Data on Active Pigments.

The information contained in the attached sheets covers the most important physical and chemical properties of the pigments in active use at the Cleveland Plant together with notes on the routine testing of each material.

All of the data is presented in tabular form for ready reference and for this reason is of necessity very concise.

The figures under the column heading "Oil Absorption" are expressed in cc. of oil per gm. of pigment. In most cases the body imparted to a paint by a given quantity of pigment will be found to be directly proportional to the figures as given in this column.

The figures under the column "Tint" afford a means of comparing the tinting strength of the various colors. In the case of colored pigments the figure represents the number of pounds of zinc oxide required to let down the color to an arbitrary standard of depth. Hence, in the case of colored pigments, the higher the value given the greater is the tinting strength. However in the case of white pigments, the figure represents the pounds of white pigment required to be added to 1 lb. of ultramarine blue to obtain the standard shade; hence, in this case the lower the figure the greater the tinting strength.

The column "Test Data" gives the routine tests ordinarily run in checking each shipment of the various pigments. The G. P. references indicate the articles in the General Proceedure of Raw Material Analysis and Testing recently distributed by the Chemical Laboratory - describing in detail each test indicated.

The balance of the data given is self explanatory.

It is hoped that this information will assist the formulator by giving him a better understanding of the physical and chemical properties of the various pigments, and providing a convenient reference for use in formulation, figuring specification paints, determining theoretical yields, etc.

White Pigments - 1

Code	Pigment	Supplier	S. G.	Bulk	Oil-Ab	Tint	Composition	Fineness	Test Data
W-1	Sublimed White Lead	Eagle Pitcher Co.	6.4	1.87	0.25	25	Basic Sulphate of Lead.		A-Color+ Oil Ab. GP 50 B- Tint (50 Mg-2G) GP 51
W-4	Green Seal Zinc Oxide	Anaconda Lead Products New JerseyZinc	5.2	2.11	0.35	18	French Process Zinc Oxide		As W-1
W-6	35% Leaded Zinc	Ozark Smelting Co.	5.8	2.1	0.30	25	Basic Lead Sulphate - 35 ZnO - 65		As W-1
W-9	Imported Whiting	Stanley Doggett	2.7	4.4	0.45		Ca CO3- 99 Silicates- not over- 1	0.5% 325	A-Color & Oil Ab. GP 50 B-Fineness GP 57 C-Putty Test Note-1
W-10	Barytes	National Pigments & Chem. Co.	4.4	2.7	0.25		BaSO4 - .99+	0.4% 325	A-Color & Oil Ab. GP 50 B- Fineness GP 57
W-11	Asbestine	International Pulp Co.	2.8	4.2	0.60		Mg Silicate	1.25% 325	As W 10 Note-Samples should be compared under microscope
W-12	China Clay	Baker & Collinson	2.7	4.4	0.70		Al2O3 2 SiO2 2 H2O	0.30% 325	As W 10
W-15	Silex	Michigan Quartz Silica Co.	2.6	4.5	0.35		SiO2- 98-100% Crystalline Quartz		As W 10
W-16	Silica	World's Products Trading Corp.	2.6	4.5	0.50		SiO2- 99.5 - 99.8% Amorphous	2.75% 325	As W 10
W-21	Carbonate of Magnesia	Wishnick Tumpeer	2.3	5.7	2.30		MgO - 41 CO2 - 36 Water- 22	1.0% 325	As W 10
W-25	Antimony Oxide	Harshaw Chemical Co	5.7	2.1	0.30	14	Sb2O3 - 99+%		As W 1
W-32	Plaster of Paris	Cleve. Builders Supply & Brick Co	2.6	4.5			Anh. Calcium Sulphate		No routine test
W-33	Z Z Z Zinc Oxide	American Zinc Sales	2.1	5.6	0.45	20	ZnO- 99.2-8 PbSO4- Trace to 0.1		As W 1

