"Dutch Boy"

PIGMENT E

A New Corrosion Inhibitive Pigment

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PIGMENT E is a new corrosion inhibitive pigment—a double chromate of barium and potassium.

PIGMENT E possesses a desirable combination of properties, most important of which is its uniform release of the corrosion inhibitive chromate ion $(CrO_4)^=$ in the presence of water.

The excellent corrosion inhibitive ability of PIGMENT E makes it very valuable for many applications, particularly in the metal painting field. Water soluble sulfates and chlorides are recognized as being detrimental to the corrosion inhibitive properties of metal primer pigments. PIGMENT E is substantially free of these impurities. This new pigment is used in combination with other pigments. The concentration employed varies considerably since this is governed by a number of important factors.

TABLE OF PROPERTIES

Color	Pale Yellow
Specific Gravity	3.65
Bulking Value (gallons per pound)	0.0329
Weight of one solid gallon (pounds)	30.4
Oil Absorption (grams per 100 grams)	11.6
Refractive Index	1.9
Barium Oxide (calculated to BaO)	34.2%
Alkali Oxides (calculated to K_2O)	21.0%
Chromium Oxide (calculated to CrO_3	44.6%
Combined Water	None
Total Chlorides, as Cl	0.015%
Water Soluble Chlorides, as Cl	0.004%
Total Sulfates, as SO_4	0.13%
Water Soluble Sulfates, as SO_4	0.05%
pH (water slurry of pigment)	7.0
Organic colors and lakes	None

PIGMENT E is compatible with paint vehicles of practically all types and with other pigments used in metal protective paints. Metal paint primers formulated with PIGMENT E produce coatings that show outstanding performance in the long time protection of iron, steel and the light metal alloys.

This new pigment is more compatible with the vehicles in current use than other chromate type pigments, and paints made with it have excellent package stability. Very satisfactory paints containing PIGMENT E may be made with vehicles containing resins such as the alkyds, phenolics, polymerized terpenes, resins derived from modified rosin, coumarone-indené, natural resins, chlorinated rubber and others.

The low tinting power of PIGMENT E is a distinct advantage when it is employed as the corrosion inhibitive pigment in a metal primer paint because there is no appreciable effect on the color. The ability of PIGMENT E to inhibit corrosion may be utilized to advantage in metallic "leafing" paints used for priming metal. PIGMENT E, when included in the undercoats, improves the corrosion inhibitive properties of such paints without noticeably affecting their appearance with respect to color or degree of gloss.

Typical Formulations

In order to illustrate the versatility of PIGMENT E, a few typical formulations are given herewith. It is possible to use this new pigment in metal protective paints of many types. The formulations show a range of drying times and a variety of applications.

Semi-Quick Drying Pigment E Primer

	Formula	*Per Cent*	*Pounds*	*Gallons*
57.0% Pigment	Pigment E	35.0	266	8.65
	Iron Oxide (85% Fe_2O_3)	30.0	228	6.13
	Zinc Oxide	10.0	76	1.63
	Magnesium Silicate	25.0	190	7.98
43.0% Vehicle	Alkyd Resin Solution*	48.0	275	34.83
	Raw Linseed Oil	34.0	195	25.31
	Mineral Spirits and Driers**	18.0	103	15.47
			1333	100.00

Weight per gallon 13.3 lbs. PV = 34.0
Per Cent Volatile in the vehicle by weight = 32.4

*Conforming to U. S. Navy Specification 52R13, Grade I
**Driers: 0.25% Lead, 0.028% Cobalt, based on vehicle solids.

Drying Time
Set to touch ..... 4 hours
To handle and recoat ..... 24 hours

Fast Drying Metal Primer

	Formula	*Per Cent*	*Pounds*	*Gallons*
47.0% Pigment	Pigment E	25.0	138	4.55
	Iron Oxide (85% Fe_2O_3)	45.0	249	6.71
	Zinc Oxide	10.0	55	1.19
	Magnesium Silicate	20.0	111	4.65
53.0% Vehicle	Alkyd Resin Solution*	76.5	476	61.04
	Thinner and Driers**	23.5	147	21.86
			1176	100.00

Weight per gallon 11.7 lbs. PV = 35.0
Per Cent Volatile in the vehicle by weight = 54.1

*Soybean oil glyceryl phthalate alkyd resin, 30% phthalic anhydride; 60% solids in mineral spirits.
**Driers: 0.5% Lead, 0.05% Cobalt, based on vehicle solids.

