

Index no.	Product code	Pigment name	C.I. ¹ code	Pigment type	Chemical description ²	Time when the pigment was introduced ³	Source / Provenance
1	10000	Smalt (0-120 μ)	PB 32	synthetic mineral pigment	SiO ₂ (65%) + K ₂ O(15%) + As ₂ O ₃ (5%) + CoO(10%)	16 th century	Kremer
2	10010	Smalt (very fine) (< 80 μ)	PB 32	synthetic mineral pigment	SiO ₂ (65%) + K ₂ O(15%) + As ₂ O ₃ (5%) + CoO(10%)	16 th century	Kremer
3	10060	Egyptian Blue (0-120 μ)	PB 31	synthetic mineral pigment	CaCuSi ₄ O ₁₀	Ca. 2613-2494 B.C.	Kremer
4	10064	Egyptian Green (40-120 μ)	PB 31	synthetic mineral pigment	CaSiO ₃ + sticlă de Cu	Ca. 2323-2150 B.C.	Kremer
5	10071	Han Blue (fine) (0-40 μ)	-	synthetic mineral pigment	BaCuSi ₄ O ₁₀	since antiquity (China)	Kremer
6	10074	Han Purple (fine) (< 40 μ)	-	synthetic mineral pigment	BaCuSi ₂ O ₆	since antiquity (China)	Kremer
7	10110	Lead Tin Yellow Deep (< 38 μ)	77629	synthetic mineral pigment	Pb ₂ SnO ₄	13 th century	Kremer
8	10150	English Pink (< 38 μ)	PR 233	synthetic mineral pigment	Ca(Sn,Cr)·SiO ₅	after 1850	Kremer
9	10154	English Pink Deep (< 38 μ)	PR 233	synthetic mineral pigment	Ca(Sn,Cr)·SiO ₅	after 1850	Kremer
10	10170	Ploss Blue	-	synthetic mineral pigment	Cu(CH ₃ COO) ₂ ·H ₂ O	since antiquity	Kremer
11	10180	Blue Verditer	PB 30	synthetic mineral pigment	2CuCO ₃ ·Cu(OH) ₂	15 th century	Kremer
12	10184	Blue Bice	PB 30	synthetic mineral pigment	2CuCO ₃ ·Cu(OH) ₂	15 th century	Kremer
13	10200	Azurite (0-120 μ)	PB 30	natural mineral pigment	2CuCO ₃ ·Cu(OH) ₂	since antiquity	Kremer
14	10203	Azurite Extra Deep (80-100 μ)	PB 30	natural mineral pigment	2CuCO ₃ ·Cu(OH) ₂	since antiquity	Kremer
15	10204	Azurite Deep (63-80 μ)	PB 30	natural mineral pigment	2CuCO ₃ ·Cu(OH) ₂	since antiquity	Kremer
16	10206	Azurite Light (38-63 μ)	PB 30	natural mineral pigment	2CuCO ₃ ·Cu(OH) ₂	since antiquity	Kremer
17	10207	Azurite Sky-Blue Light (< 38 μ)	PB 30	natural mineral pigment	2CuCO ₃ ·Cu(OH) ₂	since antiquity	Kremer

