

FOR COMPANY USE ONLY

PROCESS FILE

DATE August 6, 1974

TEST AUTHORIZATION NO. TA-C-74-738 & TEST CONCLUSION

OFFICIAL PRODUCT NAME Anthraquinone

PRODUCT CODE NO. 055-211 POUNDS PRODUCT PROPOSED Up to 27,000 lbs. dry

AREA "Ponsol" BUILDING NAME Standards

TITLE Spray drying of anthraquinone

PREPARED BY: E. G. Leser C.A. 2. RESPONSIBLE FOR TEST AND TEST CONCLUSION: E. G. Leser

PURPOSE OF TEST: To spray dry wet anthraquinone to provide dry product for export. The product pan dries slowly, and a rapid drying method is desired.

DURATION OF TEST: If initial spray dried charge meets quality specifications, one entire anthraquinone campaign (27,000 lbs. dry) will be dried.

STANDARD INVOLVED: Operating Instructions for "Ponsol" Spray Dryer.

ANALYTICAL CONTROL: ☒ No change ☐ Change described under Test Details
(OCNB 2829-143)

TECHNICAL BASIS FOR CHANGE: Successful laboratory spray drying by H. Hopkins
OCNB 3576-46, Jackson Laboratory).

TEST DETAILS:
(Include Safety and Waste Disposal) See attached.

WASTE DISPOSAL: None, except for small amounts of anthraquinone lost in equipment clean out.

SAFETY: See attached.

RESULTS OF TEST: See attached.

RECOMMENDATIONS: See attached.

DISTRIBUTION:

R. J. Pohl

R. T. McNally

D. Putnam (3)

R. H. Terss

J. A. Moffett

C. J. Slentz

J. L. Files

M. S. Moores

R. F. Stalzer

C. H. Lake

D. O. Miller (3)

J. F. Laucius

T. E. Lewis

G. L. Porter

E. G. Leser

J. R. McCloskey

J. A. Oscar

APPROVED BY:

CHIEF SUPVR., OPERATIONS

DATE

CH. SUPVR., TECH. OR PLT. ASSIST.

DATE

DATE

SUPERINTENDENT, ANALYTICAL (When Required)

DATE

SUPERINTENDENT, DYE QUALITY CONTROL (When Req'd)

DATE

AUTHORIZED BY:

SUPERINTENDENT, MANUFACTURING (Or Delegates)

DATE

SUPERINTENDENT, TECHNICAL (If Any)

DATE

Safety:

Carney's Point explosion data from the one-shot analysis of our first four anthraquinone charges is presented below. All samples except the "as is" one, were dried, ground, and passed through a 200 mesh screen prior to analysis. The data show that anthraquinone is safer than the standard "Duponol" ME or quinizarin and hence can be spray or pan dried.

Anthraquinone Dust Explosion Data (B. W. Ricards)*

<u>Charge No.</u>	<u>Maximum Explosion Pressure Δp, psi</u>	<u>Maximum Explosion Rate dp/dt psi/sec.</u>	<u>Average Explosion Rate dp/dt psi/sec.</u>
1	67	2100	1015
2	70	2280	1170
3	62	1490	885
4	58	1245	645
4 (as is)	59	1665	780
"Duponol" ME	95	2875	1400
Quinizarin SD	78	5300	2365

*Explosion Hazards Laboratory, Carney's Point Works

Test Details:

1. Charge nutsch cake into a minimum amount of water with agitation.

Note: Plant nutsch cake is about 30% solids.

2. Add water as needed to achieve a pumpable slurry.

Note: The amount of water to be added will be determined by supervision.

3. If necessary, adjust the pH of the slurry to a range of 5.5 to 7.5 by carefully adding 30% caustic.

Note: The effect of a pH greater than 7.5 on product quality is not known. At a pH below 5.5, residual acidity on drying will not adversely effect product quality, but will corrode the spray drying equipment.

Note: Plant nutsch cake will normally have a pH in the range 4.0 to 7.0.

4. Pump the aqueous slurry through the screen to the feed tank.

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5. Spray dry the slurry under the following temperature conditions:

Atomizing air	250-300°C.
Drying Air	300°C.
Mid Chamber	80-85°C.

Note: Optimum temperatures of spray drying will be determined by supervision.

Note: Anthraquinone sublimes at 286°C.

6. Send an 8 oz. sample of each charge of spray dried anthraquinone to G.A.L. for the following analyses as per specification No. 54-A-1.

<u>Property</u>	<u>Specification</u>
% H ₂ O	≤ 0.2%
% MCB Insolubles	≤ 0.3%
DTA	≥ 284.0°C.

RESULTS OF TEST:

The test was successful, producing 5,800 lbs.(net) of product. The spray dried material met our quality specifications and was suitable for sales. Final spray dried mill cost before packaging was \$2.19/lb. Alternative product codes are:

Anthraquinone, S.D.	055-572-2000
Anthraquinone, Tech.for Sales	055-200-4600

RECOMMENDATIONS:

Adopt the T.A. Anthraquinone produced by TMR-C-73-86 (test conclusion dated 8/5/74) can either be pan dried at the "Ponsol" Dry House or spray dried via TA-C-74-738. The specifications for this product are revised to be:

% H ₂ O	≤ 0.5%
% MCB Insolubles	≤ 1.0%
Melting Point (DTA)	≥ 282.0%