gouache. ? according to The CAMEO materials database at BFA (Ref), spike oil is a non drying oil , i believe this is a

										mistake (all though they most probably be confusing the Lavender Flower Oil, that is not used in oil painting, and is a non-drying oil) The oil of spike that is used by artists is not really an oil at all, but more closely related to turpentine. it is a solvent and thinner and non viscous material that is only a little more viscous than the more common solvent turpentine. It drys slower than turps, but, only in respect to minutes or hours. Try putting a drop of real Spike lavender on a surface and then spread it into a thin layer, ... it will be completely dry and evaporated within minutes. it is said however that it may leave behind more of a gum than than the normal artists' rectified turpentine. * Lavender Oil usually and more correctly refers the essential oil obtained by distillation from the flower spikes of certain species of lavender. Two forms are distinguished, *lavender flower oil*, a colorless oil, insoluble in water, having a density of 0.885 g/ml; and *lavender spike oil*, a distillate from the herb *Lavandula latifolia*, having density 0.905 g/ml. Lavender flower oil is a designation of the National Formulary and the British Pharmacopoeia. (Ref:wikipedia: Lavender Oil); **Flammable, keep away from ignition sources; Concentrated vapors can be harmful or explosive, use only in well ventilated area; Ingestion may cause injury or death.
Poppy seed Oil	Drying Oil (Slow); Binder;	Poppy Oil; Poppy Seed Oil;	N/A	Slow drying oil, often used used in alla prima techniques for that	Clear slightly greenish oily fluid	4	N/A	N/A	A	Poppy may not be as durable as linseed oil, it is said to crack more easily? (Ref:Oil Painting:

	Medium;	Poppyseed Oil;		reason; Less yellowing than linseed oil						Indiana University Southwest):
Rabbit Skin Glue	Used in oil painting as a sizing to seal canvas fibers and protect them from the acids in the oils; Used as a medium in Distemper painting; Traditional woodworking Glue Used as adhesive in gilding; Used in other arts such as book binding as a general purpose glue*	Genuine Rabbit Skin Glue [NP.om]; Hide Glue; Rabbit Skin Glue [WL.om];	N/A	Collagen rendered from rabbit skins, Usually comes as flakes crystallized powder form, that is dissolved in water in the studio. "Rabbit skin glue usually offers the highest strength, viscosity and elasticity. True rabbit skin glue tends to gel at lower temperatures, making it easier to use in gesso applications." Otherwise, similar to standard hide glues. (REF: Natural Pigments, Genuine Rabbit Skin Glue)	Amber translucent sticky mass	4	N/A	N/A	A	* Not generally used as a glue or sizing anymore, except when trying to imitate traditional painting techniques or in conservation and restoration.
Safflower Oil	Drying Oil (Slow); Binder; Medium;	Cold Pressed Safflower Oil; Expellor Pressed Safflower Oil; Safflower Oil;	N/A	Safflower oil is slower drying, clearer and less yellowing than Linseed oil. Often used in white or light colored paints due to it's lighter and less yellowing nature.	Clear slightly greenish oily fluid	4	N/A	N/A	A	Health food stores are a source for inexpensive cold or expeller pressed safflower oil. Do not use the mechanically pressed and heat treated safflower oil usually found in regular groceries. They will yellow. (Ref:Oil Painting: Indiana University Southwest):
Stand Oil	Flow improving; Leveling Agent; Slows Drying Time; Glazing Medium;	Stand Oil [WL.om];	N/A		Transparent pale amber Thick viscus fluid,	4	N/A	N/A	A	
Sun Thickened Linseed Oil	Flow improving; Leveling Agent; Speeds Drying Time; Glazing Medium;	Sun Thickened Linseed Oil [WL.om];	N/A		Transparent pale amber Thick viscus fluid,	4				Said to yellow more than stand oil (Ref: Wetcanvas.com Thread):
Turpentine	Solvent; Thinner	Artists Gum Spirits of Turpentine [BK.om]; Distilled Turpentine [WN.om]; Gum Spirits of Turpentine [GR.m];	N/A	A natural fluid obtained by the distillation of resin obtained from live trees, mainly pines. It is composed of terpenes, mainly the monoterpenes alpha-pinene and beta-pinene with lesser amounts of	Clear	4	N/A	N/A	C**	Mineral turpentine, OLS, Paint thinner or other petroleum distillates are used to replace turpentine, but they are very different chemically.[4] Turpentine is the only solvent capable of easily dissolving

		Oil of Turpentine; Pure Gum Turpentine [CRN.om | UT.om]; Rectified Turpentine [SV.om ||; Refined Turpentine (Pure Gum Spirits) [MW.om]; Spirit of Turpentine; Turpentine; Turpentine Essence [MA.om]; Turps; Wood Turpentine;		carene, camphene, dipentene, and terpinolene.[1] It is sometimes colloquially known as *turps*.[2] The word *turpentine* derives from French and Latin) from the Greek word τερεβινθίνη *terebinthine*, the name of a species of tree, the terebinth tree.[3] Crude oleoresin collected from wounded trees may be evaporated by steam distillation in a copper still. Turpentine can also be condensed from destructive distillation of pine wood.* (Ref: wikipedia Turpentine)					Dammar resin * It is said only the steam distilled rectified turpentine is suitable for artists' use. Most turps, from reputable art supply manufacturers, will be the steam distilled kind. **Liquid and fumes flammable, do not store or use near heat sources; Concentrated fumes can be dangerous, only use in a well ventilated area. Ingestion may cause illness or death May cause allergic reactions
Vanadium	Siccative; Drier	Various salts/soaps (see chemical composition)	N/A	Vanadium pentoxide[1]; Vanadium linoleate; Vanadium naphthenate; Vanaium Octoate*; Vanadyl Acetylacetonate; Vanadium Acetylacetonate;	Various; *Green liquid	N/A	N/A	N/A	B MSDS[1]	Drying properties similar to Manganese; may stain; When adding to paint use .02 - .1% metal; * New type of drier with better efficiency *(Ref)*
Venice Turpentine	Plasticizer; Glossing Agent Rheology Modifier; Fixative; Varnish	American larch turpentine; Austrian larch turpentine; European larch turpentine; Larch Turpentine [KA.m]; Venice Turpentine [SE.om]; Venetian Turpentine [MA.om]	N/A	Venice turpentine, is a pale greenish amber resin collected from the larch (*Larix decidua, or L. europea*). (Ref: britannica: Venice Turpentine); Small amounts are sometimes added to oil painting mediums as a plasticizer or glossing agent. *See also:* Balsam; Canada balsam; Strasbourg Turpentine; Turpentine	Pale Transparent greenish amber	4	N/A	N/A	B MSDS	Used to to modify handling properties of oil paint mediums; Also used in lithographic work, and in sealing wax and varnishes Many other oleoresins (resins dispersed in essential oils) mostly from pine trees are known as turpentines
Walnut Oil	Drying Oil; Binder; Glazing Medium;	Walnut Oil [NP.om];	-	Oil of Walnut (Juglans regia);	Clear; Very pale greenish yellow	-	-	-	A	Clearer and less colored than Linseed Oil; Less yellowing over time than linseed oil;

