

Mineral Products Laboratory
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LITHOPONE

PERMOLITH Lithopones

In view of "current events" in the lithopone industry, it seems worth while to review the lithopone picture and particularly our own grades of Permolith. It seems fair to say that we are still in the lithopone business because we can afford to make it at a price that a goodly number of customers are willing to pay. We can do this because we have an efficient and well integrated plant. Customers are still willing to buy it because they feel that it contributes certain properties and attributes to their product, which cannot be obtained with other pigments.

The Permoliths may be considered to be of two basic types: the normal (or all-purpose) types and the water-wetting types. The former all carry a letter after the grade number, the latter all carry a W before the grade number. The normal types may be further divided into the Regular Grades and the Non-Reactive Grades. The water-wetting types may also be divided into the regular Water-Wetting Grades and the Water-Dispersible Grades. This classification leaves us with one orphan, a Hydrophobic (or non-water-wetting) grade, Permolith 60-J.

Normal Types

Regular Grade

20L
40M
60H

Non-Reactive Grades

10W

60W

The normal types of Permolith have no surface treatment or additive. Although not treated for enhanced compatibility with water systems, they do, nevertheless, wet in water and are preferred by some users for water formulations. They are compatible with a wide variety of vehicles and matrices including vegetable oils, resin modified oils, mineral oils, proteins and latex dispersions, rubber and plastics.

The difference between the three regular grades is almost entirely in consistency characteristics. They all possess excellent light resistance, color retention and gloss retention.

Permolith 20-L (low consistency)

Wall primers and sealers.
Flat wall paints.
Caulks and putties.
Chalks.
Crayons.
Floor Tile.
Linoleum.

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Permolith 40-H, Enamel Grade (medium consistency)

Interior enamels - semi-gloss and high-gloss.
Industrial finishes.
Floor and deck paints.
Leather.
Plastics.

Permolith 60-H, (medium high consistency)

Traffic Paints.

The non-reactive grades, like the regular grades, are compatible with both oil and water systems. However, they have been specially processed to have a maximum zinc oxide content of 0.10%. They are primarily intended for use in oil vehicles sensitive to alkaline pigments and where after-body must be kept to a minimum. Specific application includes use in oil cloth and plastic finishes. Permolith 10-N produces low consistency and Permolith 60-N medium high consistency.

Hydrophobic Grade

Permolith 60-J (medium high consistency)

This is a special lithopone in which a special organic treatment is applied on a 60-H base. It exhibits superior wetting and dispersion in oil vehicles and imparts better suspension in the can for many formulas. It is completely non-wetting in water.

Water-Wetting Types

These Permoliths have been treated to provide faster wetting and increased compatibility in water systems. This treatment also produces increased high-dry hiding characteristics. They are generally compatible with oil systems, as well, but may produce rather high consistencies with certain reactive vehicles.

Permolith W-320

Water and emulsion paints.
Latex Paints.
Oil and alkyd flat paints.
Patching Plaster.
Crack-fillers.

Permolith W-320 is especially low in soluble salt of divalent and trivalent metals such as calcium, magnesium and aluminum. It also possesses excellent light resistance.

Permolith W-660 possesses somewhat greater high dry-hiding than Permolith W-320 in most formulations. It has a higher water absorption and in general contributes higher consistency. Because of the nature of the treatment, it does not show the same freedom from calcium salts as the W-320 grade.

Water-Dispersible Grades

Water-dispersible grades carry a dispersing agent in addition to the water-wetting treatment. They are intended exclusively for use in water-based systems.

Pernolith W-420, Medium Consistency, Med. Disp.

Pernolith W-421, Low Consistency, High Disp.

Pernolith W-461, Medium Consistency, High Disp.

Pernolith W-560, High Consistency, Med. Disp.

Pernolith W-661, High Consistency, High Disp.

Application of these grades include:

- Kalsomine.
- Paper coating and filling.
- Casein paints.
- Latex paints.
- Wall paper finishes.

Soluble Salts

Brief consideration should be given to the question of soluble salts. Some misunderstanding has arisen about the relative amounts of soluble salts in the regular grades of lithopone and in the Pernolith W-320. In making the statement about low soluble salts in Pernolith W-320, reference was implied to similar competitive types of lithopone. Because of the nature of the treatment, soluble salts cannot be kept as low as in regular untreated grades. A table showing the specific resistance, which is a measure of soluble salt content, summarizes the comparisons.

<u>Grade</u>	<u>Specific Resistance*</u>
Regular 20L, 40N, 60N	12,000 - 15,000
Non-Reactive 10N, 60N	7,500 - 10,000
60N	Non Water-Wetting
Water Sensitive W-320, W-660	3,500 - 5,000
Water Dispersible	Very low, water soluble dispersants added.

*High specific resistance indicates low soluble salts
and vice versa.

Albalith Lithopones

There are at present four grades of Albalith that we are seriously considering for manufacture at Coffeyville.

Albalith 362 and Albalith 332, we understand, comprised about 30% of the total Albalith production. These are both surface treated lithopones with high-dry-hiding properties and have been used chiefly in water-base systems. The treatment on the two grades is identical, but with the addition of a dispersing agent to the Albalith 332. Coffeyville is currently making preparations for a trial run on this type of lithopone, and while it is not expected that exact duplication can be achieved, it is hoped it will be sufficiently close to answer the requirements.

Albalith 13 is one of the grades for which we have no close countermatch at present. It is a relatively low consistency lithopone, having low sheen properties. It is being used to our knowledge in one account involving a dead flat finish for oil cloth. Reproduction of this grade involves some fundamental process changes and we are not yet in a position to estimate just how closely it can be accomplished.

Albalith 73 is very similar to, but not identical with, our Permolith 60-J. A trial lot on this grade has already been made, and based on our tests and those of the rubber laboratory, it appears to have been successful. Future lots of Permolith 60-J are planned on this basis. This type of lithopone has been popular in some rubber applications, notably in the manufacture of air bags employed in tire production.

Sunolith Lithopones

We have encountered the Sunolith grades rather infrequently up to now, at least. With the possible exception of one or two grades, we feel that our present series provides adequate countermatches.

Countermatches

A new table showing the current countermatches of Permolith for competitive grades has been prepared to replace page 108 in the Lithopone Booklet, Paper No. 104.

The Panolith series and Astrolith series have been eliminated since they are no longer being manufactured. The Albaliths have been retained, inasmuch as we will be concerned with them for some time yet.

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