S.G. Bulk Abb. Tint

COOL	PIGMENT	SUPPLIER	S. G.	BULK	OIL-AB	TINT	COMPOSITION	FINENESS	TEST DATA	REMARKS
W-42	COMMERCIAL WHITING	WISHNICK TUMPEER CO	2.7	4.4	0.40		$CaCO_3$ - 96-98%	1.75% 325	AS W 10	SLIGHT DIRTY GREY CAST. NOT AS SMOOTH & UNIFORM AS ~~SUPERFINE~~ CONTAINS MORE SiO_2
W-47	BLANC FIXE	CHEMICAL & PIGMENTS	4.36	2.75	0.60		$BaSO_4$- 98 ✓ $BaCO_3$- 1	0.3% 325	A-COLOR&OIL AB. GP 50 B- FINENESS GP 57	WHITER, SOFTER & HIGHER IN OIL ABS. THAN W-10
W-56	H.O. SUNOLITH OFF COLOR	CHEMICAL & PIGMENTS CO.	4.28	2.80	.42					SEE W 105-NOTE: W 105 IS LOW OIL.
W-60	35% LEADED ZINC OFF COLOR									SEE W 6.
W-63	ENAMEL CALCITE	WORLD'S PRODUCTS TRADING CORP.	2.72	4.40	0.40		$CaCO_3$- 99+%		A-COLOR&OIL AB. GP 50	A CRYSTALLINE FORM OF $CaCO_3$ WHITER THAN W9 OR W42. SETTLES BADLY.
W-66	TITANOX "B"	TITANIUM PIGMENTS CO	4.30	2.79	0.32	10	TiO_2- 25% $BaSO_4$- 75%		A-COLOR&OIL AB. GP 50 A- TINT- GP 51 (50 MG- 2G)	COLOR & TINTING STRENGTH EQUAL TO W 95.
W-71	ANACONDA WHITE LEAD	ANACONDA PRODUCTS CO.	6.74	1.78	0.25	24	BASIC LEAD CARB.		AS W 66	GOOD COLOR; SLIGHTLY WHITER THAN W 104; MUCH WHITER THAN W 76. USE W 104 TO REPLACE THIS
W-75	GYPSUM	HARSHAW CHEMICAL CO.	2.50	4.79	0.37		$CaSO_4 \cdot 2H_2O$	2.0% ON 325	A. CHECK COLOR & OIL ABS.- GP 50	PRINCIPAL USE IS IN WOOD FILLERS STAYS IN SUSPENSION & IMPROVES WIPING.
W-76	EUSTON WHITE LEAD	EUSTON LEAD CO.	6.82	1.76	0.20	45	BASIC LEAD CARB.		AS W 66	COLOR- POOR, SLIGHTLY BETTER THAN W 6.
W-84	SIERRA CLOUD TALC	S. C. DRURY	2.75	4.25	0.70		MAGNESIUM SILICATE	1.5 ON 325	AS W 47	GOOD SANDING. ABOUT SAME FLATTING AS CHI A CLAY. SETTLES BADLY, TOO MUCH PRODUCES CHAL. FILM.
W-87	LOW OIL O.C. SUNOLITH									SEE W 105.
W-90	A-550 ZnO	ANACONDA LEAD PRODUCTS CO.	5.20	2.11	0.35	18	FRENCH PROCESS ZINC OXIDE		AS W 66	NOT AS WHITE AS W 4; SAME AS NEW JERSEY ZINC RED SEAL ZnO.
W-91	PURE TITANIUM DIOXIDE	CHEMICAL & PIGMENTS	3.94	3.04	0.60	2½	PURE TiO_2		AS W 66	STRONGEST WHITE PIGMENT, SLIGHT RED CAST; CHALKS BADLY WHEN USED ALONE.
W-92	INFUSORIAL EARTH	HARSHAW CHEMICAL CO.			2.20		SILICEOUS SKELETONS OF MICROSCOPIC ORGANISMS		A- COLOR & OIL ABS. GP 50 B- SEE REMARKS	COMPARE WITH STANDARD FOR PARTICLE SIZE & STRUCTURE UNDER THE MICROSCOPE.
W-93	CREAM TRIPOLI	HARSHAW CHEMICAL CO.			0.35				AS W-92	

CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL-AB.	TINT	COMPOSITION	FINENESS	TEST DATA	REMARKS
W-94	DOMESTIC CLAY	HARSHAW CHEMICAL CO.	2.60	4.62	0.65		Al_2O_3 - 39 SiO_2 - 44 H_2O - 13	2% RESIDUE ON 325	A-COLOR & OIL ABS. GP 50 B-FINENESS GP 57	W 94 IS DARKER IN COLOR & SOMEWHAT COARSER THAN W12, DUE TO A HIGHER % OF IRON AND SILICA.
W-95	TITANOLITH L. O.	CHEMICAL & PIGMENTS	4.19	2.96	0.40	10	TiO_2 - 15 ZnS - 26 $BaSO_4$ - 59		A-COLOR & OIL ABS. GP 50 B-TINTING STRENGTH (50 MG-2G) GP 5)	EQUAL TO TITANOX FOR COLOR & STRENGTH.
W-97	L.O. DISPERSION LITHOPONE	CHEMICAL & PIGMENTS	4.28	2.80	0.35	14	TREATED LITHOPONE		AS W 95	YIELDS A FLATTER FINISH THAN W 105 OR W107. GIVES POORER BRUSHING & FLOW. USED ONLY IN FLATS.
W-101	LIMEOLITH	THOMPSON HAYWARD CO.	2.59	4.64	0.85		SYNTHETIC CALCIUM CARBONATE	0.20% ON 325	A & B AS W. 47 C-ALKALINITY LIMIT SEE REMARKS (0.5%)	SYNTHETIC $CaCO_3$- ALKALINITY TEST, TAKE UP 5 G. IN H_2O HOT, FILTER & WASH UNTIL WASHINGS ARE NEUTRAL TITRATE WITH N/10 H CL USING PHENOLPHTHALE
W-102	CATALPO	MOORE & MUNGER	2.55	4.70	0.70		SEE REMARKS		AS W 47	Al_2O_3-38.5, TiO_2-1.8 LOSS ON I 15, FE, CA, MG, CA OXIDES-1.5, SiO_2-
W-103	TITANOX (C)	TITANIUM PIGMENTS CO.	3.13	3.83		8	TiO_2 - 30% $CaSO_4$ - 70%		AS W 95	RECOMMENDED ONLY FOR INTERIOR USE.
W-104	H.C. WHITE LEAD	EUSTON LEAD CO.	6.82	1.76	0.20	24	BASIC LEAD CARBONATE		AS W 95	WHITER & STRONGER THAN W 106 & W 76.
W-105	L.O. SEG LITHOPONE	CHEMICAL & PIGMENTS CO.	4.28	2.80	0.35	14	TREATED LITHOPONE		AS W 95	SIMILAR TO W 107 BUT NOT QUITE AS GOOD FOR FLOW & BRUSHING.
W-107	L. O. DISP. SUNOLITH	CHEMICAL & PIGMENTS	4.28	2.80	0.35	14	TREATED LITHOPONE HUMBOLT MILLED		AS W 95	BEST ALL PURPOSE LITHOPONE.
W-108	SURFEX	R. T. VANDERBILT	2.65	4.53			TREATED CALCIUM CARBONATE			GOOD DISPERSION, GOOD FLOW, DOES NOT LOWER GLOSS, PREVENTS SOAKING-IN.
W 69	H.O. LITHOPONE		4.3	2.86	0.41	18	ZNS-30% $BaSO_4$-70%			
W158										
W130										
W152										
W1160				2.41						