18	10210	Azurite natural (very fine) ($< 80 \mu$)	PB 30	natural mineral pigment	$2\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$	since antiquity	Kremer / Provenance: Congo
19	10300	Malachite (0-120 μ)	PB 30	natural mineral pigment	$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$	since antiquity	Kremer / Provenance: Congo
20	10343	Malachite (medium) (80-100 μ)	PB 30	natural mineral pigment	$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$	since antiquity	Kremer / Provenance: Congo
21	10344	Malachite (fine) (63-80 μ)	PB 30	natural mineral pigment	$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$	since antiquity	Kremer / Provenance: Congo
22	10345	Malachite (extra fine) ($< 63 \mu$)	PB 30	natural mineral pigment	$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$	since antiquity	Kremer / Provenance: Congo
23	10350	Chrysocolla (0-120 μ)	PB 31	natural mineral pigment	$(\text{Cu}, \text{Al})_2\text{H}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot n\text{H}_2\text{O}$	since antiquity	Kremer
24	103600	Fibrous Malachite (0-120 μ)	PB 30	natural mineral pigment	$\text{Cu}_2(\text{CO}_3)_3(\text{OH})_2$	since antiquity	Kremer / Provenance: Congo
25	103700	Malachite Arabian (0-120 μ)	PB 30	natural mineral pigment	$\text{Cu}_3(\text{SO}_4)(\text{OH})_4$	since antiquity	Kremer / Provenance: Algeria
26	103800	Turquoise Sky-Blue (0-120 μ)	-	natural mineral pigment	$\text{Cu}(\text{Al}, \text{Fe})_6(\text{PO}_4)_4(\text{OH})_8 \cdot 4 \text{H}_2\text{O}$	since antiquity	Kremer
27	103900	Atacamite (0-120 μ)	-	natural mineral pigment	$\text{Cu}_2\text{Cl}(\text{OH})_3$	since antiquity	Kremer
28	104200	Sodalite (0-120 μ)	-	natural mineral pigment	$\text{Na}_4(\text{Si}_3\text{Al}_3)\text{O}_{12}\text{Cl}$	since antiquity	Kremer
29	10437	Kyanite Dark Gray ($< 80 \mu$)	-	natural mineral pigment	Al_2SiO_5	since antiquity	Kremer
30	10440	Sapphire Pale Blue ($< 80 \mu$)	-	natural mineral pigment	Al_2O_3	since antiquity	Kremer
31	104602	Cavansite (extra fine) ($< 40 \mu$)	-	natural mineral pigment	$\text{Ca}(\text{VO})\text{Si}_4\text{O}_{10} \cdot 4\text{H}_2\text{O}$	since antiquity	Kremer Provenance: Poona, India
32	10510	Lapis Lazuli (medium quality)	PB 29	natural mineral pigment	$(\text{Na}, \text{Ca})_8[(\text{SO}_4, \text{S}, \text{Cl})_2(\text{AlSiO}_4)_6]$	since antiquity	Kremer / Provenance: Afghanistan
33	10520	Lapis Lazuli (good quality)	PB 29	natural mineral pigment	$(\text{Na}, \text{Ca})_8[(\text{SO}_4, \text{S}, \text{Cl})_2(\text{AlSiO}_4)_6]$	since antiquity	Kremer / Provenance: Afghanistan
34	10550	Lapis Lazuli (bright pure blue) ($< 20 \mu$)	PB 29	natural mineral pigment	$(\text{Na}, \text{Ca})_8[(\text{SO}_4, \text{S}, \text{Cl})_2(\text{AlSiO}_4)_6]$	since antiquity	Kremer / Provenance: Chile
35	1056020	Lapis Lazuli (extra fine) ($< 20 \mu$)	PB 29	natural mineral pigment	$(\text{Na}, \text{Ca})_8[(\text{SO}_4, \text{S}, \text{Cl})_2(\text{AlSiO}_4)_6]$	since antiquity	Kremer / Provenance: Chile