										Common grocery store pure walnut oil can be used, but should be "washed" first to remove mucilage (Ref Cleansing Unrefined oil from Studio Secrets website-scroll about half-way down the page; Ref on washing Linseed Oil from calcitesunoil.com; Ref on "washing" oil from realcolorwheel.com); Walnut Oil is said to go rancid if kept too long. I have never experienced this using Walnut oil for 20 years. Cases of it going rancid may be due impurities of from crude extraction, stored in open container, stored in warm damp conditions or exposure to bacteria. I've had some Walnut Oil sitting on the shelf for 10 years and it gone rancid yet. Just keep it in a sealed container. "All vegetable drying oils go rancid in the process of drying and linseed does so much faster than walnut oil." (Ref from artpurveyors.com);
Wax Medium	Used in moderation to thicken paint and give a short, "buttery" texture; Increases transparency; Matting agent; Used as a final varnish;	Bee's Wax Medium Wax Medium [WL.om];	N/A	Usually made from Natural wax's like bee's wax which are mixed with linseed oil and may have small amounts of damar or mastic varnish. The ingredients are mixed and gently heated in a double boiler until combined. *See the Medium and Recipe Page...*	Translucent white to off white thick paste	1-2 in mass 3-4 in thin layers	N/A	N/A	A*	* Flammable and harmful if ingested in large amounts
Zinc	Drier; Drying Inhibitor*	Various salts/soaps (see chemical composition); White white vitriolitriol	N/A	Zinc sulfite; Zinc octate; Zinc Octoate; Zinc Vitriol	Whitish to light yellow	N/A	N/A	N/A	A	*Zinc oxide may slow drying *(Ref)*; Usually used as an auxiliary drier; Use .1 - .2% metal
Zirconium	Auxiliary Drier; Siccative;	Various salts/soaps (see chemical composition)	N/A	Zirconium Octoate	Light Yellow	N/A	N/A	N/A	A	Only slightly active as drier in its self, but excellent at promoting the primary drier *(Ref)*; Said to be the most efficient auxiliary drier; Promotes through drying; Active cross-linking agent; Use .2 -

										.6% metal

Watercolor Mediums and Additives

Metallic Pigments | Inert Pigments and Additives | Mineral Pigments & Unclassified | | Page Top^
Oil Paint Mediums and Siccatives | Watercolor Mediums & Additives | Acrylic Mediums and Additives

Name	Usage	Common, Historic and Marketing Names	C.I. Constitution Number	Chemical Composition	Color Description † = Long Term Effects of Light	Opacity 1 = opaque 4 = trans.	Light Fastness I = excel. IV=Fugitive	Oil Absorption g/100g		Side Notes
Binding Medium; Watercolor Binder;	Binder; Medium;	Binding Medium; Ready to Use Gouache Binder [SCH]; Ready to Use Watercolor Binder [SCH]; Watercolor Binder;	N/A	Generic term for a solution of various ingredients used in paint making that bind the pigments together and to the surface of a substrate. It can also be used as a diluent, and to thin paints without losing adhesion. It can be bought pre-made or made up in the artists studio. In watercolors the binding media will consist of: *Water*: *A binder*: traditionally Gum Arabic, but often other natural water soluble gums, starches, glues and synthetic binders such as polyethylene glycol; *Extenders and fillers:* Dextrin or Maltodextrin and other synthetic polymers, used as thickeners.; A humectant — used to retain moisture. Usually honey or other simple sugars. Apparently corn syrup is also used by some manufacturers. Plasticizing agent — usually Glycerin or methyl cellulose esters used to help with wetting and re	Usually pale amber	4	N/A	N/A	A*	* depending on formula may have small amounts of toxic ingredients. The preservative is generally the only component that might be poisonous, but it usually added in tiny amounts, less than 1 part per 100

				wetting, Dispersants — help to hold pigment particles in suspension and reduce settling and clumping. Preservatives — bactericide and/or fungicide to retard spoilage and the growth of bacteria and mold (Ref: Handprint.com: standard Paint Ingredients); *see the Recipes, Formulas and Mediums page for some water color binding media recipes.*						
Cellulose Gum	Viscofiers (thickeners) in water-based paints; Binder; Stabilizing agent; Water retaining agent; Dispersing agent; Binding agent; Protective colloid; Drying retardant; Emulsion Stabilizer; Foam stabilizer; Film forming agent; Suspending agent Gelling agent, Flow control agent Sizing; (Ref: Fine-tuning the characteristics of water-borne paint, AkzoNobel Performance Additives);	Akucell; Bermocoll; Bermodol; Carboxymethyl cellulose; Cellulose Gum; Cellulose Methylate, Hydrolose; CELFLOW®; Crystalline cellulose; CMC; GRINDSTED®; Methyl Cellulose (MC);	N/A	Cellulose is a natural polymer and the main component of wood pulp or cotton. the insoluble cellulose is reacted with a combination of different substances such as methyl, ethyl, hydroxyethyl and hydrophobic groups. This process is called etherification, makes it water soluble. Used in water based paints as a Rheology additive and is a Thickening agent, Stabilizing agent, Water retaining agent, Dispersing agent, Binding agent, Protective colloid, Emulsion and foam stabilizer, and Film forming agent. .(Ref: AkzoNobel Bermocoll Performance Additive); Cellulose Gum is the generic name for the wide group of ethers based on Cellulose. Common forms used in water based paints: Cellulose Methylate, Hydrolose;	white or off white powder or crystals	4	N/A	N/A	A MSDS	Used as viscofiers and absorbents in food, food packaging, personal care products, cement, plaster, water-based paints, wallpaper, adhesives, detergents, etc. (Ref MSDS, Carboxymethyl cellulose); Used in watercolors and other water based paints as Thickening agent, Stabilizing agent, Water retaining agent, Dispersing agent, Binding agent, Protective colloid, Emulsion and foam stabilizer, and Film forming agent. (Ref);

				Carboxymethyl Cellulose; Methyl Cellulose; Carboxymethyl cellulose CMC is an anionic water soluble polymer. It is manufactured by reacting insoluble cellulose with sodium hydroxide and chloroacetic acid during which the hydroxyl groups are etherified and converted into carboxymethyl groups. (Ref MSDS); Cellulose gum is usually used to describe non-purified or lowly purified carboxymethyl cellulose. (Ref: Danisco; Cellulose Gum); (Ref wikipedia); CAS 9004-32-4 CAS 9004-67-5						
Dextrin	Used for sizing watercolor papers; Used as watercolor binder; Used as filler or to extend watercolors; Used for acid free glues and mounting; Improves Rheology of watercolor paints by thickening and smoothing paint adding a "buttery" quality.; Used in making gouache;	Alpha Limit Dextrin; Amylodextrin; Aquaflake; Arabix; Avedex; Beta Limit Dextrin; British gum; Canary Dextrin; Cargill Yellow; Cellotriose; Cyclodextrin; Dextrin; Dextrin Powder; Dextrin Powder (yellow); Dextrine; English Gum; Fantastick Yellow Dextrin; Fantastick White Dextrin; Fibersol; Maltodextrin; Microcrystalline cellulose; Modified Starch; Potato Dextrin;	N/A	"Dextrins are a group of low-molecular-weight carbohydrates produced by the hydrolysis of starch"-From Wikipedia (Ref) CAS 94700-07-9 CAS 100041-56-3; CAS 152232-07-0; CAS 199015-70-8; CAS 256933-14-9; CAS 37265-05-7; CAS 37265-06-8	White to yellowish powder; may come in liquid form	N/A	N/A	N/A	A	also used in various textile and dying operations. How to make dextrin from Corn Starch (Ref)

