

Chicago

Auxiliaries Research

Cleveland

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Lithopone - du Pont

Attached is a small brochure written to enable the salesman to select more intelligently the SW lithopone for a given match for du Pont's lithopone, and also outlining briefly some of the recommended changes that should be made, based on our discussion at Coffeyville. A detailed report of this meeting at Coffeyville and the visit at du Pont will be made at a later date. In the meantime we are going ahead with some experimental work both as regards a small plant batch and laboratory work. Furthermore, we are making a careful comparison of du Pont's lithopone and SW lithopone in the light of present production to see what differences exist both in flat paints and enamels. The enamel formula is being used not so much because there is considerable usage of lithopone for this purpose, but largely to bring out the physical differences in the two pigments with respect to hiding power.

du Pont's lithopones have always showed some high, dry, hiding properties which we have tried to avoid in our lithopone, particularly for use in flat paints, so that a better enamel hold out would be obtained. Since usage has changed in the last few years possibly we can now incorporate some of these high, dry, hiding properties in our lithopone without objection. This would show up our lithopone to better advantage in flat paint at some increase in porosity.

C. H. Adams
C. H. Adams *per se*
Mineral Products Laboratory

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LITHOPONE

SW GRADES VS. DU PONT GRADES

A large number of inquiries have been received recently in regard to what SW lithopone should be recommended for a given grade of du Pont's lithopone. It is not always easy to make an intelligent recommendation in view of the fact that usage may not be stated. The problem is further complicated by the fact that in most cases no given lithopone manufacturer will have exact matches for the given grades of lithopone produced by another manufacturer. Some grades will be close; others will be quite different, with each having its own desirable properties.

The laboratory is in the process of studying the relative properties of SW and du Pont's lithopones in order to be able to answer inquiries more intelligently, and in order to determine whether closer matches are desired in some cases. Usage and consumption should be controlling factors in the latter case. Radical changes in general in our own lithopones are undesirable and no changes should be made that will disturb the status quo of customers now satisfied with SW lithopones.

In some cases we do not have exact matches for a given du Pont lithopone. Usage, however, may indicate that one of our regular grades will be a satisfactory replacement for a given customer. In other cases it may be necessary to make a new grade to satisfy the customer. A good example of this is Ponolith NR-8. This is a non-reactive lithopone with very low zinc oxide content and low oil absorption. We do not have an exact match, but probably in many cases SW's Permolith 2OL (selected for low reactivity and low zinc oxide content) should be recommended for trial. If extra low oil absorption is desired try Permolith 1OLL.

Ponolith NR-8 seems to enjoy relative large sales. Our plan is to make a lithopone comparable to this. Samples should be ready for distribution in the not too distant future, as a trial run has been scheduled at Coffeyville. In the meantime try Permolith 2OL, as suggested above, on the basis that if this isn't satisfactory, a closer match will be available.

We do not have matches for HC, HCW, and HO-J types. Laboratory trials are scheduled for the HO-J just as soon as the raw materials are received. A decision will be made soon as to whether we will attempt to make the HC and HCW types. Some additional equipment, already approved, is required.

Until matches are available, the salesman should use with discretion the following table as a guide in recommending the proper Permolith grade for a given Ponolith grade, keeping in mind that usage may indicate in some cases a grade other than the one that more closely matches a given type in physical characteristics.

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In using the following table it should be kept in mind that du Pont, like SW, uses a dual coding system. The letters pretty well identify a given grade, and the number following the letter can be ignored. However, the numbers indicate the relative consistency properties. The higher the number the higher the consistency. The EL and LR grades have pretty well lost their significance. Originally the former meant enamel grade and the latter low reactivity or the regular grade. It will be noted that there are two EL grades -- one 112 and one 133. The 112 gives low consistency and the latter medium consistency, which is lower in general than LR-142.

As a guide the following key can be used:

- NR - Non Reactive
- EL - Enamel
- LR - Regular grade
- HO - High oil or consistency
- HC - High consistency, high dry hiding
- W - Water dispersible
- J - Soap treated

In some cases several grades are listed for trial in finding a satisfactory substitute for a given Penolith grade. In general, the first listed should be the closest match, but the others probably should be tried in order in case the customer is not satisfied.