36	1056045	Lapis Lazuli (fine) (38-45 μ)	PB 29	natural mineral pigment	$(\text{Na,Ca})_8[(\text{SO}_4,\text{S,Cl})_2(\text{AlSiO}_4)_6]$	since antiquity	Kremer / Provenance: Chile
37	10580	Ultramarine Ash	PB 29	natural mineral pigment	$\text{Na}_2\text{O}\cdot 3\text{Al}\cdot 6\text{SiO}_2\cdot 2\text{Na}_2\text{S}$	since antiquity	Kremer / Provenance: Afghanistan
38	10610	Cinnabar (< 63 μ)	PR 106	natural mineral pigment	HgS	since antiquity	Kremer / Provenance: Monte Amiata, Italy
39	10620	Cinnabar	PR 106	natural mineral pigment	HgS	since antiquity	Kremer / Provenance: China
40	10624	Cinnabar (extra fine) (< 20 μ)	PR 106	natural mineral pigment	HgS	since antiquity	Kremer
41	10625	Cinnabar (fine) (20-50 μ)	PR 106	natural mineral pigment	HgS	since antiquity	Kremer
42	10628	Cinnabar (dark) (63-100 μ)	PR 106	natural mineral pigment	HgS	since antiquity	Kremer
43	10700	Orpiment (genuine) (< 175 μ)	PY39	natural mineral pigment	As_2S_3	since antiquity	Kremer
44	10800	Realgar (genuine) (< 175 μ)	PY39	natural mineral pigment	$\alpha\text{-As}_4\text{S}_4$	since antiquity	Kremer
45	10900	Galena	77640	natural mineral pigment	PbS	since antiquity	Kremer
46	10910	Chalcopyrite	-	natural mineral pigment	CuFeS_2	since antiquity	Kremer
47	10912	Covelline	-	natural mineral pigment	CuS	since antiquity	Kremer
48	10914	Chalcocite	-	natural mineral pigment	Cu_2S	since antiquity	Kremer
49	10918	Bornite	-	natural mineral pigment	Cu_5FeS_4	since antiquity	Kremer
50	10920	Pyrite (0-120 μ)	-	natural mineral pigment	FeS_2	since antiquity	Kremer
51	10940	Antimony (0-200 μ)	PR 107	synthetic mineral pigment	Sb_2S_3	since antiquity	Kremer
52	11010	Verona Green Earth (fine) (0-80 μ)	PG 23	natural mineral pigment	$\text{K}[(\text{Al,Fe}^{\text{III}}),(\text{Fe}^{\text{II}},\text{Mg})(\text{AlSi}_3,\text{Si}_4)\text{O}_{10}(\text{OH})_2]$	since antiquity	Kremer / Provenance: Verona, Italy
53	11100	Bavarian Green Earth (0-120 μ)	PG 23	natural mineral pigment	$\text{K}[(\text{Al,Fe}^{\text{III}}),(\text{Fe}^{\text{II}},\text{Mg})(\text{AlSi}_3,\text{Si}_4)\text{O}_{10}(\text{OH})_2]$	since antiquity	Kremer / Provenance: Bavaria, Germany

54	11110	Russian Green Earth (0-120 μ)	PG 23	natural mineral pigment	$K[(Al,Fe^{III}), (Fe^{II},Mg)(AlSi_3,Si_4)O_{10}(OH)_2]$	since antiquity	Kremer / Provenance: Russia
55	11111	Russian Green Earth (extra fine) (< 63 μ)	PG 23	natural mineral pigment	$K[(Al,Fe^{III}), (Fe^{II},Mg)(AlSi_3,Si_4)O_{10}(OH)_2]$	since antiquity	Kremer / Provenance: Russia
56	11120	Volkonskoite (0-120 μ)	-	natural mineral pigment	$Ca_{0.3}(Cr,Mg,Fe)_2((Si,Al)_4O_{10})(OH)_2 \cdot 4H_2O$	since antiquity	Kremer / Provenance: Siberia, Russia
57	11141	Aegirine (63-80 μ)	-	natural mineral pigment	$NaFeSi_2O_6$	since antiquity	Kremer
58	11150	Epidote	-	natural mineral pigment	$Ca_2(Al, Fe^{3+})_3[OH(SiO_4)_3]$	since antiquity	Kremer
59	11151	Epidote (greenish extra) (0-120 μ)	-	natural mineral pigment	$Ca_2(Al, Fe^{3+})_3[OH(SiO_4)_3]$	since antiquity	Kremer
60	11152	Florentine Green (60-120 μ)	-	natural mineral pigment	$CaMgO_6Si_2$	since antiquity	Kremer / Provenance: Volterra, Italy
61	11181	Andeer Green (fine) (0-200 μ)	-	natural mineral pigment	$(Mg,Fe,Ni,Al,Zn,Mn)_{2-3}(Si,Al,Fe)_2O_5(OH)_4$	since antiquity	Kremer / Provenance: Andeer, Switzerland
62	11183	Andeer Green (coarse) (0,5-2 mm)	-	natural mineral pigment	$(Mg,Fe,Ni,Al,Zn,Mn)_{2-3}(Si,Al,Fe)_2O_5(OH)_4$	since antiquity	Kremer / Provenance: Andeer, Switzerland
63	11200	Green Jasper (0-120 μ)	PW 27	natural mineral pigment	SiO_2	since antiquity	Kremer
64	11210	Green Quartz (63-100 μ)	PW 27	natural mineral pigment	SiO_2	since antiquity	Kremer
65	11250	Celadonite	-	natural mineral pigment	$K(Mg, Fe^{2+})Fe^{3+}(Si_4O_{10})(OH)_2$	since antiquity	Kremer / Provenance: Côte d'Azur, France
66	11272	Yellow Ochre from Andalusia (0-80 μ)	PY 43	natural mineral pigment	$Fe_2O_3 \cdot H_2O / FeOOH$	since antiquity	Kremer / Provenance: Andalusia, Spain
67	11273	Red Ochre from Andalusia (light) (0-80 μ)	PR 102	natural mineral pigment	Fe_2O_3	since antiquity	Kremer / Provenance: Andalusia, Spain
68	11276	Brown Ochre from Andalusia (0-80 μ)	PR 102	natural mineral pigment	Fe_2O_3	since antiquity	Kremer / Provenance: Andalusia, Spain
69	11280	Black Earth from Andalusia (0-80 μ)	-	natural mineral pigment	$Fe_2O_3 + SiO_2 + Al_2O_3 + CaO + MgO$	since antiquity	Kremer / Provenance: Andalusia, Spain
70	11283	Alba Albula	-	natural mineral pigment	$CaCO_3$	since antiquity	Kremer /