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CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL-AB.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA
BN-4	WALNUT CRYSTALS	HELLER & MERZ					WATER STAIN			A-DISSOLVE 1 G IN 100 CC WAT COMPARE WITH S
BN-17	BURNT TURKEY UMBER	A. G. WATT	3.5	3.4	0.90	24	Fe_2O_3 - 42 SILICA- 34 MnO_2 - 14 H_2O - 5		NONE	A-COLOR&OIL A GP 50 B-TINT GP 51 (50 MG-1G)
BN-18	RAW UMBER	H L. GRUND	3.5	3.4	0.75	13	Fe_2O_3 - 40 SILICA- 12 MnO_2 - 20 Al_2O_3 - 10		NONE	AS BN-17
BN-20	VAN DYKE BROWN	A. G. WATT	1.7	7.2	0.80	10	ORGANIC- 65 WATER - 25 Fe_2O_3 - 3 $CaCO_3$ - 5		NONE	AS BN 17
BN-27	OIL BROWN	NATIONAL ANILINE & CHEM. CO.					OIL STAIN			DISSOLVE 1 G. 100 CC. BENZO
BN-28	WATER BROWN	NATIONAL ANIL- INE & CHEM.CO					WATER STAIN			A-DISSOLVE 1 IN 100 CC. WA B-DITTO IN NG REDUCER
BN-38	BENZOL BROWN	COMMONWEALTH COLOR & CHEMICAL CO.					OIL STAIN			AS BN-27

Red Pigments - 1

Code	Pigment	Supplier	S. G.	Bulk	Oil-Ab	Tint	Composition	Bake	Bleed	Test Data	Remarks
R-1	Scarlet Lake	Imperial A-4333	2.9	4.1	0.85	23	Pig. Scar.- 35 Ba SO_4 - 49 Al Hyd.- 16	1 Hr @ 250	None	A-Color&Oil Ab. GP 50 B- Tint (50 Mg-1G) GP 51	Not as blue or dark as madder lake-pink cast, perm. poor; below lithol & red for lake C (most scarlet lakes are slightly better than lithol) R-1 is transp. varie
R-2	Tuscan Red	C. E. Hoover	3.7	3.2	0.35	7	Lake - 20 Fe_2O_3 - 33 $BaSO_4$ - 43 SiO_2 - 4	Darkens above 200	None	As R 1	Richest & bluest oxide pigment; fairly permanent; lake fades.
R-3	Para Toner 10%	A. Wilhelm	2.6	4.5	0.40	6	10% Para 90% Paris White	1 Hr @ 150	Bleeds lacq. & paint	As R 1	A trifle lighter than R 15
R-6	Dark Indian Red	A. G. Watt	4.90	2.44	0.30	11	Fe_2O_3- 98%		None	As R 1	Next to tuscan red the darkest & richest oxide. Slight brown cast.
R-7	Madder Lake	United Color Co.	1.6	7.7	1.40	50	35% Alizarine on $CaPO_4$ & Al Hydrate	1 Hr. @ 180	Non-bleeding	As R 1 Note- (20 Mg-1G Tint)	Darker, bluer & more opaque than R1. Excellent permanence Should not be ground in unlined pebble mill.
R-8	Cologne Lake	Imperial A-4299	2.9	4.1	0.75	20	10% Toner	Max. Short bake 150°	Fast under paint	As R 1	Similar to amaranth but darker, Permanence-very good
R-9	Toluidine	A. Wilhelm	1.4	8.5	1.30	86	See remarks	Darkens over 225	Slight bleed	As R 7	Meta Nitro para toluidine diazotized with beta napthol Perm- Excellent.
R-14	Light Para Toner	A. Wilhelm Imperial A-4329	1.5	8.0	2.00	60	See remarks	1 Hr @ 150	Bleeds badly	As R 7	Paranitraniline diazotized with beta napthol. Fairly light, not as bright as Lt. Lithol or as light as R-9. Perm.-Good but poorer than
R-15	Dark Para Toner	A. Wilhelm Imperial A-1757	1.46	8.2	2.00	75	See R-14	1 Hr @ 150	Bleeds badly	As R-7	Rich red similar to R-167; undertone bluer than R-14 but not as blue as R-167. Harder to grind than R 9.
R-16	Venetian Red	A. G. Watt	3.6	3.3	0.45	4	Fe Oxide- 20 Ca Carb.- 40 Ca Sulf.- 40		None	As R 1	Lightest & most orange oxid (except R 197 which is not often used).
R-18	Persian Gulf Oxide	A. G. Watt (C.K. Williams)	3.9	3.0	0.35	7	Oxide - 67 Sil - 20 Al - 10 Water - 3		None	As R 1	Darker & richer than R 6 but less than R 186.
R-19	Red Lead	Metals Refining Co.	8.8	1.3	0.15		Pb_3O_4 - 85 PbO - 15		None	A-Check color GP 50	Basic & oxidizing in chemical nature.
R-21	Burnt Sienna	H. L. Grund Harshaw Chemical	3.5	3.4	1.20	18	Oxide - 75	O.K. @ 300	None	As R 1	Rich brown, not as dark as umbers. Excellent Perm.

CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL-AB.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	REMARKS
R-30	OIL RED R. O	AMERICAN ANILINE & CHEMICAL CO								DISSOLVE 1 GM IN 100 CC S-46.	
R-1	WATER RED #7194	NAT. ANILINE & CHEMICAL CO								A-DISSOLVE 1 G IN 100 CC WATER B-DITTO IN NGR REDUCER	
R-35	AMARANTH LAKE	IMPERIAL A-4334 (BURGUNDY)	3.0	3.9	0.70	50	DYE ON GLOSS WHITE	½ HR. @ 250	NONE	AS R 1	PERMANENCE- VERY POOR.
R-37	WINTERS METALLIC OXIDE	GEO. S. MEPHAM	3.2	3.7	0.40	5	OXIDE - 70 CA CARB- 8 SIL - 22		NONE	AS R 1	BROWN COLOR SIMILAR TO R 62.
R-62	#272 OXIDE	WHITE & CO.	2.86	4.20	0.40	8	Fe_2O_3 - 88-90		NONE	A-COLOR&OIL AB, GP 50 B- TINT GP 51 (50 MG- 1G)	BROWNEST OF REGULAR OXIDES.
R-68	X DEEP LITHOL	IMPERIAL COLOR WORKS	1.49	8.06	1.45	150	CALCIUM LITHOL	½ HR. @ 250	NONE -OIL SLIGHT -LACQUER	AS R 62 GP 54 C- CHECK BLEEDING	DEEPER & BLUER THAN R167. SEE R 167.
R-70	X-1020 MAROON	IMPERIAL COLOR WORKS	1.59	7.51	1.40	60	LITHOL TYPE MAROON	1 HR. @ 275	BLEEDS UNDER LACQ.	AS R 62 (20 MG- 1G TINT)	PERMANENCE-FAIR, SLIGHTLY BETTER THAN LITHOLS REGULAR.
R-100	X-761 TANAGER RED TONER	IMPERIAL COLOR WORKS	1.63	7.33	2.00	56	PARA TONER	1 HR. @ 200	BLEEDS LACQ.	AS R 62	LIGHTER & MORE BRILLIANT THAN TOLUIDINE. PERMANENCE VERY GOOD.
R-103	#103 AUROMINE	ADAMS & ELTING								DISSOLVE 1 GM IN 100 CC WATER.	NOTE: THIS IS A LEMON YELLOW.
R-145	C P PENN RED B	A. WILHELM	1.61	7.46	1.30	135	BARIUM LITHOL	½ HR. @ 275	AS R-68	AS R 68	COLOR-SIMILAR TO LIGHT PARA BUT NOT QUITE AS BRICH TINT MUCH CLEANER & BLUER SEE R-167.
R-167	C P PENN RED C	A. WILHELM IMPERIAL COLOR WORKS	1.62	7.90	1.30	150	CALCIUM LITHOL	1 HR. @ 300	AS R-68	AS R 68	DARKER & BLUER THAN R 145 PERM.-FAIR, TURNS BROWNER; LESS PERM. THAN PARAS BETTER THAN RED FOR LAKE-C BUT POORER THAN LITHOL RUBINE OR TUNGSTATE PPT RHODAMINE TONERS.
R-171	OIL RED STAIN	ADAMS & ELTING								DISSOLVE 1 GM IN 100 CC S-46.	
R-172	X-909 MAROON	IMPERIAL COLOR WORKS	1.80	6.66	1.10	52	ALIZARINE MAROON		NONE	AS R 62 (20 MG- 1G)	RICH, PERMANENT MAROON
R-179	MEDIUM CADMIUM RED	CHEMICAL & PIGMENTS CO	4.37	2.75	0.40	9	CD S- 22 CD SE- 20 BA SO4- 58	STANDS HIGH TEMP.	NONE	AS R 62 (50 MG- 1G TINT)	BETWEEN R190 & R192 FOR COLOR-ABOUT SAME DEPTH OF COLOR AS LT. PARA BUT NOT AS BRILLIANT. UNAFFECTED BY HEAT.

CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL-AB.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	REMARKS
R-180	MAPICO RED	BINNEY & SMITH	4.82	2.40	0.75	10	Fe_2O_3 - 100%		NONE	AS R 62 (50 MG-1G TINT)	BLUER THAN R183 BUT NOT QUITE AS RICH AS R 18.
R-183	TOBY RED OXIDE	PENNOR CO.	4.57	2.62	0.45	10	Fe_2O_3 - 85%		NONE	AS R 62 (50 MG- 1G TINT)	
R-186	#51 MAPICO RED	BINNEY & SMITH	4.60	2.60	1.40	20	Fe_2O_3 - 98%		NONE	AS R 62 (50 MG- 1G) OIL ABS. IS VERY IMP. IF LOW RUN SETTLING TEST	DARK RICH OXIDE- VERY HIGH OIL ABS.- GOOD SUSPENSION-PARTICULARLY SUITED FOR USE IN DIPPING MATERIALS.
R-187	TRANSPARENT TANGERINE LAKE	IMPERIAL COLOR WORKS X-17	2.02	5.97	1.5	10	ORGANIC COLOR ON AL. HYDRATE	½ HR. @ 330		AS R 62 (50 MG-1G TINT)	PERMANENCE- POOR
R-188	PARISIAN TONER	IMPERIAL COLOR WORKS X-1093	1.65	7.28	1.6	65	PIGMENT SCARLET	1 HR. @ 200°	NONE	AS R 62 (20 MG-1G TINT) TEST FOR BLEEDING	CLEAN BLUE TONE BLUER & DEEPER THAN P.145. MORE PERM. THAN LITHOL
R-189	GRAPHIC RED TONER	SHERWIN WILLIAMS	1.65	7.06	1.30	150	LITHOL TONER	1 HR. @ 300	NONE OIL SLIGHT LACQ.	AS R 191 (20 MG- 1G)	SEE R167. SIMILAR TO R167 BUT HAS BETTER FLOWING PROPERTIES.
R-190	MEDIUM LIGHT CADMIUM	CHEMICAL & PIGMENT CO.	4.21	2.85	0.45	9	CdS - 23 CdSe - 18 $BaSO_4$ - 59	STANDS HIGH HEAT	NONE	AS R 62 (50 MG-1G TINT)	RICHEST CADMIUM RED SLIGHTLY LIGHTER THAN TOLUIDINE
R-191	LIGHT CADMIUM RED	CHEMICAL & PIGMENTS CO.	4.38	2.74	0.40	9	CdS - 25 CdSe- 15 $BaSO_4$- 60	STANDS HIGH TEMP.	NONE	A-COLOR & OIL ABS. AS IN GP 50 B-TINT-GP 51 (50 MG- 1G)	LIGHTEST CADMIUM RED.
R-192	CADMIUM RED DEEP	CHEMICAL & PIGMENTS CO.	4.28	2.80	0.40	9	CdS - 19 CdSe - 21 $BaSO_4$ - 60	STANDS HIGH TEMP.	NONE	AS R 191	
R-193	CADMIUM MAROON	CHEMICAL & PIGMENTS CO	4.27	2.81	0.40	9	CdS - 17 CdSe - 25 $BaSO_4$ - 58	STANDS HIGH TEMP.	NONE	AS R 191	
R-195	95% RED LEAD	METALS REFINING CO.	8.80	1.36	.15		95% Pb_3O_4 -		NONE	ANALIZE FOR Pb_3O_4	
R-196	NIPPON ORANGE	IMPERIAL COLOR WORKS X-881	1.63	7.36	1.60	60	RED FOR LAKE "C"			AS R 191	BRIGHT RED; MORE ORANGE THAN TANAGER TONER. MORE PERM. THAN PIGMENT SCARLET BUT NO AS GOOD AS LITHOL RUBINE R PARA TONER.
R-209	TOLUIDINE TONER	IMPERIAL COLOR WORKS A-2989	1.40	8.50	1.30	85				AS R 191 (20 MG- 1G)	SEE R 9-R 209 IS BRIGHTER & RICHER AND DRIES BETTER THAN A A E R C.