In general SW lithopones will show lower oil absorption than the corresponding grade of du Pont's lithopones. Consistencies, however, in most formulas will be closer. Do not use oil absorption to predict the consistency properties in paint except on a rough basis.

<u>Du Pont</u> <u>Ponolith</u>	<u>Sherwin-Williams</u> <u>Permolith</u>	<u>Remarks</u>
NR-8	2OL	Select 2OL with low sine oxide and low reactivity.
NR-8	1OLL	Use where very low con- sistency is important.
EL-112	2OL	
EL-133	4QM	
LR-142	4QM	
LRW-116	W-421 Bird	
HO-153	6OH	May bring these closer together.
HO-J	No match	Soap treated. Labor- atory trials scheduled.
HC-181	Try W-320	No close match
HCW-184	Try W-421 W-560 W-420 W-320	No close match

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The following data on Ponolith lithopones are taken from du Pont's White Pigment Booklet, and is given here in the hope that it will prove useful in suggesting a Permolith grade for a given Ponolith grade.

"PONOLITH" Zinc Sulfide -- Barium Sulfate Pigment

Lithopones may be described as an extended zinc sulfide pigment, since it is composed of over 28% zinc sulfide and 70 to 71% precipitated barium sulfate. The "PONOLITH" line of lithopones includes grades of pigment suitable for any use to which lithopone is adaptable. The consistencies range from very thick to very thin. Reactive as well as non-reactive pigments are included.

Many of the grades of "PONOLITH" are designed for certain specific uses, such as water paints, enamels and flats. All of the "PONOLITH" grades, excepting a few designed for special purposes, are characterized by superior fineness and excellent texture. These properties contribute to ease of grinding and, in enamel and gloss paints, they assure high gloss and long gloss retention. The EL grades are particularly noteworthy in these respects.

NORMAL GRADES OF "PONOLITH"

The normal grades are all fine-textured pigments suitable for use in all types of products including interior and exterior paints, linoleum, felt base floor covering, rubber, leather finishes, textiles and printing inks.

"PONOLITH" EL

Grade 112
Paint Consistency 78-88 K.U.
Grade 133
Paint Consistency 90-100 K.U.

These two grades are enamel pigments of generally superior characteristics. While they carry only normal zinc sulfide content, they have great whitening power which overcomes to a large extent the disadvantages of dark-colored vehicles to yield excellent film color. These pigments have remarkable color retention properties in baked coatings and minimum yellowing with age in air-dry enamels. They contribute to the brightness of tints in colored paints.

The low consistency of these grades of "PONOLITH" permits higher than normal pigmentation in enamels with resultant higher opacity, acceptable consistency and maintenance of gloss.

The grades differ from each other primarily in consistency, and a choice between them will depend upon the body desired.

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"PONOLITH" LR

Grade 142
Paint Consistency 100-110 K.U.

This is an all-purpose pigment useful in flats as well as in enamels. Its properties are similar to those of the EL grades although it has a somewhat thicker consistency and is the alternative choice if EL grades are found to be too thin.

"PONOLITH" HO

Grade 153
Paint Consistency 115-125 K.U.

"Ponolith" HO is a thick reactive lithopone used widely in heavy-bodied flat paints. The consistency grading given above applies to non-reactive vehicles. In reactive vehicles the consistency may be somewhat thicker. "Ponolith" HO should be chosen if a thicker consistency is desired than that yielded by "Ponolith" LR.

NON-REACTIVE GRADE

"PONOLITH" NR

Grade 8
Paint Consistency 85 K.U. Maximum

The NR indicated "Non-Reactive". This is a neutral and non-reactive pigment with a very low zinc oxide content suitable for use with vehicles sensitive to either zinc oxide or pigment alkalinity. Though of thin consistency, it serves to "shorten" paints that have too much flow when made with more alkaline pigments. "Ponolith" NR is a very useful pigment in this respect.

WATER DISPERSIBLE GRADE

"PONOLITH" LR-W

Grade 116
Paint Consistency 85 K.U. Maximum
Water Absorption 21-26

This pigment is a thin consistency, fine-textured product treated for easy dispersion in aqueous media. It is characterized by extremely low water absorption. The water absorption range shown above indicates that 100 parts by weight of pigment are reduced to a flowing paste with only 21 to 26 parts of water. Simple mixing in a water vehicle gives practically complete dispersion and freedom from aggregates.

