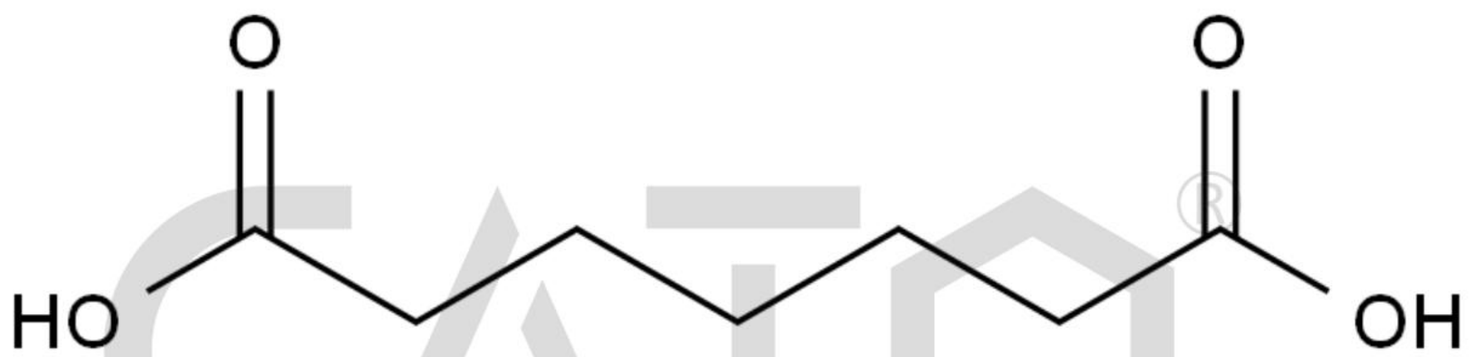
# Certificate of Analysis

## Reference Material & Standard

| | | | |
|---|---|---|---|
| **Product Name:** | 1,5-Pentanedicarboxylic Acid | **Catalogue Number:** | CCFD200006 |
| **Synonyms:** | N/A | **Lot Number:** | 1-F-3A0-1 |
| **CAS Number:** | 111-16-0 | **Expiry Date:** | Sep 06, 2030 |
| **Molecular Formula:** | $C_7H_{12}O_4$ | **Storage:** | Room Temp Protected from light and Sealed |
| **Molecular Weight:** | 160.17 | **Shipping Condition:** | Shipping at Room Temperature |
| | | **Warning:** |  |

**Chemical Structure:**




| Test Items | Method | Results |
|---|---|---|
| **Appearance** | Visual inspection | White Solid |
| **Identification** | GCMS&HNMR | Confirmed |
| **Purity** | GC | 97.838% |
| **Loss on Drying** | TGA | 0.1352% |
| **Assay** | | 97.7% |
| **Uncertainty** | | ±0.2% |

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## Comment:

*1. The calculation of the mass balance method follows the formula (calculated on the non-dried basis):*
*Assay (%) = (100%-Loss on Drying) * Purity GC (%) /100%*
*Loss on Drying is considered as absolute effect, GC purity is considered as relative effect.*
*2. The uncertainty values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.*

**Signature:**

Prepared by: Alice Date: Sep 07, 2026

Reviewed by: Hinlam Date: Sep 07, 2026

Approved by General Manager: David Date: Sep 07, 2026

CATO Research Chemicals Inc.