		Sizing; Starch; Starch gum; Tapioca Malto-Dextrin; White Dextrin; Yellow Dextrin;								
Drying Inhibitor; Drying Retardant	Inhibits or slows drying time	Blending Medium [WN.wm];	N/A	Mostly comprised of either natural or synthetic emollient and humectants, Humectants are substances that actually bond with water molecules to increase the water content and hold moister, in watercolors glycerin, propylene glycol, cellulose gum, or sugars like honey are typically used as water binding agents, often in combination. Emollients are occlusive agents: Substances that coat the molecules and prevent the lose of moister. Some emollients that might be used are Stearyl alcohol, Cetyl alcohol, and mineral oil. In watercolors it is recommended to use the littlest amount possible, to get the effect you want.		N/A	N/A	N/A	A	
Glycerin	Plasticizer; Wetting agent; Reduces the native brittleness of the gum arabic *	Crude Glycerin; Glycerin; Glycerine; Glycerine Oil; Glycerol; Ophthalgan; Osmoglyn; Pedia-Lax; Pure Glycerin; Vegetable Glycerine Oil	N/A	A Trihydroxy form of alcohol	Water clear thick liquid	N/A	N/A	N/A	A	Used as a plasticizer in water based paints: watercolors; gouache, tempera; and acrylics (not recommended for acrylics *see Ref below*), Used as filler or to extend watercolors; *In watercolors it "reduces the native brittleness of the gum arabic and minimizes the cracking or chipping of dried paint"-Handprint.com (Ref); Used to extend drying time in acrylic paints. May have problems when used for that purpose. about.com (Ref)

										Used as moisturizer in handmade soaps; Used as a water-soluble lubricant
Gum Arabic	Medium; Binder	Gum Arabic; Gum Arabic Paste [HO.wm]; Gum Arabic Medium [HO.wm]; Gum Arabic Tears; Gum Kordofan; Gum Senegal; Gum Sudan;	N/A	The most common binder used in watercolors. Sold in fine and coarse powders or as pellets called "tears" (Ref: from handprint.com); Also available pre-dissolved in water. The pre-made watercolor gum arabic solutions or mediums may also contain other ingredients like plasticizers, wetting agents and preservatives.	Translucent amber powder, tears or pale amber liquid.	4	N/A	N/A	A MSDS	-
Honey	Plasticizer; humectant, (helps to retain moisture)	Bee's Honey; Honey;	N/A	A sweet syrupy product collected from bees.	pale amber syrupy fluid		N/A	N/A		
Iridescent Medium	Used for adding iridescent and pearlescent properties to paints	Iridescent Medium [DV.wm]	N/A	Usually coated micronized Mica in a binding medium of varying composition (usually gum arabic in watercolors), but may contain one or more any of the various luminescent, iridescent or pearlescent pigments, or metal flakes.	usually white or silvery with luminescent, iridescent or pearlescent properties	N/A	N/A	N/A	N/A	-
Masking Fluid	Used to mask out areas so they are paint resistant.	Art Masking Fluid [WN.wm]; Artist Mask Latex [HO.wm];	N/A	Most often Composed of natural rubber latex, ammonia, and water, often with a small amount of pigment so it can be seen on a white substrate, may include other proprietary ingredients to help with flow, drying time, and release.	White to slightly colored liquid, smell of Ammonia	1	N/A	N/A	A* MSDS	* Contains ammonia
Methyl Cellulose	Viscofiers (thickeners) in water-based paints; Binder; Plasticizer; Stabilizing agent; Water	METHOCEL cellulose ethers; Methyl Cellulose; Methyl Cellulose Esters;	N/A	Cellulose is a natural polymer and the main component of wood pulp or cotton. the insoluble cellulose is reacted with a combination of different substances such as methyl, ethyl,		N/A	N/A	N/A	A	Also used as a binder in pastels;

	retaining agent; Dispersing agent; Binding agent; Protective colloid; Emulsion Stabilizer; Foam stabilizer; Film forming agent; Suspending agent Gelling agent, Flow control agent (Ref; Fine-tuning the characteristics of water-borne paint, AkzoNobel Performance Additives); Sizing, used to size watercolor papers			hydroxyethyl and hydrophobic groups. This process is called etherification, makes it water soluble. Used in water based paints as a Rheology additive and is a Thickening agent, Stabilizing agent, Water retaining agent, Dispersing agent, Binding agent, Protective colloid, Emulsion and foam stabilizer, and Film forming agent. .(Ref; AkzoNobel Bermocoll Performance Additive); Cellulose Gum is the generic name for the wide group of ethers based on Cellulose. Common forms used in water based paints: Cellulose Methylate, Hydrolose; Carboxymethyl Cellulose; Methyl Cellulose; Carboxymethyl cellulose CMC is an anionic water soluble polymer. It is manufactured by reacting insoluble cellulose with sodium hydroxide and chloroacetic acid during which the hydroxyl groups are etherified and converted into carboxymethyl groups. (Ref MSDS); Cellulose gum is usually used to describe non-purified or lowly purified carboxymethyl cellulose. (Ref: Danisco; Cellulose Gum); (Ref wikipedia); Cellulose ethers are water-soluble polymers derived from cellulose, the most abundant polymer in nature.						

				Used in foods, cosmetics, pharmaceuticals, latex paints, watercolor paints, and Acrylic Paints construction products, ceramics, and a host of other applications Methyl cellulose esters are used as thickeners, binders, film formers, and water-retention agents. They also function as suspension aids, surfactants, lubricants, protective colloids, and emulsifiers. (Ref. Dow Chemical); CAS 9004-32-4 CAS 9004-67-5						
Modeling Paste; Impasto Paste	Used to create impasto by thickening and reducing the flow of watercolors and gouaches	Aquapasto [WN.wm];			transparent clear gel to opaque white	1-4	N/A	N/A	A MSDS	
Oil of Spike Lavender	Preservative; Odorant; Thinner and Solvent in oil paints;	Lavender Oil*; Lavender Spike Oil; Oil of spike; Oil of Spike Lavender [LB.om]; Spike; Spike Lavender; Spike Lavender Oil [HO.om]; ISO 4719:2012	N/A	Oil extracted from the Spike lavender plant (Lavandula latifolia or L. spica)	Clear non viscus liquid; Strong smell of Lavender flowers	4	N/A	N/A	C** MSDS	Small amounts can be added as a preservative and odorant in aquatic mediums, watercolor, tempera and gouache. Used as solvent in oils; * Lavender Oil usually and more correctly refers the essential oil obtained by distillation from the flower spikes of certain species of lavender. Two forms are distinguished, *lavender flower oil*, which is not used by artists, a colorless oil, insoluble in water, having a density of 0.885 g/mL; and *lavender spike oil*, or *oil of spike* a distillate from the herb *Lavandula latifolia*, having density 0.905 g/ml. Only the *lavender*