							Provenance: Albula, Switzerland
71	11290	Dolomite (0-120 μ)	PW 18	natural mineral pigment	CaMg(CO ₃) ₂	since antiquity	Kremer / Provenance: Swiss Alps
72	11291	Dolomite (coarse) (120-250 μ)	PW 18	natural mineral pigment	CaMg(CO ₃) ₂	since antiquity	Kremer / Provenance: Swiss Alps
73	11300	Red Jasper (0-120 μ)	PW 27	natural mineral pigment	SiO ₂ + Fe ³⁺ , O	since antiquity	Kremer
74	11305	Carneol (0-120 μ)	PW 27	natural mineral pigment	SiO ₂	since antiquity	Kremer
75	10975	Meteorite Brown (chondrite) (0-80 μ)	-	natural mineral pigment	lithic meteorite composed of olivine (40%), pyroxenite (30%), plagioclase (10%), Fe-Ni alloy (10-20%) and troilite (5-15%)	since antiquity	Kremer / Provenance: Zagora, Morocco
76	11310	Rose Quartz (0-120 μ)	PW 27	natural mineral pigment	SiO ₂	since antiquity	Kremer / Provenance: Namibia
77	11315	Amethyst (0-120 μ)	PW 27	natural mineral pigment	SiO ₂	since antiquity	Kremer / Provenance: Brasilia
78	11320	Rhodochrosite (0-120 μ)	-	natural mineral pigment	MnCO ₃	since antiquity	Kremer
79	11324	Rhodonite Black (0-80 μ)	-	natural mineral pigment	CaMn ₃ Mn[Si ₅ O ₁₅]	since antiquity	Kremer
80	11350	Côte d'Azur Violet	-	natural mineral pigment	Fe ₂ O ₃	since antiquity	Kremer / Provenance: Côte d'Azur, France
81	11354	Slate Green from Mels	-	natural mineral pigment	K[(Al,Fe ^{III}),(Fe ^{II} ,Mg)(AlSi ₃ ,Si ₄)O ₁₀ (OH) ₂	since antiquity	Kremer / Provenance: Mels, Switzerland
82	11356	Gray from Mels	PBk 19	natural mineral pigment	Fe ₂ O ₃ + SiO ₂ + Al ₂ O ₃ + CaO + MgO	since antiquity	Kremer / Provenance: Mels, Switzerland
83	11360	Brown-Red Slate	-	natural mineral pigment	Fe ₂ O ₃ + SiO ₂	since antiquity	Kremer / Provenance: Austria
84	11362	Gray from Burgundy (0-80 μ)	-	natural mineral pigment	Fe ₂ O ₃ + SiO ₂ + Al ₂ O ₃ + CaO + MgO	since antiquity	Kremer / Provenance: Burgundy, France
85	11390	Jade (extra fine) (< 63 μ)	-	natural mineral pigment	NaAlSi ₂ O ₆	since antiquity	Kremer / Provenance: Russia
86	11391	Jade (fine) (40-100 μ)	-	natural mineral pigment	NaAlSi ₂ O ₆	since antiquity	Kremer / Provenance: Russia