BLUE PIGMENTS - 1

CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL-ABS.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	REMARKS
BL-1	NON-BRONZING BLUE	IMPERIAL X-882	1.83	6.56	1.30		FERRIC FERRO CYANIDE	1 HR @ 250	NONE	GRIND IN LACQUER BASE & TEST IN AUTOMOTIVE LACQUER	JETTEST, LEAST PLUM OVERTONE OF PRUSSIAN BLUES, TINT IS LESS RED THAN BL-2 BUT NOT AS GREEN AS BL-3. USED IN DEEP BLUES
BL-2	PRUSSIAN BLUE	IMPERIAL A-4323	1.85	6.48	1.30		FERRIC FERRO CYANIDE	1 HR @ 250	NONE	A-COLOR & OIL ABS. GP 50 B-TINT - GP 51 (20 MG- 1G)	OVERTONE IS LESS JET THAN BL-1 BUT NOT AS PLUM AS BL-3. TINT IS REDDEST OF PRUSSIANS. USED PRINCIPALLY IN BLACKS.
BL-3	MILORI BLUE	IMPERIAL A-1835	1.85	6.48	1.25	200.	FERRIC FERRO CYANIDE	1 HR @ 300	NONE	A- COLOR B- GRIND A 50-1 TINT IN PALE VARNISH	OVERTONE IS MUCH MORE PLUM THAN BL-1 & 2. GIVES GREENEST TINT USED IN LIGHT BLUES.
BL-4	570-A BLUE	J.H. HINZ (CALCO CHEMICAL CO)	2.38	5.05	0.65	20	DOUBLE SILICATE Na & Al WITH SODIUM-BISULPHIDE	UNAFFECTED BY HEAT	NONE	A-COLOR & OIL ABS. GP 50 B-TINT GP 51 (50 MG- 1G)	DIRTIEST & GREENEST ULTRAMARINE UNAFFECTED BY ALKALI BUT ATTACKED BY DILUTE ACIDS LIBERATING H_2S.
BL-5	572-A BLUE	J.H. HINZ	2.38	5.05	0.65	20	DITTO	DITTO	NONE	AS BL-4	NOT AS DARK & RICH AS BL-16 BUT DARKER & RICHER THAN BL-4 & 14
BL-7	BLUE LEAD	EAGLE PICHER LEAD CO.	6.24	1.80	0.25		SEE REMARKS		NONE	NOT TESTED	$PbSO_4$-40-60%, PbO-30-50, ZnO-1-$PbSO_4$- PbS-C-7-10. CHALKS ON EXPOSURE; INHIBITS RUST.
BL-14	#572 BLUE	J.H. HINZ	2.38	5.05	0.65	19	AS BL-4	UNAFFECTED	NONE	AS BL-4	ALMOST AS LIGHT AS BL-4.
BL-16	#2900 BLUE	STANDARD ULTRAMARINE BLUE	2.38	5.05	0.65	24	AS BL-4 COATED WITH LEAD STEARATE	DITTO	NONE	AS BL-4 C. LITHO-SIZE TEST GP-55	DARKEST, REDDEST ULTRAMARINE. DOES NOT WATER SPOT,
BL-49	TURQUOISE BLUE- EX. CONCENTRATED	IMPERIAL X-852	2.39	5.03	1.60	33	ORGANIC COLOR ON ALUMINUM HYDRATE			AS BL-4 (20 MG- 1G TINT)	PRODUCES VERY CLEAN BLUE-GREEN TINT. PERMANENCE FAIR.
BL-51	TUNGSTATE PURPLE (FANCHON MAROON)	HOLLAND ANILINE LYE CO.	4.70	2.54	1.80	165		OK TO 2500	NONE UNDER ENAMEL	AS BL-4 (20 MG- 1G TINT)	VERY RICH PURPLE. FAIRLY PERMANENT USED IN RICHENING BLUES & IN TONING WHITES. FADES ON LONG EXPOSURE.
BL-52	MARINE BLUE TONER	IMPERIAL COLOR A-8021	2.30	5.23		200	ORGANIC COLOR 100%	1 HR @ 300	SLIGHT BLEED UNDER LACQ.	AS BL-4 (20 MG- 1G TINT)	CLEAN RED TONED TINT, MUCH REDDER THAN BL-49 BUT NOT AS RED AS BL-51 FAIRLY PERM. -DARKENS
BL-53	#44 BLUE	A. WILHELM CO	1.85	6.48	1.30	200	FERRIC FERRO CYANIDE	1 HR @ 250	NONE	AS BL-2	TOP TONE SIMILAR TO BL-2, TINT TONE SAME AS BL-3.
B 58	ROYAL BLUE TONER C			7.95			MONASTRAL TYPE CU PHTHALOCYANINE BLUE				