"Ponolith" LR-W is used extensively in emulsion paints, dry powder and paste cases in paints, leather finishes, textile finishes and similar products where ease of dispersion and low water absorption are important.

HIGH FLAT HIDING GRADES

High flat hiding grades of "Ponolith" are outstanding pigments for maximum hiding value in flat finishes.

"PONOLITH" EC

Grade 181
Paint Consistency 125-135 K.U.

"Ponolith" EC is a thick consistency, soft-textured pigment for use in emulsion paints, dry powder and paste casein paints, calicoater flats, wallboard coating compositions, oleoresinous flats, shoe cleaners, textile coating, and other applications where maximum hiding value per unit of cost is desired.

In the field of emulsion paints, a choice can be made between thin consistency "Ponolith" grades, such as "Ponolith" LR-W or the EL grades, and high flat hiding grades like "Ponolith" EC. Generally speaking, with proper formulation, the thinner consistency grades permit realization of maximum wet abrasion resistance. However, an enormous advantage in flat hiding power together with satisfactory wet abrasion resistance and large saving in cost can be achieved by use of "Ponolith" EC.

The consistency range shown above refers to oil paints and has no significance for emulsion paint usage other than to indicate that this is a thick consistency pigment.

"PONOLITH" EC-W

Grade 184
Water Absorption 35-45

This grade is identical with "Ponolith" EC except that it is treated for easy dispersion in water and water-containing compositions. This treated pigment has advantages in certain emulsion paint formulas because of its easy mixing, improved dispersion and its contribution to emulsion stability. In some formulas, the hiding may be lower than for the untreated "Ponolith" EC.

The following figures give an approximate picture of the economies that can be realized with suitable formulas of water vehicle paints by use of EC.

	Relative Hiding Power Per Unit Cost
Thin Consistency Lithopone-----	100%
"Ponolith" EC-----	120-130%

GRADE	DESCRIPTION AND USE	Relative Consistency in Oil Flat-K.U.	Oil Absorption; Lbs. Oil/100 Lbs. Pigment	pH
HC-181	High dry hiding for increased value per unit cost; for emulsion, casein, calcicoater and flat wall paints; for wallboard and textile coatings, and shoe cleaners. Hiding power value per dollar in water systems 120%-130% of normal lithopone.	125-135 (Thick in water systems)	23-24	9-10
HC-W 184	Similar to HC-181, but treated to promote ease of mixing and dispersion in water systems. Not recommended for oil paints. Water absorption 35-45 lbs./100 lbs. pigment."	(Thick in water systems)	23-24	9-10

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"PONOLITH" LITHOPONE PIGMENTS
 (Containing over 28% Zinc Sulfide and 70 to 71% Barium Sulfate)
 (Bulking 0.02792 Gallons per Pound)

GRADE	DESCRIPTION AND USE	Relative Consistency in Oil Flat-K.U.	Oil Absorption; Lbs. Oil/100 Lbs. Pigment	pH
EL-112	General-purpose enamel grade applicable to all types of interior and exterior paints, linoleum, felt base floor covering, rubber, leather finishes, textiles, printing ink, etc. Fine texture, easy grinding, low consistency permitting higher pigmentation with superior gloss and gloss retention and high whitening power in dark liquids. Choice between EL-112 and EL-133 depends on consistency desired.	78-88	11-12	8-9
EL-133	Same as above	90-100	13-14	9-10
LR-142	Similar to EL-112 and EL-133, but slightly thicker. Useful in flat wall paints as well as in enamels.	100-110	15-16	9-10
EO-153	Thick consistency, reactive grade applicable to heavy-bodied flat wall and gloss paints.	115-125	16-17	9-10
NR-8	Especially non-reactive grade designed for use with vehicles sensitive to pigment alkalinity.	85 max.	11-13	7-8
LR-W 116	Special thin consistency grade treated for ease of dispersion in water systems. For emulsion and casein paints, leather finishes and textile coatings where easy dispersion and low vehicle absorption are important. Water absorption 21-26 lbs./100 lbs. pigment.	85 max.	11-12	9-10

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