

SAND AND ATTRITOR MILL PROGRESS REPORT

MAR 24 1965

JANUARY 1965

Included in this report is a testing procedure for the evaluation of Cowles dispersible pigments in the laboratory set up by Jim Southwick.

I am sure that this testing procedure can be used for any of our pigments, in any of our plants, and we hope to standardize on this procedure unless we receive comments to the contrary.

Carl Kelly is doing an outstanding job on his progress with the sand mill and I hate to report that one of our divisions is rather reluctant in making out any report.

This is a cooperative effort and we can all benefit by the background and comments of all the divisions.

It was suggested by Dick Haviland that the information received on the Cowles and sand mill grinds be reported on the Raw Material Information Card so that each pigment would show how well it disperses in a numerical factor. Example - Cowles 5, Sand 6.

This is being discussed with Hal Hayward and in the meantime this could be done in your plant until we get the cards standardized.

M. W. MALAGA

GLD004923

N 2209

ANTICIPATED GRIND ATTAINABLE FROM VARIOUS PIGMENTS

<u>Code</u>	<u>Trade Name</u>	<u>Supplier</u>	<u>Microscope Test Micron Size</u>	<u>Dispersion Oil & Water</u>		<u>Sand Mill</u>
<u>Black</u>						
B-1	Carbon Black	Columbian Carbon	5-10	2	2	.
B-7	Lamp Black	Monsanto	5-10	3½	3	
B-96	Lamp Black M-1011	C. K. Williams		0	0	7
B-110	Lamp Black	Monsanto	5-10	-	4	
None	Black Oxide 604	Northern Pigment		0	0	6
<u>Blue</u>						
BL-16	Ultra Blue	American Cyanamide	15-25	2	2	
BL-58	Phthalo Blue	DuPont	10-15	0	0	
BL-91	Monastral Blue	DuPont	10-15	2	0	
None	Blue BT 425 D-DuPont	DuPont	10-15	0	0	7-
<u>Brown</u>						
BN-17	Burnt Umber #513	R. Coulston	75-100	4½	0	6
BN-17	Burnt Umber - OB	Imperial		2	-	-
BN-18	Raw Umber	R. Coulston	75-100	0	0	5½
None	Raw Umber 1044	R. Coulston		5½	-	5½
None	Burnt Umber #14	R. Coulston		4	-	5½
None	Metallic Brown 1681	R. Coulston		6	-	6
<u>Green</u>						
G-3	Chrome Green Deep	American Cyanamide	25-30	0	0	
G-48	Chrome Green Light	Reichhold	25-30	0	0	
G-48	Chrome Green Light	Eakina	25-30	0	0	
G-74	Phthalo Green	Holland	25-30	3	3	
None	Chrome Green A-4443	Imperial	25-30	-	2½	

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<u>Red</u>						
R-18	Venetian Red	R. Coulston	75-100	0	0	
R-21	Burnt Sienna	Toch Brothers	75-100	0	0	
R-210	Red Oxide C-15481	M.M.M.	40-50	3½	0	5½
R-211	B-3093 Metallic Brown	C. K. Williams	30-50	2	2	
R-269	Red Oxide #2899	C. K. Williams	10-20	4½		
R-275	Iron Oxide	C. K. Williams	30-50	4	4	
R-283	Maroon Oxide 1871	R. Coulston		5	-	5
R-290	Toluidine Toner	S. Williams	10-20	2½	3	7
R-297	Kroma Red R 8097	C. K. Williams	5-10	6½	6	
R-300	Softex 1400	C. K. Williams	10-20	6	6	
R-301	Iron Ore #909	R. Coulston		3½	-	4
R-310	Mapico Red 477	Columbian Carbon		1½	-	5½
None	VVF 2093 Metallic Brown (Velvetized)	C. K. Williams	5-10	6½	6	-
None	#344 Mapico Red	Columbian Carbon	75-100	0	0	
None	Red Oxide RO 6097	C. K. Williams	10-20	5½	5	
None	Molera Red Toner	Std. Ultramarine RO 6306		0		7½
<u>Yellow</u>						
YW-1	Light Chrome Yellow	DuPont Y434-D		4		7
YW-1	Light Chrome Yellow	American Cyanamid 40-3515		5		7
YW-2	Med. Chrome Yellow	Am. Cyan. 40-4485		1-2		7
YW-2	Med. Chrome Yellow	Eakins Color 2150		5½		7
YW-2	X-2541 Med. Ch. Yellow	Imperial		7	1½-2	7½
YW-2	12272 Med.Ch. Yellow	Sherwin-Williams		0		7
YW-77	Zinc Yellow	DuPont Y539-D		6		7
YW-89	201 ED Irox Yellow	R. Coulston		5½		7
YW-89	Ferrite Yellow	Columbian Carbon	20-40	3	3	