										spike oil is used by artists. Lavender flower oil is a designation of the National Formulary and the British Pharmacopoeia. (Ref:wikipedia: Lavender Oil); **Flammable, keep away from ignition sources; Concentrated vapors can be harmful or explosive, use only in well ventilated area; Ingestion may cause injury or death.
Oxgall	Wetting agent; Flow Enhancement; Drying inhibitor*	Bacteriological Ox Bile; Bovine Bile; Aqua Oxgall [SCH.wm]; Fel Bovinum; Fiele Di Bue; Ochsengalle [SCH.wm]; Oxbile; Ox gall; Oxgall; Oxgall Liquid [DS | WN.wm]; Ox Gall Medium [HO.wm | MA.wm];	N/A	Gall, usually obtained from cows and mixed with alcohol; "Bile is composed of fatty acids, bile acids, inorganic salts, sulfates, bile pigments, cholesterol, mucin, lecithin, glycuronicacids, porphyrins, and urea"; "The major composition of Oxbile is taurocholic and glycocholic acids"-USBiological (Ref)	Clear to slightly brownish or greenish liquid or hygroscopic powder; CAS 8008-63-7	4	N/A	N/A	A MSDS	Used as a wetting agent and increase paint flow in acrylic paints, watercolors and gouache.; May help prevent the crawling of ceramic glazes (Ref). Some products labeled as Oxgall, might have other synthetic ingredients or chemical flow enhancers. * drying inhibition is very minor
Polyethylene Glycol		Anti-Freeze; Ethylene glycol Polyethylene Glycol; Poly Glycol Ether; Propylene	N/A	Polyethylene Glycol	-	N/A	N/A	N/A	B	Used to slow drying time of acrylic paints; Used as Anti-freeze Used as binder in watercolors;
Propynyl Butyl Carbamate	Preservative	Biodocarb [KP]; Carbamic Acid; Coatcide; Fungitrol; Guardsan; Glycacil; Iodocarb; Preventol; Propynyl Butyl Carbamate; Thompson's Wood Protector; Troysan Polyphase; *May be found in many preservatives, wood preservatives and pharmaceuticals*	N/A	Propynyl Butyl Carbamate; CAS 55406-53-6	Off white powder	N/A	N/A	N/A	C	Antimicrobial, antiseptic, disinfectant, fungicide, pesticide; The main artist use is as a preservative for paints and textiles; When used as a preservative in watercolors, artist paints and coatings. Suggested to use 0.5%, relative to solids content - Kremer Pigments Ref, MSDS Sheet

Sizing	Preparing surfaces for watercolor;	Sizing; Sizing Liquid [HO.m];	N/A	Any one of numerous specific substances that is applied to or incorporated in other material, especially papers and textiles, to act as a protecting filler or glaze. Sizing is used in watercolor papers to change the absorption and wear characteristics; It is also used by painters and artists to prepare paper and textile surfaces for some art techniques Sizing solutions used by artists are mostly starches or other hydrocolloids, such as gelatine. Some products may have other surface sizing agents such as alkyl ketene dimer (AKD) or acrylic co-polymers. (Ref:wikipedia)	N/A	N/A	N/A	N/A	A*	* Some surface sizing agents such as alkyl ketene dimer (AKD), may be harmful if ingested or burnt.
Watercolor Medium; Water Color Medium	"One-Spot Shop" Mixed ingredient mediums to enhance multiple of the paint film or handing	Watercolor Medium [DV.wm | HO.wm | MA.wm] Water Color Medium;	N/A	Usually made of a water soluble binder binder (gum arabic is the most common) and water. usually will have small amounts of other additives to modify or improve handling properties, including flow improvers, wetting and re-wetting agents (glycerin), preservatives and small amounts of other ingredients that may serve to enhance the product. These extra ingredients are not often listed on the label but some MSDS sheets may list some if they are hazardous.	N/A	N/A	N/A	N/A	A MSDS (MA)	-

Name	Usage	Common, Historic and Marketing Names	C.I. Constitution Number	Chemical Composition	Color Description † = Long Term Effects of Light	Opacity 1 = opaque 4 = trans.	Light Fastness I = excel. IV=Fugitive	Oil Absorption g/100g		Side Notes
Acrylic Medium (medium viscosity)	Increase transparency; Glazing; Improve flow and handling characteristics; Thin paint without losing adhesion; Add gloss, satin or matte qualities; Adhesive;		N/A	Acrylic Medium is a generic term for any acrylic resin medium. Although when simply labeled as "acrylic medium" without any modifying descriptions they usually have a thin "milky" consistency, and dry clear. Generally the thicker and thinner acrylic mediums, will usually have an added description such as gel, or impasto in the case of thicker mediums and reducer or thinner for the watery varieties. They are used to dilute and thin the paint with out losing adhesion. Acrylic Mediums will also increases the brightness and depth of the color, add gloss or matte qualities and slightly prolong drying.	White milky, low viscosity fluid, that dries clear	4	N/A	N/A	A	
Binding Medium; Acrylic Binder;	Binder; Medium;	Binding Medium; Ready to Use Acrylic Binder [SCH]; Acrylic Binder;	N/A	Generic term for a solution of various ingredients used in paint making that bind the pigments together and to the surface of a substrate. It can also be used as a diluent, and to thin paints without losing adhesion. It can be bought pre-made or made up in the artists studio. In Acrylics the binding media will usually consist of acrylic polymer resins, dispersion, wetting and stabilizing agents, and may also have flow improving and/or drying retarder agents. see the Recipes, Formulas and Mediums page for some Acrylic binding media recipes.	White when wet, clear when dry	4	N/A	N/A		
Flow improvers										
Gel Mediums	Increase transparency; Glazing; Improve flow and handling characteristics; Add gloss, satin or matte qualities; Adhesive;	Dense Gel Medium [MA.am]; Gel Medium Gloss [MA.am]; Gel Medium Matte [MA.am];		Gel Mediums are a generic term for acrylic resin mediums that are usually similar in viscosity to tubed paints or a gel. They generally thicker than the "milky" consistency of the average acrylic mediums. Gel Mediums are used to dilute colors for glazing techniques with out overly thinning the paint. They will often increases the brightness and depth of the	white gel or paste that drys clear					

				color, add gloss or matte qualities and slightly prolong drying.						
Gloss Medium		-	-	-		-	-	-	A	-
Impasto Mediums										
Matt Medium		-	-	-		-	-	-	A	-
Modeling Paste										

Pigment Home | Yellow | Orange | Red | Violet | Blue | Green | Brown | Black | White | Misc.