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YELLOW PIGMENTS - 1

CODE	PIGMENT	SUPPLIER	S.G.	BULK	OIL-AB.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	REMARKS
YW-1	LIGHT CHROME YELLOW	IMPERIAL A2884 A. WILHELM #8112	5.84	2.03	0.35	6	$PbCrO_4$ - 64 $PbSO_4$ - 36	1 HR @ 225	NONE	A-COLOR +OIL-AB. GP 50 B- TINT (50 MG-1 G) GP 51 C- PERMANENCE GP 56 D- HEAT RES. 1 HR @ 225	PERM.- FAIR, DARKENS; DARKENED BY H_2S OXIDIZING IN CHARACTER
YW 2	MED. CHROME YELLOW	IMPERIAL A-548 WILHELM #8113	5.84	2.03	0.30	10	$PbCrO_4$ - 98%	1 HR @ 225	NONE	AS YW-1	AS YW-1
YW 3	EX. DP. CHROME ORANGE	IMPERIAL A-4124 WILHELM #8120	6.87	1.75	0.30	12	$PbCrO_4$ - 60 PbO - 40	1 HR @ 350 SL. RED & DIRTY	NONE	A- COLOR+OIL AB. GP 50 B- TINT (50 MG-1G) GP 51	REDDEST CHROME ORANGE, TINT FAIRLY RED BUT WEAK. DARKENS ON EXP. BASIC & OXIDIZING REACTS WITH ACID VEHICLES
YW 5	OIL YELLOW	A + E								A- DISSOLVE 1 G IN 100CC BENCOLE, HEAT, COOL, COMPARE COLORS ON FILTER PAPER	PERM. - POOR
YW 6	WOODS YELLOW	A. WILHELM UNITED	3.80	3.16	0.25 UNIT 0.50	3	$PbCrO_4$ - 40 $PbCO$ 3- 30 $BaSO_4$- 30		NONE	AS YW 3	TRIFLE LIGHTER & GREENER THAN YW 2. USED IN OLIVE GREENS & BROWNS AS IT FLOATS LESS THAN OTHER CHROMES.
YW 9	ZINC YELLOW	A. WILHELM	3.40	3.52	0.55	2	ZnO $ZnCrO_4$-	30 MIN @ 250 SL. DARK	NONE	AS YW 3	CLEANEST & GREENEST OF REG. YELLOWS EXCELLENT PERM. USED LARGELY IN RUST INHIBITIVE PRIMERS
YW 10	FR. YELLOW OCHRE	WITHNICK TUMPEER	2.87	4.17	0.55	2	HYD. OX. IRON 20 CLAY - 80		NONE	AS YW 3	SIMILAR TO FERRIT YELLOW BUT MUCH WEAKER
YW 17	RAW SIENNA	H-L- GRUND	3.08	2.67	1.60	9	Fe_2O_3- 70%		NONE	AS YW 3	
YW 22	LIGHT CHROME ORANGE	IMPERIAL B-2386	6.68	1.80	0.25	9	$PbCrO_4$- 70 PbO_4- 30	1 HR @ 150 F.	NONE	A & B AS YW 3 C. TEST REACTIVITY SEE NOTE - 1	COLOR DARKENS MODERATELY
YW 23	OIL ORANGE	NAT'L ANILINE & CHEMICAL CO. #7642								AS YW 5	NOT PERMANENT
YW 24	WATER ORANGE	HELLER & MERZ								A- TEST 1/16 OZ. IN 4 OZ. WATER B- SAME IN NGR RED.	FAIRLY PERMANENT
YW 25	OIL YELLOW	HELLER & MERZ								AS YW 5	NOT PERMANENT
YW 26	WATER YELLOW	HELLER & MERZ								AS YW 24	PERMANENCE GOOD- TURNS SLIGHTLY REDDER
YW 3[illegible]	OIL ORANGE	HELLER & MERZ								AS YW 5	SLIGHTLY MORE PERMANENT THAN YW 23

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CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL AB.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	REMARKS
YW 36	CHRYSGIDINE	HELLER & MERZ								A- DISSOLVE 1G M. IN 100 CC S-91 COMPARE COLOR, STRENGTH & SOLUBILITY WITH STANDARD	PERM. VERY POOR
YW 37	FERRITE YELLOW	DINNEY & SMITH	3.66	3.28	1.00	9	FE 203- 74%		NONE	A. COLOR & OIL AB. GP 50 B. TINT (50 MG- 1G) GP 51	SIMILAR TO OCHRE BUT CLEANER AND MUCH STRONGER NOT AS DARK OR RED AS RAW SIENNA
YW 40	PRIMROSE YELLOW	A & E 8111 IMPERIAL A-3041	5.86	2.05	0.30	2	LEAD CHROM. 53 LEAD SULPH. 47	1 HR @ 150	NONE	AS YW 37	LIGHTEST & GREENEST OF CHROMES; QUITE PERM. ALKALI E MATERIALS REDDEN AND DARKEN IT
YW 44	WATER YELLOW- 167	ADAMS & ELTING								TEST SAME AS YW 24	MORE LEMON THAN YW 26.
YW 47	LEMON CADMOLITH	CHEMICAL & PIGMENTS	4.26	2.81	0.65	2	ZN-SULPHIDE 4 CD-SULPHIDE 29 BA-SULPHATE 66	TEMP. LIMITED ONLY BY DARKENING OF VEH.	NONE	AS YW 37	SLIGHTLY LIGHTER & CLEANER THAN YW 1; NOT AS GREEN AS YW 40. EXCELLENT PERM. UNREACTIVE. NOT AFFECTED BY SULPHUR VAPORS.
YW 48	GOLDEN CADMOLITH	CHEMICAL & PIGMENTS	4.25	2.82	0.65	3	BA SULPHATE 65 CD-SULPHIDE 35	DITTO	NONE	AS YW 37	HALF-WAY BETWEEN YW 1 & YW 2, FOR COLOR SEE YW 47
YW 45	PRIMROSE CADMOLITH	CHEMICAL & PIGMENTS	4.42	2.98	0.65	2	ZN-SULPHIDE 5 CD-SULPHIDE 28 BA-SULPHATE 67	DITTO	NONE	AS YW 37	SIMILAR IN COLOR TO YW 40; SLIGHTLY BRIGHTER AND LESS GREEN. SEE YW 47
YW 53	TRANSPARENT YELLOW LAKE	IMPERIAL A-4319	2.01	5.97	1.30	4	DYESTUFF ON ALUMINUM HYDRATE	½ HR @ 300	NONE UNDER OIL ENAM.	AS YW 37 FREEDOM FROM EXCESSIVE MILKINESS IMPORTANT	RED TONED TRANSPARENT YELLOW FOR METAL COATINGS. FAIRLY PERMANENT. FOR INSIDE- POOR OUT DOORS
YW 57	RAW SIENNA	J. H. FURMAN & CO.			0.55				NONE	AS YW- 37	DARKER, DIRTIER & LESS RICH THAN YW 17
YW60	MING ORANGE		7.00	1.73	.57	35					
YW61											