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<u>Yellow</u> (continued)					
YW-111	YE-637-D Molybdate Orange	E. I. DuPont		7	7
YW-112	Irox Yellow 602N	R. Coulston		5½	7
YW-129	X-2846 Hansa Yellow	Imperial		- 0	
YW-131	X-1810 Med. Ch. Yellow	Imperial		- 4½	
	Zinc Yellow	Reichhold 45-228		3½	7Dirty
	Zinc Yellow	Imperial X2867		6½	7
	Light Chrome Yellow	Harshaw 1231 Special NA		6	7
	Light Chrome Yellow	Reichhold 45-172		4	7
	Light Chrome Yellow	Harshaw 482-2		2½	7Dirty
	Light Chrome Yellow	Harshaw 2311		2½	7½
	Med. Chrome Yellow	Reichhold 45196		5	7½
	Med. Chrome Yellow	Sherwin-Williams 12282		7	Only Cowles
	Med. Chrome Yellow	Sherwin-Williams 12278		3½	7½
	Med. Chrome Yellow	Eakins Color Super Dry Spray		4½	7½
	Moly Orange	Reichhold 45-370		3½	7
	Moly Orange	DuPont YE-421-D		7	7
	Moly Orange	Imperial X-2552		-	6
	Moly Orange	Harshaw 2522-03		6	7½
	Chrome Orange	Sherwin-Williams 12311		-	-

White

W-33	Zinc Oxide Lead Free	Eagle Picher	30	4½	4
W-91	Zopaque S.D.	Glidden	20-30	3	3
W-128	Zinc Oxide Kadox 515	New Jersey Zinc	10-15	6	6
W-128	G-40 Zinc Oxide(Special)	St. Joe Lead	10-15	5	5
W-163	Unitane OR 342	American Cyanamide	10-15	6½	6½
W-164	Unitane OR 540	American Cyanamide	10-15	7	7

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<u>White (continued)</u>					
W-170	Ti-Pure R-610	DuPont	10-15	7½ 7	8
W-170	Titanox Ranc	Titanium Pigment	10-15	5½ 5	7½
W-170	Titanox Ranc (Improved)	Titanium Pigment	10-15	7½ 7½	8
W-170	Unitane OR 640	Am. Cyan.	10-15	7½ 7	8
W-179	RCHT	Titanium Pigments		6½ -	7½
W-201	Zopaque R-33	Glidden	10-15	3 3	
W-201	Zopaque R-33 (Improved)	Glidden	10-15	6 2	
W-208	Zopaque R-88	Glidden	20-30	3 3	
W-209	Titanox A-168-L0	Titanium Pigments	10-15	7 7	8
W-219	XX-505 Zinc Oxide	New Jersey Zinc	30-40	0 0	
W-238	Zopaque RLL	Glidden	20-30	3 3	
W-243	Ti-Pure R 610	DuPont	5-10	7½ 7½	8
W-244	Ti-Pure R 900	DuPont	5-10	8 8	8
W-247	Ti-Pure R 510	DuPont	10-15	8 8	8
W-290	Zopaque R-88S	Glidden		7½ -	8
None	Zopaque R55 (Improved)	Glidden	10-15	7½ 8	8
None	G-45 Zinc Oxide(Special)	St. Joe Lead	10-15	5 5	7½
None	Tipaque R-780	Japan (Export)		6	8
None	Tipaque R-820	Japan (Export)		7½	8
None	Tipaque R-825	Japan (Export)		7½	8
None	Unitane OR-560	Am. Cyan.		6	8
<u>Inerts</u>					
W-10	Barytes	C. K. Williams	50	3 5½-6	
W-11	Asbestine	Int. Talc	60-80	2 1½	
W-16	Silica	C. K. Williams	80-100	0-1 0	
W-21	Magnesium Carbonate	T. Weinman	60-80	1½ 1	
W-42	Whiting	T. Weinman	60	2 2	