PAINT AND PIGMENT REFERANCE TABLE KEY:

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Jump to : Supplier\Manufacturer Codes | Binder/Medium Codes

Color Index Generic Name | CI Common or Historical Name | Common, Historic and Marketing Names (Supplier codes, Binder Codes) | C.I. Constitution Number | Chemical Composition | Color Description († = Long Term Effects of Light) | Opacity (1 = opaque 4 = trans.) | Light Fastness (I = excel. IV=Fugitive) | Oil Absorption g/100g | Toxicity & Hazard Info | Side Notes

Color Index Generic Name:

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This is the C.I. Generic Name (abbreviated) given by the ASTM and Colour Index International (CII) for that pigment. The first 2 or 3 letters describe the general pigment color and the number is the individual pigment identifier. N/A (not applicable) means that pigment has not been given a color index name or number.

Natural Dye and Solvent Pigments

These are naturally occurring organic pigments and dyes. With a few exceptions, most are plant or animal extracts or dyes that need to be fixed to a substrate to become pigments (i.e. Madder Lake). A few are organic natural earths such as Cassel earth (Van Dyke Brown). They are designated with C.I. Generic name of which consists of the usage class "Natural" and basic hue, followed by the CI serial number (i.e. Natural Brown 8). Natural pigment CI generic names are often abbreviated with the usage class N + the hue abbreviation + the serial number. (i.e. NBr 8)

NY = Natural Yellow;
NO = Natural Orange;
NR = Natural Red;
NV = Natural Violet;
NB = Natural Blue;
NG = Natural Green;
NBr = Natural Brown;
NBk = Natural Black;
NW = Natural White;

Pigment

Pigments can be organic or Inorganic. Most modern pigments are given this usage designation by the Color Index. They can be completely synthetic, naturally occurring minerals, or lakes based on the synthetic derivatives of natural dyes. Pigments are designated with C.I. Generic name which consists of the usage class "Pigment" and the basic hue followed by the CI serial number (i.e. Pigment Red 106, Cadmium Red). The pigment CI generic names are often abbreviated with the usage class P + the hue abbreviation + the serial number. (i.e. PR83 for Pigment Red 83)

PY = Pigment Yellow;
PO = Pigment Orange;
PR = Pigment Red;
PV = Pigment Violet;
PB = Pigment Blue;
PG = Pigment Green;
PBr = Pigment Brown;
PBk = Pigment Black;
PW = Pigment White;
PM = Pigment Metal

The CI (Color Index) Common Pigment Name:

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In this database the common name is the name given in the Color Index (third edition, 1997) by the Color Index International

published by the Society of Dyers and Colourists and the American Association of Textile Chemists and Colorists, and are also used by the ASTM International, American Society for Testing and Materials.

When the Colour Index (3rd edition) has not specified a name, I have used the name that the first manufacturer, inventor or original patent holder has given that pigment. In the case of ancient pigments, historic pigments, minerals or other odd pigments, I have used the most commonly used traditional historic, mineral or chemical name as determined by my research.

Common, Historic and Marketing Names:

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These are the various names that have been used for that pigment ***whether or not it is the correct usage***. This is NOT an endorsement of any particular name, but merely a collection of names that are in common usage o*r have been used in the past* according to historic pigment books & references, paint sales literature, and pigment manufacturers references. They have been collected (in order of importance) from

1.) Paint manufacturers, pigment manufacturers and/or other pigment supplier literature;

2.) Various web sites in particular AMIEN.org, Dick Blick Artist Supply, Handprint.com, Kremer Pigments, Natural Pigments, Kama Pigments, Sinopia Pigments, PCImag.com and along with internet forums on art and painting, web sites of paint manufacturers, paint suppliers, chemical manufactures and pigment manufacturers;.

3.) The Color Index, Third edition (published by the Colour Index International, 1997);

4.) Historical books on pigments, oil painting, watercolor painting and other art forms (see Free Art e-Books);

5.) Artist manuals and handbooks (see the bottom of the Pigment Database's main page for a complete list of reference works);

6.) Various dictionaries and encyclopedias (both historic and contemporary).

(hue):
When a manufacturer has has used a common historical name for a pigment that is *not* the accepted traditional historic pigment name and has not clearly indicated it to be a hue or substitute, I have indicated it with the "(hue)"* in parenthesis. For example calling\naming a paint made with Phthalocyanine Blue as "Azure", "Smalt" or "Cobalt Blue".

*In order to stay within ASTM specification D 4302-05, manufactures are encouraged to use the word "hue" when the paint or pigment marketing name is not the real name of a paint or a pigment. Substitute and tone could be also considered acceptable means of indicating a hue substitute for the actual color. However, the ASTM specifications are usually voluntary and there is little means to enforce them. Also because of language differences, changes in the paint or pigments common identification because of contemporary usage (often perpetrated by manufacturer's incorrect color marketing names), and last but not least - the sheer multitude of historically used paint names for any given paint\pigment, it's nearly impossible to prove or say a manufacturer of art materials is being purposely deceptive.

C.I. Constitution Number or Colour Index Constitution Number (chemical composition):

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These are the chemical constitution numbers given that pigment by the Color Index International published by the Society of Dyers and Colourists and the American Association of Textile Chemists and Colorists, and are also used by the ASTM International, American Society for Testing and Materials. Each of the numbers in the "Colour Index Constitution Number" has a specific chemical or compositional meaning; for more information see the Colour Index Number Chart or go to the Color Index International and ASTM, American Society for Testing and Materials web sites (these links open in a new window)..

Chemical Composition:

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These are the basic chemical names, or mineral names along with chemical composition. I have also included CAS numbers, when I can fine them. Sometimes multiple names are given because chemical names can be stated in different ways and can also give an indication of the manufacture method. Very often a pigment can be a group of related compounds rather than one specific chemical. I have not included detailed chemical descriptions or analyses, but only basic information that should help you to find further information. I have included references designated with "(Ref)" where further information can be attained.
Adulterants, extenders and other additives may be added to artistic paints to improve the paint rheology, transparency, and\or drying time. Often inert pigments, extenders and fillers are added to the color pigments in student grade paints or to modify paint pigments with overly strong tinting strength, i.e. the Phthalocyanine Blues and Greens. These extra ingredients are rarely listed of the label.

Color Description:

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This is a general attempt to explain the hue in plain English. The perception of color is as individual as the the people viewing it and any such description can not be completely accurate, but merely give a general idea of the what color looks like to the average person. Many pigments have a range of shades and hues. This range in hues can be due to many things such as different manufacturing processes, exact chemical composition and crystal shape. In most cases, i have not used any of the attempted means of standardizing color descriptions for this (such as the Munsell system), but where the pigment is included in the Color Index International Pigments and Solvent Dyes (The Society of Dyers and Colourists, third edition 1997), I have used that description, when there is no color hue description in the Color Index, I have used other reference sources in particularly manufacturer or supplier literature.

† = Effects of long term light exposure are given when known, this may allow an artist to anticipate color changes and possibly use them as an advantage. These effects are all relative to the pigments inherent light fastness and *may take decades or even centuries in museum conditions to be visible*.