Drying Time
Set to touch ..... 30 minutes to 2 hours
To handle and recoat ..... 18 hours
Baking Time—¾ hour at 250°F.

Fast Drying Primer with Improved Water and Chemical Resistance

	Formula	*Per Cent*	*Pounds*	*Gallons*
43.5% Pigment	Pigment E	39.6	200	6.58
	Titanium Dioxide	5.7	28.6	0.88
	Black Iron Oxide*	1.9	9.6	0.24
	Magnesium Silicate	26.4	134	5.63
	Zinc Oxide	26.4	134	2.87
56.5% Vehicle	Alkyd Resin Solution**	48.0	315	39.87
	20 cps Chlorinated Rubber	7.0	46	3.40
	Hi-Flash Naphtha	43.6	286	39.45
	Driers***	1.4	9.5	1.08
			1162.7	100.00

Weight per gallon 11.6 lbs. PV = 36.1
Per Cent Volatile in the vehicle by weight = 59.5

*This quantity of black iron oxide produces a dark gray-green color. By reducing the oxide, lighter olive green to yellow-greens can be produced.
**Conforming to U. S. Navy Specification 52R13, Grade I.
***Driers: 0.8% Lead, 0.09% Cobalt, based on alkyd resin solids.

Fast Drying Primer for Light Metal Alloys

	Formula	Per Cent	Pounds	Gallons
34.0% Pigment	Pigment E	74.3	267.0	8.77
	Titanium Dioxide	10.9	39.0	1.19
	Black Iron Oxide	2.9	10.3	0.26
	Magnesium Silicate	10.9	39.0	1.63
	Aluminum Stearate	1.0	3.6	0.42
66.0% Vehicle	Modified Phenolic Resin Solution*	13.1	91.5	11.10
	Modified Alkyd Resin Solution**	62.2	432.3	52.67
	Stabilizer	0.2	1.7	0.22
	Aromatic Petroleum Thinner	22.4	155.5	21.76
	Butyl Alcohol	1.3	9.3	1.40
	Driers	0.8	5.3	0.58
			1054.5	100.00

Weight per gallon 10.5 lbs. PV = 31.0
Per Cent Volatile in the vehicle by weight = 62.1

*Bakelite Dispersion Resin Solution such as BK 3962 or XK16700.
**Alkyd Resin Solution, 50% solids. The solids analyzing 35% phthalic anhydride and meeting other requirements of Army-Navy Aeronautical Specification AN-TT-P-656b.

Automotive Primer-Surfacer (Baking)

	Formula	Per Cent	Pounds	Gallons
52.1% Pigment	Red Iron Oxide (85% Fe_2O_3)	66.0	432.6	11.64
	Pigment E	7.0	45.8	1.50
	Zinc Oxide	7.0	45.8	0.98
	Magnesium Silicate	20.0	130.8	5.49
47.9% Vehicle	Alkyd Resin Solution*	62.4	375.4	48.13
	Melamine-Formaldehyde Resin Solution**	11.4	68.4	8.34
	Xylol	2.6	15.7	2.18
	Mineral Spirits	23.6	142.4	21.74
			1256.9	100.00

Weight per gallon 12.6 lbs. PV = 46.0
Per Cent Volatile in the vehicle by weight = 63.2

*Linseed Oil Modified Alkyd, 30% phthalic anhydride. Viscosity in mineral spirits (50% solids)—W to Y, Acid No. 3-7.
**Alkyd Modified Melamine Formaldehyde Resin, 50% solids. Viscosity O to T, Acid No. 1-3. Baking Time—30 minutes at 275°F.

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