<u>Code</u>	<u>Trade Name</u>	<u>Supplier</u>	<u>Microscope Micron Size</u>	<u>Dispersion Oil & Water</u>	<u>Sand Mill</u>
<u>Inerts</u> (continued)					
W-63	#10 Calcite White	Georgia Marble	60-70	2	2
W-69	Lithopone	Chemical & Pigment		4	-
W-121	Snowflake White	T. Weinman	50-60	4½	4
W-121	Cameltax	H. T. Cambell		5	-
W-140	Multiflex MM	Diamond Alkali	10-15	8	8
W-141	Talc White A	Witco Chemical	75-80	0	
W-154	Gamaco	George Marble		4	4
W-158	Mineralite 3X	Mineralite Sales			
M-166	L-10 Dicalite	Great Lake Carbon	80-100	0	0
W-168	C 3000 Mica	English Mica Co.	10-20	6	5½
W-173	ASP 400 Clay	Edgar Bros.	10-20	5½	5
W-188	Nytal 400	R. T. Vanderbilt	20-30	5½	5½
W-189	3 X Asbestine	Int. Talc	(Few over 80) (20-30)	1	
W-191	Nytal 400	R. T. Vanderbilt	20-30	5½	5½
W-192	1767 Talc	Whittaker-Clark- Daniels	60-80	2½	2
W-199	399 S F	Whittaker-Clark- Daniels	5-10	7½	6½
W-199	Mistron Monomix	Sierra Talc Co.		6	-
W-204	C-C-O White	National Lead	60-80	2	2
W-215	Wallastonite	G. L. Cabot	30-40	3	3
W-220	ASP 100	Edgar Bros.	5-10	8	8
W-221	ASP 900	Edgar Bros.		2	-
W-222	ASP 101	Edgar Bros.		5½	5½
W-234	Mistron TO-76	Sierra Talc Co.		6	-
W-230	Mineralite	Mineralite Sales			
W-239	Camel Carb	H. T. Campbell	60-70	3	3
W-241	Ruby Talc	Chemet	40-50	1½	4½

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<u>Inerts (continued)</u>					
W-320	Permolite	S. Williams		4	4
M-361	L-5 Diclite	Great Lakes Carbon	80-100	0	0
None	VVF 1430		5-10	6	6
None	Talc Mistron F 218	Sierra Talc		6	6½
None	Talc Mistron M.S.C.	Sierra Talc		6	6
None	Talc Mistron L-39	Sierra Talc		6	6
W-154	Camel White			6½	
W-154	Micro White #25			6+	
W-154	Gamaco			7-	
W-121	Calcium Carbonate	Georgia Marble		5-6	
W-121	Calcium Carbonate	Sylacauga		5-5½	
W-121	Camel Tex			4-5	
W-121	Calcium Carbonate	Thompson-Weiman		5-6	
W-121	Calcium Carbonate	Georgia Marble		Clean G.	
	Camel Tex 3			4½-5	
	#6441	Georgia Marble		5-5½	
	Dacote	Diamond Alkali		Dirty 5+	
W-108	Surfex MM			7-	
	Calcium Carbonate #6371	Georgia Marble		6½	
	Calcium Carbonate #6372	Georgia Marble		7+	

PIGMENTS FROM DOMINION COLOUR CORP. LTD.

TESTED IN THE COWLES AND SAND MILL

			<u>COWLES</u> <u>GRIND</u>	<u>SAND MILL</u> <u>GRIND</u>
G-48	Lt. Chrome Green	DCC-9426	0	7
G-48	Lt. Chrome Green	DCC-9427	0	6
G-2	Medium Chrome Green	DCC-9431	0	6-1/2 dirty
G-3	Dark Chrome Green	DCC-9436	0	5
A-74	Iron Blue	DCC-9376	0	2
YW-111	Moly Orange	DCC-9078	0	7
YW-111	Moly Orange	DCC-9070	4-4 1/2	7-1/2
YW-120	Moly Orange	DCC-9076	0	7
YW-22	Lt. Chrome Orange	DCC-9106	0	2-1/2
YW-86	Medium Chrome Orange	DCC-9105	0	6
R-15	Para Red Toner	DCC-9130	0	1-1/2 - 2
R-167	Lithol Red	DCC-9201	0	7 dirty
R-314	Bon Maroon	DCC-9477	0	6-6 1/2
R-290	Toluidine Red	DCC-9193	0	6
P-14	Para Light Red	DCC-9126	0	5-5 1/2
	Hachthol Light Red	DCC-9226	0	7+
P-100	Para Red Toner	DCC-9129	0	7
YW-1	Light Chrome Yellow	DCC-9007	1-1/2 - 2	7
YW-1	Light Chrome Yellow	DCC-9008	0-1	7
YI-1	Light Chrome Yellow	DCC-9014 E.D.	4-4 1/2	7+
- YW-2	Medium Chrome Yellow	DCC-9002 E.D.	3-1/2 - 4	7 dirty
- YW-2	Medium Chrome Yellow	DCC-9001	0	7
- YW-2	Medium Chrome Yellow	DCC-9003	0	7
YW-46	Primrose Yellow	DCC-9010	0	7
YW-77	Zinc Chromate	DCC-9015	0	6-1/2
YW-77	Zinc Chromate	DCC-9016 E.D.	4-1/2	7
YW-87	Special Yellow	DCC-9026	1-1/2	7-1/2
YW-87	Hansa Yellow 100	DCC-9030	0-1	7-1/2 - 8
YW-97	Hansa Yellow	DCC-9035	0-1	7