87	11392	Jade (medium) (100-120 μ)	-	natural mineral pigment	NaAlSi ₂ O ₆	since antiquity	Kremer / Provenance: Russia
88	11400	Rock Crystal (80-150 μ)	PW 27	natural mineral pigment	SiO ₂	since antiquity	Kremer
89	11401	Rock Crystal (fine) (< 63 μ)	PW 27	natural mineral pigment	SiO ₂	since antiquity	Kremer
90	11415	Bianco San Giovanni	PW 18	synthetic mineral pigment	CaCO ₃ + Ca(OH) ₂	since antiquity	Kremer
91	11416	Bianco San Giovanni (coarse)	PW 18	synthetic mineral pigment	CaCO ₃ + Ca(OH) ₂	since antiquity	Kremer
92	11420	Fuchsite (extra fine) (0-100 μ)	PW 20	natural mineral pigment	K(Al,Cr) ₃ Si ₃ O ₁₀ (OH) ₂	since antiquity	Kremer
93	11421	Fuchsite (fine) (100-250 μ)	PW 20	natural mineral pigment	K(Al,Cr) ₃ Si ₃ O ₁₀ (OH) ₂	since antiquity	Kremer
94	11422	Fuchsite (medium) (250-500 μ)	PW 20	natural mineral pigment	K(Al,Cr) ₃ Si ₃ O ₁₀ (OH) ₂	since antiquity	Kremer
95	11424	Fuchsite (coarse) (500-1000 μ)	PW 20	natural mineral pigment	K(Al,Cr) ₃ Si ₃ O ₁₀ (OH) ₂	since antiquity	Kremer
96	11520	Jarosite (0-100 μ)	PY43	natural mineral pigment	KFe ³⁺ ₃ (SO ₄) ₂ (OH) ₆	since antiquity	Kremer
97	11530	Gold Ochre	PY 43	natural mineral pigment	Fe ₂ O ₃ ·H ₂ O / FeOOH	since antiquity	Kremer / Provenance: Saxony, Germany
98	11540	Taunus Ochre (light)	PY 43	natural mineral pigment	Fe ₂ O ₃ ·H ₂ O / FeOOH	since antiquity	Kremer / Provenance: Germany
99	11550	Red Ochre from Island (Snaefellsjoekull Red)	-	natural mineral pigment	Fe ₂ O ₃ + SiO ₂ + Al ₂ O ₃ + CaO + MgO	since antiquity	Kremer / Provenance: Island
100	11551	Yellow Ochre from Island (Heydalsvegur Yellow)	-	natural mineral pigment	Fe ₂ O ₃ ·H ₂ O/FeOOH + SiO ₂ + Al ₂ O ₃ + CaO + MgO	since antiquity	Kremer / Provenance: Island
101	11552	Green Earth from Island (Brimisvellir Green)	-	natural mineral pigment	K[(Al,Fe ^{III}),(Fe ^{II} ,Mg)](AlSi ₃ ,Si ₄)O ₁₀ (OH) ₂	since antiquity	Kremer / Provenance: Island
102	11573	Burgundy Yellow Ochre (0-120 μ)	PY 43	natural mineral pigment	Fe ₂ O ₃ ·H ₂ O / FeOOH + SiO ₂ + Al ₂ O ₃ + CaO + MgO	since antiquity	Kremer / Provenance: Burgundy, France
103	11575	Burgundy Red Ochre (0-120 μ)	PR 102	natural mineral pigment	Fe ₂ O ₃ + SiO ₂ + Al ₂ O ₃ + CaO + MgO	since antiquity	Kremer / Provenance: Burgundy, France
104	11577	Burgundy Red Ochre Deep (0-120 μ)	PR 102	natural mineral pigment	Fe ₂ O ₃ + SiO ₂ + Al ₂ O ₃ + CaO + MgO	since antiquity	Kremer / Provenance: Burgundy, France