Fades = Becomes more Transparent
Lightens = Loses chroma but maintains relative transparency or opaque character;
Whitens = Becomes lighter towards white and more opaque;
Darkens = Becomes darker but retains hue;
Dulls = Loses chroma towards neutral but maintains the relative tone;
Blackens = Turns very dark or black losing chroma;
Hue shift = Changes hue towards a different color

Opacity - Transparency:

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This designation is only a general reference to the most common encountered opacity or transparency inherit to the pigment. In paints, the transparency of a pigment can change due to what is used as the painting medium or binder (i.e., oil color, watercolor, encaustic, acrylic, etc.). There are many pigments that are opaque in watercolor but transparent or semi-transparent in oil paints. The transparency of a paint or pigment can often be manipulated by the manufacturing process for a particular purpose. The addition of inert pigments or other modifiers can also change the perceived transparency of a paint formulation or pigment.
When available, i have used the Color index's designation or manufacturers literature to arrive at this figure. When the Color Index description is unavailable i have arrived at a general figure by manufacturer literature or personal experience. A general designation such as given will not always be the case in any particular formulation.

1 = Opaque,
2 = Semi-Opaque,
3 = Semi-Transparent,
4 = Transparent

Light Fastness Rating:

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The light fastness rating can only be a general guide, when available, i have used the ASTM rating or manufacturers literature to arrive at this figure. The ASTM has not rated all pigments, and I believe will no longer be rating pigments. For that reason the rating in this database will not always be the ASTM rating but a rating culled from other sources, most importantly manufactures literature. The ASTM ratings have a 5 increment scale and the blue-wool scale is 8, in this database lightfastness ratings have been condensed or averaged to a less specific 4 designations. Very often, pigments in tints are less light fast and this should be taken into account when determining if a pigment or paint will meet your needs. I can can not cover every possible paint, binder, or pigment formulation in this chart as it would take too much time and space. In particular the quality of the actual pigment manufacture has much influence on a pigments fastness to light, heat and other chemicals. Additives, binder, and many other factors all have a influence on light fastness or fastness to other environmental influences. Whether a paint is watercolor, oil color, tempera, etc. has an effect on light fastness. Varnishes and other treatments to the painting surface or support can have an influence too. The only way to be sure, is to make your own tests on the paint or pigment you have. Reference the following: (ASTM D4303 - 10, Standard Test Methods for Lightfastness of Colorants Used in Artists' Materials, or *ASTM* D01.57, the Subcommittee on Artists' Materials doc here, opens new window); or this (AMIEN.org Thread - opens new window). Blue Wool Scale will be given when known, but be aware that these may be from tests on a single formulation, and may not be the same for all brands or binders.

I = Excellent,
II = Good,
III = Poor (may last many years in museum conditions, but should be used with caution for permanent works of art)
IV = Fugitive/Very Poor

BWS = Blue wool scale

7-8 = Excellent,
6 = Very Good,
4-5 = Fair (Impermanent),
2-3 Poor (fugitive),
1 = Very Poor (fugitive)*

*When known, blue wool scale ratings will be given for tints in the following format: Full;1/2 tint/;1/4 tint (i.e. Cadmium Red would be 8;8;8 with excellent light fastness in all tints). Note: these may from tests on a single formulation or pigment brand, and may not be valid for other brands or binders.

Oil Absorption: is given in g/100g or grams of oil per 100 grams of pigment or as H, M, L (see below)

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The oil absorption figure has been arrived at from the pigment manufacturer's literature or artist reference sources (see the bottom of the Pigment Database's main page for a complete list of reference works). The higher the oil absorption, generally, the longer it will take to dry when used in oil painting. The addition of driers, siccatives, retardants and other additives can effect the drying time of any specific formulation, or they can be added by the artist to speed up or slow down the drying of oil paints. In some literature the oil

absorption rate is given as ml/100g, although not technically the same as g/100g, for the purposes of this database they are close enough.

Depending on the specifications i have available I may also use the following designations:
H = High; - These pigments absorb a lot of oil.
M = Medium; - Average drying or cure rate
L = Low; - Usually very fast driers

Toxicity: Key Top ^ Page Top^

Under this heading will be a general designation of a possible hazard. It is assumed intelligent people will use at least ordinary care when handling all paints or pigments. The designation has been arrived at from, in most cases, the manufacturer's literature, art books and art reference works (see the bottom of the Pigment Database's main page for a complete list of reference works), MSDS sheets, the EPA manual: Environmental Health & Safety in the Arts: A Guide for K-12 Schools, Colleges and Artisans (full PDF here), The Art & Creative Materials Institute, Inc. (ACMI), The Health and the Arts Program - Great Lakes Centers at the University of Illinois at Chicago School of Public Health (UIC SPH), The American Institute for Conservation of Historic & Artistic Works has a collection of articles on art safety, The Consumer Product Safety Commission's Art and Craft Safety Guide (PDF, 250 KB) and Art Materials Business Guidance

All paints and especially dry pigments can be hazardous if carelessly handled, but, if handled properly with common sense all but the most dangerous pigments can be used safely. Very few pigments used in the arts are edible, and even so called "Food Colors" are not meant to be used in large quantities and may have unknown side effects or allergic reactions.

WARNING: Always use a dust mask when working with any dry pigments. Work in a separate area of your studio away from children, pets or other living things. Do not smoke, eat or drink around any art materials. Dispose of all waste materials in an environmentally safe way.

A = Low hazard, but do not handle carelessly;
B = Possible hazard if carelessly handled, ingested in large amounts or over long periods of time;
C = Hazardous, use appropriate precautions for handling toxic substances;
D = Extremely Toxic, only attempt working with these pigments (especially the dry form) in laboratory like conditions with proper safety equipment (see "Prudent practices in the laboratory: handling and disposal of chemicals" at google books opens new window); or the PDF - Booklet Safe Handling of Colour Pigments Copyright © 1995: BCMA, EPSOM, ETAD, VdMI - link from VdMI

The Side Notes Column: Key Top ^ Page Top^

These are typically interesting things I have read, or information collected on a pigment that may be worth further study. Please remember that they are *NOT* statements of absolute fact. Many pigment qualities are rumors, old wife's tales and misconceptions repeated over and over until they accepted as fact without any scientific proof. References (Ref) may be provided for further info.

Miscellaneous:

(hue) = When the word "hue" in in parenthesis (hue), it refers to a hue color not designated on the label, when the word "hue" is *not* in parenthesis *is* part of the pigment name as per ASTM guidelines.

(Ref) = A link to a reference source. This may be the reference source of the information that I have given, or just a link to more detailed information.

? = a question mark next to a name, note, or data code indicates that it may or may not be correct information due to conflicting information, questionable references, possible typo or other discrepancies in the manufacturer or other reference documentation. Further study is needed to clarify.

Paint or Pigment Manufacturer Code & Art Medium:***** Key Top ^ Page Top^

Paint/Pigment Manufacturer Code:
The manufacturer code is to indicate companies that make or supply paints or pigments using the particular pigment. Only those products that are single pigments will be indicated in this database. In a few cases, the Color Index International has listed a mixture of pigments or chemicals under a single color index pigment name or code, and these will also be designated as if they were a single pigment. The codes next to the pigments in above Color of Art Database may take you off sight where you can find more info or even purchase, if you so desire. These codes are not part of any standard, but were made up by me for this database, with purpose of making them as short as possible.
The links below next to the manufacturer code below are to the official manufacturer web site and will open in a new window.