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PIGMENT DISPERSIONS

<u>Code</u>	<u>Material</u>	<u>Supplier</u>	<u>Cowles</u>	<u>Sand Mill</u>
W-249	Ozlo 18M Lead Zinc Oxide	Sherwin-Williams	5+	
W-35	" 1288 " " "	" "	4½-5	
	Ozide 20 Lead Free Zinc Oxide	" "	2-2½	
	Ozide 22P " " " Oxide	" "	3½-4	
YW-129	Permansa Yellow	" "	0	7½
YW-77	Zinc Yellow	Mineral Pigments	4	7
R-269	R-2899 LT Red Iron Oxide	C. K. Williams	0	4½-5
R-297	R-8097 Red Iron Oxide	" " "	6	7
BN-61	B-2093 Metallic Brown V.V.F.	" " "	6½	6½
G-73	J-5351 Chromium Oxide	Mineral Pigments	3	7
BL-91	BT-425-D Monastral Blue	E. I. duPont	0	5½
B-131	Continex F1	Witco	3½-4	6-6½
W-244	R-900 Titanium	E. I. duPont	7½	
W-164	R-510 Tipure	" " "	5½	7½
YW-77	J-1310 Zinc Chromate	Mineral Pigments	5	5½
YW-109	J-1345 " "	" "	6	7
	Ozlo 413 Lead Zinc Oxide	Sherwin-Williams	1	
YW-40	Primrose Yellow 40-1465	American Cyanamid	2½	7+
	Milor Blue 4050	Harshaw Chemical	0	7
	Carbolac 46 Powder	Cabot Corporation	2½	6
	" 2 "	" "	2	6½
	Monarch 71 Powder	" "	0	6½
	" 74 "	" "	0	7
	Regal 300R Carbon Black	" "	0	7
	Monarch 81 " "	" "	0	6
	Raven 40 " "	Columbian Carbon	0	7
	Mapico Crimson 98	" "	4½-5	6½-7
	" Yellow Dk. Orange	" "	5	7
	" Brown #418	" "	1	7
	" " #419	" "	1	7
	" " #420	" "	1	7+
	" " #421	" "	0-1	7
	" " #422	" "	0	7
	" Red #110	" "	0	2-3
	" Med. Red #516	" "	1	6
	" Dk. Red #516	" "	4½	7
	" Tan #15	" "	0	7
	" " #20	" "	3	6½
	Tipure R-911	E. I. duPont	7½	
	Tipaque 825	Guatemala	7½	
YW-77	Super Spray Dry 8794	Eakins	4½	7
YW-2	X-2541 Chrome Yellow	Imperial	6½-7	7½
	Zinc Yellow X-2867	"	3	7
YW-22	Light Chrome Orange X-819	"	0	7

GLD004931

Pigment Dispersions in V-869 or V-891 on Cowles and Sand Mill

YW-120	X-2806 Rex Orange	Imperial Color	0	7
R-6	RO-8099 Red Iron Oxide	Pfizer & Co.	4	7
R-151	RO-5098 Red Iron Oxide	Pfizer & Co.	5	7
R-18	N-3872 " " "	" "	4	5
R-180	R-4098 " " "	" "	0	7
R-222	NR-4284 " " "	" "	4	5
R-269	R-2899 " " "	" "	0	7
R-275	R-3387 " " "	" "	0	5
R-331	R-9998 " " "	" "	5	6½-7
R-214	N-5785 " " "	" "	3	4
R-284	N-4485 " " "	" "	3½	6½
R-214(Alt.)	N-5785 " " "	" "	5	5½
R-297	RO-8097 Kroma Red	" "	6+	7
R-50	V-4040 Venetian Red	" "	4½	6½
R-301	B-01085 Ground Iron Ore	" "	2	3
BN-61	VVF-2093 Metallic Brown	" "	6½	6½
R-211	B-3093 Brown Iron Oxide	" "	4	4½
R-211(Alt.)	B-2094 Brown Iron Oxide	" "	7	7+