105	11584	Spanish Red Ochre (0-120 μ)	-	natural mineral pigment	$\text{Fe}_2\text{O}_3 + \text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{CaO} + \text{MgO}$	since antiquity	Kremer / Provenance: Castille, Spain
106	11620	Brown Earth from Otranto	PBr 7	natural mineral pigment	$\text{Fe}_2\text{O}_3 + \text{SiO}_2 + \text{Al}_2\text{O}_3$	since antiquity	Kremer / Provenance: Otranto, Italy
107	11630	Iseo Brown	-	natural mineral pigment	$\text{Fe}_2\text{O}_3 \cdot (\text{H}_2\text{O}) + \text{MnO}_2 \cdot (n \text{ H}_2\text{O}) + \text{Al}_2\text{O}_3$	since antiquity	Kremer / Provenance: Italy
108	116431	Red Moroccan Ochre (fine) (0-80 μ)	PR 102	natural mineral pigment	$\text{Fe}_2\text{O}_3 + \text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{CaO} + \text{MgO}$	since antiquity	Kremer / Provenance: Morocco
109	116440	Red Moroccan Ochre (dark) (0-120 μ)	PR 102	natural mineral pigment	$\text{Fe}_2\text{O}_3 + \text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{CaO} + \text{MgO}$	since antiquity	Kremer / Provenance: Morocco
110	11670	Onyx Black (0-120 μ)	PW 27	natural mineral pigment	SiO_2	since antiquity	Kremer
111	11674	Obsidian Black (0-120 μ)	-	volcanic glass	amorphous volcanic glass	since antiquity	Kremer / Provenance: Mexico
112	11810	Selenite (fine) (0-80 μ)	PW 25	natural mineral pigment	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$	since antiquity	Kremer / Provenance: Cyprus
113	17290	Ironstone	PBr 7	natural mineral pigment	calcite, iron ore and manganese ore	since antiquity	Kremer
114	362611	Yellow lake pigment	NY 2	natural organic dye	lake made of reseda and buckthorn berries	since antiquity	Kremer
115	36262	Yellow lake pigment	NY 2	natural organic dye	lake made of reseda	since antiquity	Kremer
116	36267	Indigo Green (0-63 μ)	-	natural organic dye	precipitation of reseda and indigo	since antiquity	Kremer
117	36180	Sandalwood	NR 22	natural organic dye	red sandalwood powder	since antiquity	Kremer / Provenance: Sumatra
118	36020	Indian Red Lake	NR 25	natural organic dye	Red lake made from Coccus Lacta secretion	since antiquity	Kremer
119	37000	Dragon's Blood	NR 31	natural organic dye	red lake made from Resina Dracaena	since antiquity	Kremer
120	37030	Kamala	NO 2	natural organic dye	red natural resin Mallotus philippinensis	since antiquity	Kremer

¹ <http://www.artiscreation.com/>

² <https://www.kremer-pigmente.com/en/>
<https://ruff.info/>

³ Eastaugh Nicholas, Valentine Walsh, Tracey Chaplin, Ruth Siddall, Pigment compendium: a dictionary and optical microscopy of historical pigments, Routledge, 2013.

Feller Robert (ed.), Artists' Pigments. A Handbook of Their History and Characteristics, vol. 1, National Gallery of Art, 1986.

Roy Ashok (ed.), Artists' Pigments. A Handbook of Their History and Characteristics, vol. 2, National Gallery of Art, 1993.

Fitzhugh Elisabeth West (ed.), Artists' Pigments. A Handbook of Their History and Characteristics, vol. 3, National Gallery of Art, 1997.

Ruth Siddall, Mineral pigments in archaeology: Their analysis and the range of available materials. Minerals. 8 (2018)