File

FROM FILE J. B. Spigener

TA-C-56-151

## TEST CONCLUSION

Plant: Chambers Works January 17, 1957

Area: "Ponsol" Colors

Test Title: Tert-Butylbenzoylbenzoic Acid (T.B.B.B.A.). Reduction in mol-ratio of t-butylbenzene to phthalic anhydride.

### Purpose of Test:

To establish plant yield and quality at the lower mol-ratio of T-butylbenzene to phthalic anhydride in order to determine whether a cost savings can be obtained by using a slight excess of phthalic anhydride instead of an excess of the more expensive T-butylbenzene. Present standard yield is 93.0% of theory based on phthalic anhydride. Laboratory results indicate about 91.0% of theory using the mol-ratio of 0.98 TBB/PA. If the 91.0% yield can be obtained in the plant, a savings of about $2.50 per 100 lbs. of T.B.B.B.A. will result.

### Results of Test:

This test was made in three parts of which the first and third parts were made by the regular method and the middle part made according to this authorization. The test cannot be considered conclusive, as another variable was introduced (by necessity) with the test. The use of purchased T-butylbenzene gave some extremely low results during the last third of the test, and decidedly influenced results so that any conclusions reached would not be entirely valid.

### Production and Yield

Results of the test may be summed up as follows:

| Method | Mol.ratio T.B.B./PA | Prod. | Std. Yld. | Based on | Act. Yld. | Yld. Eff. | Quality M.R.140-145°C |
|---|---|---|---|---|---|---|---|
| TA-C-56-151 | 0.98 | 32,785* | 91.0% | T.B.B. | 81.4% | 89.5% | 140-147°C (range) |
| * Regular | 1.09 | 79,795* | 93.0% | P.A. | 89.0% | 95.7% | 141-150°C (range) |

*The "regular" production and yield was figured by omitting 5 charges of T.B.B.B.A. made from Lots 5 and 14 of purchased T-butylbenzene which gave extremely low results and could not possibly be included in any analysis of yields between the various methods.

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Recommendation:

The procedure should not be adopted in its present form. It may be advisable to try another test later on when the quality of the T.B.B. purchased is more reliable or if we can made an extended run using only plant manufactured T.B.B. The molar ratio on the next test should be increased to at least 1:1 TBB/PA or increase the amount of T.B.B. to a slight excess.

Prepared by: H. R. Steinbruck

Issued by: J. B. Spigener /s/
Production Supt.

C. L. Richardson /s/
Plant Tech. Supt.

/sp

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V. R. Hurka

TA-C-56-151

PROCESS FILE

# TEST AUTHORIZATION

Plant: Chambers Works July 30, 1956

Area: "Ponsol" Colors

Test Title: Tert-Butylbenzoylbenzoic Acid (TBBBA). Reduction in mole-ratio of T-butylbenzene to phthalic anhydride.

Purpose of Test:

To establish plant yield and quality at a lower mole ratio of T-butylbenzene to phthalic anhydride in order to determine whether a cost savings can be obtained by using a slight excess of phthalic anhydride instead of an excess of the more expensive T-butylbenzene. (Present standard yield is 93.0% of theory based on phthalic anhydride. Laboratory results indicate about 91.0% of theory using the mole ratio of 0.98 TBB/PA. If the 91.0% yield can be obtained in the plant, a savings of about $2.50 per 100 lbs. of TBBBA will result.)

Standard Involved:

Tentative New Brunswick Works Process for the Manufacture of 2(4'Tert-Butylbenzoyl) Benzoic Acid (TBBBA).

Test Details:

Based on Laboratory work, the Intermediates Technical Group has recommended trial of a mole ratio of 0.98 TBB/PA. The present mole ratio is 1.09 TBB/PA.

See memorandum from R. A. Stenger to A. J. Hayward, dated July 17, 1956.

A campaign of 100,000 lbs. of TBBBA is scheduled for September and October.

It is proposed to make the first 1/3 of this production using the present mole matio of 1.09 TBB/PA, then clean-up to get an accurate yield. Then the second 1/3 (about 33,000 lbs.) will be made using the mole ratio of 0.98 TBB/PA, followed by a clean-up to get an accurate yield. The final 1/3 of this production will be made using the 1.09 TBB/PA mole ratio.

| Materials | 1.09 Mole Ratio Lbs. | 0.98 Mole Ratio Lbs. |
|---|---|---|
| Phthalic Anhydride | 960 | 960 |
| Aluminum Chloride | 1,920 | 1,920 |
| T-butylbenzene | 944 | 850 |
| Monochlor Benzene | 3,146 | 3,146 |

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N33012.01

Test Authorization - TA-C-56-151

Prepared by: A. J. Hayward

Approved by: (s) H. I. Stryker
Chemical Control Dept.

Authorized by: (s) V. R. Hurka Date: 8/3/56
Production Superintendent

(s) A. V. Willett, Jr. Date: 8/7/56
Plant Tech. Superintendent

Responsible for Test: H. R. Steinbruck

/sp

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