DETERMINATION OF 4-CARBOXYBENZALDEHYDE & *p*-TOLUIC ACID IN PURIFIED TEREPHTHALIC ACID ACCORDING TO ASTM D7881 & ASTM D7882 TEST METHODS

ASTM D7881-13
ASTM D7882-13

INTRODUCTION

These test methods cover the determination of 4-carboxybenzaldehyde (4-CBA, 4-formylbenzoic acid) and *p*-toluic acid (*p*-TOL, 4-methylbenzoic acid) in **purified terephthalic acid (PTA)** by capillary electrophoresis (CE) with normal or reverse voltage mode and UV detection.

MEASUREMENT METHOD

The measurement methods are based on capillary zone electrophoresis with direct UV detection at the wavelength of 200 nm.

MEASUREMENT RANGE

The measurement ranges for the components are presented in the table below.

Compound	Measurement range, mg/kg	
	ASTM D7881-13	ASTM D7882-13
4-carboxybenzaldehyde	3–400	5–400
p-toluic acid	8–400	10–400

EQUIPMENT AND REAGENTS

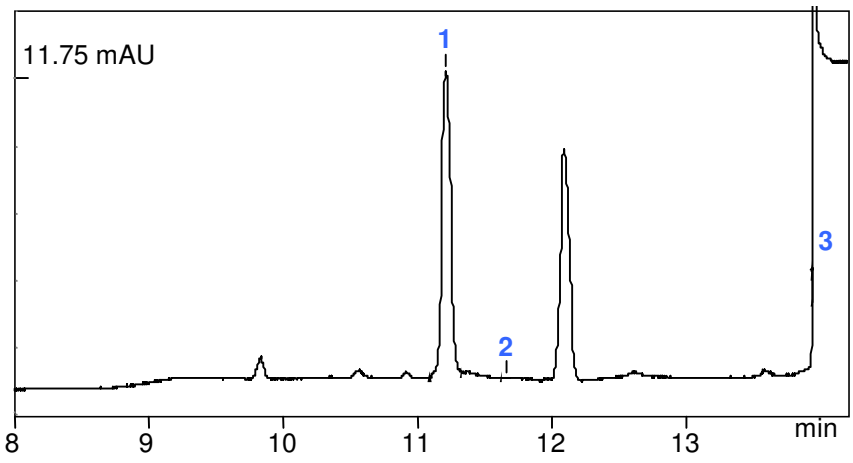
The CAPEL® capillary electrophoresis system is used in measurements. Data acquisition, collection, processing, and output are performed using a personal computer running under WINDOWS® XP/7/8/10 operating system with installed dedicated software package ELFORUN®.
All reagents must be of analytical grade or better.

EXAMPLES OF REAL ANALYSES (ASTM 7882-13)

BGE: phosphate, with sodium 1-heptanesulfonate
Capillary: L_{tot} 50 cm, ID 50 µm
Injection: 3,3 kPa * 15 s (495 mbar*s)
Voltage: + 25 kV
Temperature: + 20 ^{O}C
Detection: 200 nm

Sample: purified terephthalic acid

Measurement results:
1 – *p*-TOL (20 mg/kg)
2 – 4-CBA (not detected)
3 – PTA



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