NOTE 1:
REACTIVITY MIX 20 GMS PIGMENT WITH 15 CC OF V115 HEAT ON STEAM BATH ½ HR. COOL & COMPARE BODY. REJECT IF THERE IS EXCESSIVE BODYING.

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CODE	PIGMENT	SUPPLIER	S.G.	BULK	OIL-ABS	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	REMARKS
G-2	CP. MED. CHROME GREEN	A. WILHELM #8129 IMPERIAL A-4201	4.1	2.9	0.55	19	LEAD CARB-18 " CHRO-66 IRON BLUE-17	SL. DEEPER & BLUER @ 265	NONE	A. COLOR & OIL ABS. GP 50 B- TINT GP 51 50 MG- 1G	DARKER & BLUER THAN G 48; NOT AS BLUE AS G 3. ALKALIS DESTROY COLOR; COLOR FADES IN CLOSED CAN; BLACKENED BY H_2S
G-3	CP. DEEP CHROME GREEN	A. WILHELM #8125 IMPERIAL A-3035	3.3	3.6	0.55	24	LEAD CARB-14 " CHRO-51 IRON BLUE-35	AS ABOVE	NONE	AS G-2	DEEPER & BLUER THAN G-2
G-4	MILORI GREEN	IMPERIAL WILHELM #8130	5.9	2.0	0.55	6	LEAD CARB-13 " CHRO-77 IRON BLUE- 5	AS G-2	NONE	AS G 2	LIGHTEST AND YELLOWEST OF CHROME GREENS.
G-5	7006 GREEN LAKE	H. L. GRUND	2.9	4.2	1.30	4		1 HR @ 250	NONE	AS G 2	TRANSPARENT, NOT AS CLEAN AS G 5.
G-16	VICTORIA GREEN CRYSTALS	NAT. ANILINE & CHEMICALLO								TEST IN WATER, ALCOHOL & NGR REDUCER. 1G- TO 100 CC	PERMANENCE- GOOD
G-46	GLEN GREEN D D D A-4209	IMPERIAL COLOR WKS.	2.4	5.0	0.90	50	LEAD SULPH- 7 " CHRO- 28 IRON BLUE- 65	AS G-2	NONE	AS G-2 (20 MG- 1G)	BLUEST & DARKEST CHROME GREEN
G-48	GLEN GREEN X- LT. A-4062	IMPERIAL COLOR WKS. KENTUCKY COLOR CO	4.8	2.5	0.50	6	LEAD SULPH-19 " CHRO-75 IRON BLUE- 6	MAX. BAKE 265	NONE	AS G-2	A CLEAN LIGHT GREEN SLIGHTLY BLUER THAN G 4. KENTUCKY G 48 IS NON-FLOODING.
G-50	DEEP SPRUCE GREEN A-4152	IMPERIAL COLOR WKS.	3.2	3.7	0.50	24	LEAD SULPH-3 " CHRO-41 IRON BLUE-36	AS G 2	NONE	AS G 2	ABOUT SAME DEPTH AS G3 BUT YELLOWER AND LESS BLUE, SLIGHTLY MORE PERM. THAN OTHER CHROME GREENS
G-54	HYDRATED CHROMIUM OXIDE	IMPERIAL COLOR WKS.	3.7	3.2	0.85	2	$Cr_2O_3 \cdot 1\frac{1}{2}H_2O$	STANDS HIGH BAKE	NONE	AS G-2	VERY CLEAN BLUE TONE
G-58	A-8028 GREEN TONER	IMPERIAL COLOR WKS.	2.7	4.4	1.00	17	PHOSPHO-TUNGSTATE LAKE	1 HR @ 300		AS G 2	CLEAN, BRILLIANT TRANSPARENT GREEN SLIGHTLY STRONGER & YELLOWER THAN G59 FADES IN 6 MO. USED IN TRANSP. COATINGS & TO BRIGHTEN OTHER GREENS.
G-59	A-4380 DEVON GREEN	IMPERIAL COLOR WKS.	3.8	3.1	0.65	5	PHOSPHO-TUNGSTATE LAKE	½ HR @ 300	NONE	AS G 2	CLEAN BLUETONE SIMILAR TO G54; FAIRLY PERM. SHOULD NOT BE USED WITH WHITE LEAD, ZINC OXIDE, CHROME YELLOWS NON-FADING IN CAN.
G-65	A-4066 GLEN GREEN	IMPERIAL COLOR WKS.	3.2	3.7	0.65	26	LEAD SULPH-13 " CHRO- 51 IRON BLUE- 36	AS G 2	NONE	AS G 2	SLIGHTLY BLUER THAN G 3.

CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL-AB.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	RE
G-66	X-1284 GREEN	IMPERIAL COLOR WKS.	3.7	3.2	0.85	2	AS G 54	AS G 54	NONE	AS G 2	NO G
G-73	CHROMIUM OXIDE	IMPERIAL COLOR WKS.	5.0	2.4	0.35	1	Cr_2O_3 - OVER 98%	STANDS HIGH BAKE	NONE	AS G 2	CH VI

IER	S. G.	BULK	OIL-AB.	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	REMARKS
SCHILL OS CTUMPEER O	1.73	6.90	3.60	250	CARBON 99.8		NONE	A-CHECK COLOR & OIL AB. GP 50 (200 MG) B-TINT STRENGTH GP 51 (20 MG-1G)	SLIGHT BROWN CAST; NOT AS JET AS B2 OR B5 BUT SLIGHTLY BLACKER THAN B4 AND APPRECIABLY BLACKER THAN B26. PRODUCED BY IMCOMPLETE COMBUSTION OF NAT.GAS. HARDER & MORE GRANULAR THAN B 7.
& LINSON	2.58	4.65	1.00	15	CARBON- 8.% BONE PHOS.-74 CA CARB- 9		NONE	AS B 1 (50 MG- 1G TINT) (1 G FOR COLOR)	BLACKER THAN B1, CLEAN RICH TONE.
& LL	2.53	4.75	.75	14			NONE	AS B 2	APPRECIABLY GREYER THAN B 2
IAL OIL PRODUCTS	1.85	6.50	3.60	285	CARBON- 93+%		NONE	AS B 1	NEXT TO B9 AS BLACKEST CARBON BLACK RANKS BETWEEN B1 & B2 FOR JETNESS. HAS BROWN CAST.
& ALL	UNDER 2	6.74	3.60	135	CARBON- 100%		NONE	AS B 1	GREY CAST- NOT AS BLACK AS B26 BUT APPRECIABLY BLACKER THAN B15, PREPARED BY INCOMPLETE COMBUSTION OF OIL.
EY GETT & SMITH	2.49	4.85	0.50	35	Fe_3O_4- 98 H_2O - 2		NONE	AS B 2	BLACKER THAN B-29
NEY & ITH	1.85	6.5	7.80	200	C- 93.20 WATER- 6.75 ASH 0.05		NONE	AS B 1	BLACKER THAN B5 BUT NOT QUITE AS BLACK AS CARBOLAC.
S CTS S CORP.	1.40	8.60	2.20	4	C- 89 ASH- 7 WATER- 4		NONE	AS B 2	
R & RZ					OIL SOLUBLE STAIN			A. DISSOLVE 1 GM IN 100 CC S-46. COMPARE WITH STD.	NOT AS RED AS B 17, FAIRLY PERM.
CAL CO.					SPIRIT SOLUBLE STAIN			A. DISSOLVE 1 GM IN 100 CC S-91. COMPARE WITH STD.	NOT PERMANENT
AINT ER CO	2.67	4.48	0.50	2	CARBON- 14.3 ALUMINA- 17.1 SILICA- 59.2 Fe_2O_3- 7.3		NONE	AS B 2	CONTAINS 2% WATER.
ANILINE ICAL					OIL SOLUBLE STAIN			AS B 12	
R & RZ					WATER SOLUBLE STAIN			A-TEST 1 GM IN 100 CC WATER B-TEST 1 GM IN 100 CC NGR RED.	EXCELLENT PERMANENCE
ICK ER	1.82	6.63	2.25	225	CARBON- 98		NONE	AS B 1	NOT AS BLACK AS B 1

CODE	PIGMENT	SUPPLIER	S. G.	BULK	OIL-AB	TINT	COMPOSITION	BAKE	BLEED	TEST DATA	RE
B-29	MAGNOX BLACK	NUBIAN	4.46	2.69	0.30	4	86- 90% FE3 04		NONE	A-COLOR & OIL ABS. GP 50 B-TINT (50 MG-1G)	NO BL
B-31	FF 1 GRAPHITE	CUMMINGS MOORE GRAPHITE CO.	2.36	5.10	0.80	10			NONE	AS B 29	
B-41	BLACK OIL STAIN	A & E					OIL SOLUBLE STAIN			AS B 12	
B-45	1BS BLACK STAIN	A & E					OIL SOLUBLE STAIN			AS B 12	
B-50	BLUE BLACK NIGROSENE	NAT'L ANILINE					WATER SOLUBLE STAIN			AS B 23	QU
B-51	THERMATONIC BLACK	R.G.VANDER-BILT CO.	1.83	6.55	0.80	50	100% CARBON		NONE	AS B 29	LO MO BO IF
B-88	PASTE TONER	HERMON COLOR WORKS					BLACK TONER IN ESTER GUM		SLIGHTLY IN LACQ.	DETERMINE % SOLIDS. SHOULD NOT BE LESS THAN 75%	PE WI
B-90	EBONY DYE	HELLER & MERZ								DISSOLVE 1 G. IN 100 CC- 50-50 BENZOL ALCOHOL MIX	
B-91	#840 TONER	ZINSSER & CO.	1.90	6.31		20	IRON GALLATE		NONE	AS B 29	US CA
B-92	CARBOLAC	CABOT CO.	1.94	6.52	9.00		CARBON- 99+		NONE	AS B 29 (20 MG- 1G TINT) COLOR VERY IMP.	BL
B-93	X-1[illegible] TONER	IMPERIAL COLOR WORKS			1.35	200				AS B 29 (50 MG- 1G)	US FE AR TH