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**Committee D16 on Aromatic Hydrocarbons and Related Chemicals
Subcommittee D16.02 on Oxygenated Aromatics**

Research Report: D16-2001

**Interlaboratory Study to Establish Precision Statements for ASTM
D7882, Determination of 4-Carboxybenzaldehyde and p-Toluic
Acid in Purified Terephthalic Acid by Capillary Electrophoresis
with Normal Voltage Mode**

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1. Introduction/ Background:

This test method covers the determination of 4-carboxybenzaldehyde (4-CBA) and p-toluic acid (p-TOL) in purified terephthalic acid (PTA) by capillary electrophoresis (CE) with normal voltage mode and UV detection. It is applicable for 4-CBA from 5 to 400 mg/kg and for p-TOL from 10 to 400 mg/kg, respectively..

2. Test Method:

2.1 The Test Method used for this ILS is D7882-20. To obtain a copy of D7823, go to ASTM’s website, www.astm.org, or contact ASTM Customer Service by phone at **610-832-9585** (8:30 a.m. - 6:00 p.m. Eastern U.S. Standard Time, Monday through Friday) or by email at service@astm.org.

2.2 A PTA sample is dissolved in ammonium hydroxide. The 4-CBA, p-TOL and PTA dissociate and become homologous ions under basic conditions. A fixed amount of this solution is introduced into the capillary using hydrodynamic sampling. A voltage is applied to the capillary to separate the impurities, 4-CBA and p-TOL, from PTA. External standard calibration is used for quantification.

3. Participating Laboratories:

The following laboratories participated in this interlaboratory study:

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LTD
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PetroChina Wulumuqi Petrochemical
Company
Contact: Guantao Li

Shanghai Asia Petrochemical Company
Contact: Wei Liu

Beckman
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4. Description of Samples:

Five PTA samples with different concentrations of 4-CBA and p-TOL are tested in this study. The expected concentrations of the component interest are listed in Table 1.

Table 1 Expected Concentrations of 4-CBA and p-TOL in PTA [mg/kg]

| | Level I | Level II | Level III | Level IV | Level V |
|-------|---------|----------|-----------|----------|---------|
| 4-CBA | 11 | 17 | 25.1 | 4~5 | 2 |
| p-TOL | 210 | 100 | 127.3 | 210 | 63 |