AS = Art Spectrum
BR = Blueridge
BX = Blockx
CAS = C.A.S AlkydPro
CH = Charvin
CL = Classic, Triangle Coatings
DG = Daniel Green
EP = Earth Pigments
GB = Gamblin
GEN = Common Generic term
GO = Golden
GR = Grumbacher
GU = Guerra Paint &
LB = Lefranc & Bourgeois
LA = Lascaux
LQ = Liquitex
LK = Lukas
MA = Maimeri
MT = Matisse
MG = M. Graham
MW = Martin/F. Weber Co.
NP = Natural Pigments
OH = Old Holland
PF = Pebeo Fragonard
RF = R&F Handmade Paint
SE = Sennelier
SI = Sinopia
SCH = Schmincke
SQ = Steven Quiller
TA = Tri-Art
UT = Utrecht
VI = Vasari

CR = Chroma
DS = Daniel Smith
DR = Daler-Rowney
DV = Da Vinci
DB = Dick-Blick

Pigment
HO = Holbien
JO = Jo Sonja
KA = Kama Pigments
KP = Kremer Pigmente (USA site)

MH = Michael Harding
MR = MIR , Jaurena Art.

RGH = RGH Artists' Oil Paints
ROSS = Bob Ross
RT = Royal Talens
SH = Shinhan
SV = Shiva

WL = Williamsburg
WN = Windsor & Newton
YK = Yarka / St.Petersburg

Paint medium or binder code:

Key Top ^ Page Top^

Clicking on the paint or pigment manufacturer code next to the pigment name will take you off site where more information can be found. The link will most often take you to an art supplier where you can find more specific art medium or paint binder info, purchasing source, pigment properties, pigment history, MSDS sheets, and whether it is the artist premium or student economy grade. If *you find this site helpful you can help support this site by purchasing through these links*.

d in *italics* next to the pigment manufacturer or art supplier code indicates a discontinued pigment or paint.
All other art medium or binder codes in *italics* mean the pigment under that name is in the "student" or economy grade, not the "artist's" grade paint.

a = Acrylic Paint, heavy body;

ab = Acrylic Airbrush colors;

ad = Aqueous pigment dispersions;

af = Fluid Acrylics;

ag = Matte Acrylic or Acrylic Gouache;

ao = open acrylics or slow drying

k = Alkyd paints;

c = Casein or milk paint;

d = Discontinued

e = Encaustic paints;

g = Traditional water color Gouache;

i = Ink (printing ink or pigmented drawing inks);

o = Oil Paint;

p = Dry Pigment;

t = Artist Professional Tempera or Egg Tempera;

w = Watercolor Paint in tubes;

wp = Watercolor Pan; wp = 1/2 pan, wp(f) = full pan, wp(L) = large pan

wo = Water mixable oil paint or water soluble oil paint.

am = Acrylic medium, may have a wide variety of ingredients or uses

om = Oil painting Medium, may have a wide variety of ingredients or uses

wm = Watercolor Medium, may have a wide variety of ingredients or uses

GEN = Where there is a generally accepted common historic name associated with a pigment, I have used "GEN" to denote the generic or common historical name of a particular pigment.

Other than gouache, only single pigment paints and pigments are included. Gouache is designated distinct from watercolors because it is often mixed with white or additives to make it matte and/or opaque and that is not usually indicated on the paint manufactures literature. Other art material or medium forms such as pastel, oil pastels, oil bars, dyes and ceramic glazes will not be designated with a artists medium or binder code, but may still be listed under the pigment name with a company code.

Artist Reference Resources:

Historical Artist and Pigment Reference Sources:
This is just a partial list, for a more complete listing of Historical Pigment References see the Free Art Books Page**.**

1. The Industrial and Artistic Technology of Paint and Varnish,
   By Alvah Horton Sabin, Published by J. Wiley & Sons, 1904
2. The Painters' Encyclopaedia,
   By Franklin B. Gardner, Published by M.T. Richardson, 1887
3. The Science of Painting,
   By Jehan Georges Vibert, Published by P. Young, 1892
4. A Treatise on Painting,
   By Cennino Cennini, Giuseppe Tambroni, Mary Philadelphia Merrifield, Translated by Mary Philadelphia Merrifield, Published by Lumley, 1844
5. A Treatise on Painting,
   By Leonardo Da Vinci, John Francis Rigaud, Published by J.B. Nichols and Son 1835
6. The Book of the Art of Cennino Cennini,
   By Cennino Cennini, Cennini, Christiana Jane Powell Herringham, Translated by Christiana Jane Powell Herringham, Published by G. Allen & Unwin, ltd., 1899
7. The Chemistry of Paints and Painting,
   By Arthur Herbert Church, Published by Seeley, 1901
8. A Handbook for Painters and Art Students on the Character and Use of Colours,
   By William J. Muckley, Published by Baillière, Tindall, and Cox, 1880
9. The Household Cyclopedia,
   By Henry Hartshorne 1881
10. The Chemistry of Pigments,
    By Ernest John Parry, John Henry Coste, Published by Scott, Greenwood, 1902
11. Facts about Processes, Pigments and Vehicles: A Manual for Art Student,
    By Arthur Pillans Laurie, Published by Macmillan, 1895
12. The Manufacture Of Earth Colours:
    By DR. JOSEF BERSCH, translated by CHARLES SALTER,SCOTT, GREENWOOD & SON , 1921 Link
13. Materials for Permanent Painting,
    By Maximilian Toch 1911

Modern Pigment and Artist Reference Sources:

14. The Artist's Handbook,
    by Pip Seymour, Arcturus Publishing (September 16, 2003)
15. The Artist's Handbook, Revised Edition,
    Ray Smith; DK Publishing 2003
16. The Artist's Handbook of Materials and Techniques,
    Third edition, by Ralph Mayer; Viking Press 1979
17. Artists' Pigments: Volume 1: A Handbook of their History and Characteristics
    Edited by Robert L. Feller
18. Artists' Pigments: Volume 2: A Handbook of their History and Characteristics
    Edited by Ashok Roy (Oct 2, 1993)
19. Artists' Pigments: Volume 3: A Handbook of their History and Characteristics
    Edited by Elisabeth West Fitzhugh (Oct 1997)
20. Artists' Pigments: Volume 4: A Handbook of their History and Characteristics
    Edited by Barbara Berrie (Jun 7, 2007)
21. Collins Artist's Colour Manual,
    Simon Jennings; HarperCollins Publishers 2003
22. Color Index International Pigments and Solvent Dyes,
    The Society of Dyers and colourists, third edition 1998
23. A Dictionary of Art Terms and Techniques.
    Ralph Mayer, Harper and Row Publishers, New York, 1969
24. The Materials and Techniques of Painting,
    by Jonathan Stephenson (May 1993)
25. The Painter's Handbook,
    Mark David Gottsegen; Watson-Guptill Publications 1993
26. Painting Materials A Short Encyclopaedia,
    by Rutherford J. Gettens and George L. Stout; Dover Publications 1966
27. Pigment Compendium,
    by Nicholas Eastaugh, Valentine Walsh, Tracey Chaplin, Ruth Siddall; Butterworth Heinemann 2004

Web Resources and Art Suppliers with Excellent Reference Materials:

28. American Institute for Conservation of Historic and Artistic Works (AIC):

National membership organization in the United States dedicated to the preservation of cultural material, establishes and upholds professional standards, promoting research and publications, educational opportunities, and fostering the exchange of knowledge among conservators, allied professionals, and the public.

29. AMIEN:
    a resource for artists dedicated to providing the most comprehensive, up-to-date, accurate, and unbiased factual information about artists' materials
30. Blick Art Materials:
    has done a extremely thorough job of indicating the pigments used in most of the paints they sell, making the Dick Blick art supply website much more than just a store to purchase paint and art supplies.
    Dick Blick also has the MSDS sheets
    for of most of the products they sell , making the Blick site a valuable resource for toxicity info and the health and safety of artist materials.
31. Coloria.net,
    a large and thorough site on pigments, in Finnish http://www.coloria.net/index.htm
32. Conservation and Art Materials Encyclopedia Online (CAMEO), The Materials Database,
    developed at the Museum of Fine Arts, Boston (MFA), to be a more comprehensive and well-rounded encyclopedic resource for the art conservation and historic preservation fields. The MATERIALS database contains chemical, physical, visual, and analytical information on over 10,000 historic and contemporary materials used in the production and conservation of artistic, architectural, archaeological, and anthropological materials.
33. Conservation OnLine (CoOL):
    A freely accessible platform to generate and disseminate vital resources for those working to preserve cultural heritage worldwide.
34. The Handprint.com:
    site by Bruce MacEvoy has loads of excellent information on watercolor pigments and Has a excellent color wheel showing where the actual pigments are in color space. Truly an awesome site, the site is directed at watercolors, but is a good general reference for any paints or pigments.
35. Webexhibits.org;
    Great pigment sight that even includes step by step instructions for making you own pigments.
36. The Real Color Wheel;
    by Don Jusko is also a great color site.
37. Studiomara:
    has a fantastic pigment reference database sorted by the marketing paint color name and brand.
38. Health and Safety in the Arts;
    A Searchable Database of Health & Safety Information for Artists
39. Household Products Database;
    Health and safety information on household products from the US Department of Health and Human Services
40. Natural Pigments:
    One of the best sources of rare natural and historical pigments and information.
41. Pigments and their Chemical and Artistic Properties; by Julie C. Sparks, is part of The Painted Word Site. Wonderful stuff.
42. Paintmaking.com: By Tony Johansen, Great Paint making site with all types of useful pigment and binder information for the artist.
43. PCImag.com: Paint & Coatings Indusry
    2010 Additives Handbook by Darlene Brezinski, Dr. Joseph V. Koleske, Robert Springate, June 4, 2010;
    A History of Pigment Use in Western Art Part 1;
    A History of Pigment Use in Western Art Part 2
44. Dick Blick Artist Supply:
    Full Range of art supplies at discount prices and has pigment info on most paints they sell
45. Kremer Pigmente Europe / Kremer Pigments USA site:
    Has a huge amount of pigments and information.
46. Earth Pigments:
    Specializes in earth pigments.
47. Guerra Paint and Pigments:
    Many rare and out of production Pigments mostly in aqueous dispersions
48. Sinopia:
    Lots of Pigments & info

Health and Safety in the Arts References and Info:

49. Art and Craft Safety Guide (PDF, 250 KB)
    Consumer Product Safety Commission
50. Art Materials Business Guidance
    Consumer Product Safety Commission
51. Art Safety
    Environmental Protection, Health & Safety, California State University at Monterey Bay
52. Artist Safety
    Center for Research on Occupational and Environmental Toxicology, Oregon Health & Science University
53. Environmental Health & Safety in the Arts: A Guide for K-12 Schools, Colleges and Artisans
    U. S. Environment Protection Agency
54. Exposing Ourselves to Art (PDF, 6.83 MB)
    Scott Fields. Environmental Health Perspectives Volume 105, Number 3, March 1997
55. Health & Safety Bibliographic Resources and Resource Guides in Art Conservation
    CoOL – Conservation Online, Stanford University Libraries
56. Health and Safety Guides and Publications
    American Institute for Conservation of Historic and Artistic Work
57. Art Safety

Office of Environmental Health and Safety, Connecticut College

58. Health and the Arts Program
    The Occupational Health Service Institute, University of Illinois at Chicago
59. Online Health and Safety in the Arts Library
    The Occupational Health Service Institute, University of Illinois at Chicago
60. Arts, Entertainment and Recreation
    New York Committee for Occupational Safety and Health
61. Studio Safety
    Gamblin Artists Colors

This page of the Color of Art Pigment Database was designed for C.I. Pigment Metal and other various paint additives.

This color database is a also a great pigment reference made for DIY artist's and artisans that make their own paints with raw pigments and grind or mull the pigments into homemade paints giving them complete control over the paints grind, texture, and color. Making your own paints (paint making) by mulling the pigment in with a binding medium can be a rewarding and fun creative experience. The artist is involved in the process of creation, from the beginning with only the raw dry pigments and proceeding on to grinding pigments with a binding media (usually shortened to "binder"). For making oil paints, linseed oil is the most common binder (or medium). Walnut oil is also common oil used in making oil colors in the art studio and is less yellowing than linseed oil, There are other less common drying oils and some new alkyd resins the are sometimes used in making oil colors in the studio. Making (or grinding) watercolor paint is also fun and easy. The most common formula for making homemade watercolors is mostly water with some dissolved gum arabic (the glue that holds the paint together when dry). Honey and glycerin are common additives used in varying proportions to adjust the drying time and re-wetability of the dried watercolor. See the Art is Creation Recipe page and the free book page for more info and paint making or grinding medium recipes. Egg-oil tempera and other media can be made in the art studio by DIY artists and it is creative and fun to make your very own paints. It is a very rewarded creative experience to grinding (mulling) your own paints and then finally making a painting or work of art, all entirely created by the artist themselves from start to finish.

Reference resources and info on pigments used for artist paint, student paints, oil color including:

- Oil Paints
- Watercolors
- Acrylic Paint
- Pigments used in making paint
- Dry Pigments and Powders
- Aqueous Pigment Dispersions
- Fluid Acrylics
- Airbrush Paint
- Acrylic Gouache
- Matte Acrylic Paints
- Acrylic Vinyl
- Acyclic paint or Alkyd Oils
- Casein or Milk Paint
- Encaustic painting
- Gouache
- Printing Inks or Pigmented Drawing inks
- Oil sticks or Oil Bars
- Oil Base Pigment Stick
- Tempera or Egg Tempera
- Watercolor Sticks
- Watercolor Pigment Sticks or Bars
- Water mixable oil paint or water soluble oil paint