

# Certificate of Analysis

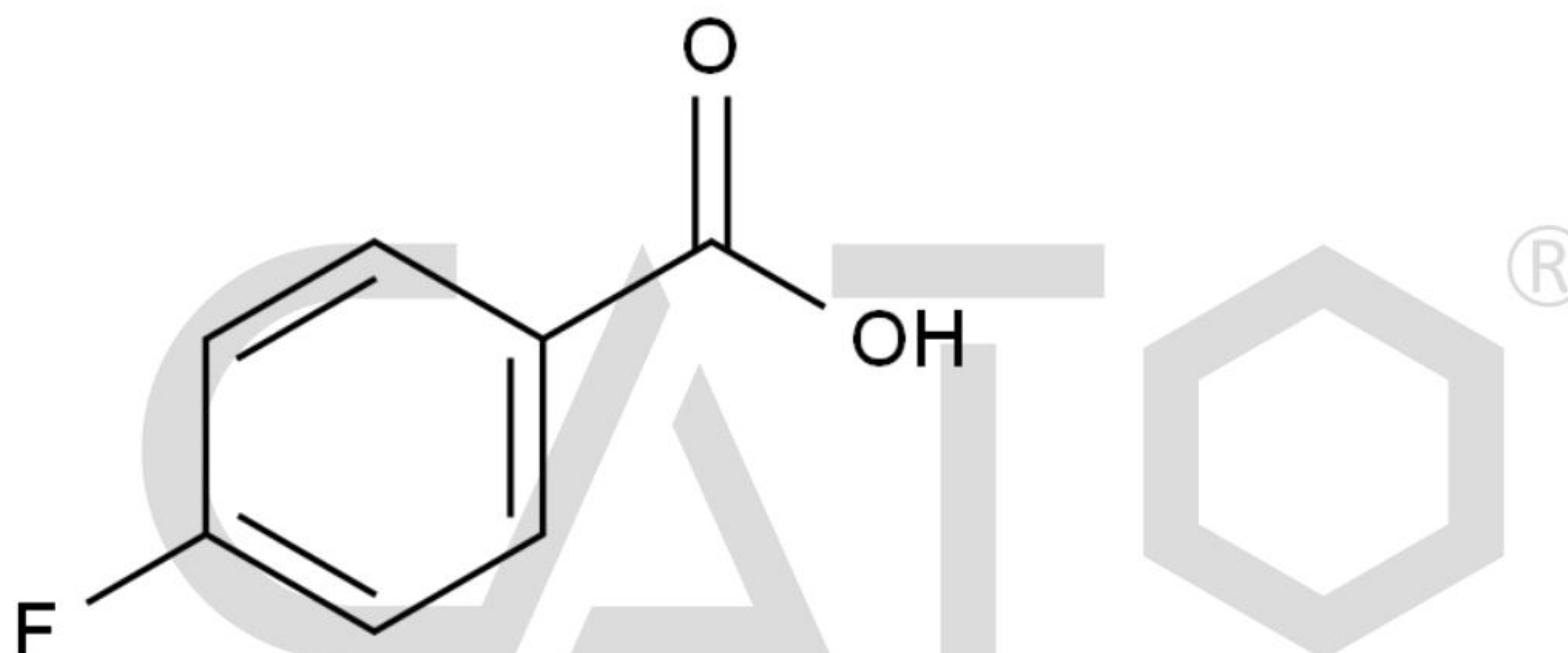
## Reference Material & Standard

|                    |                                               |                     |                                           |
|--------------------|-----------------------------------------------|---------------------|-------------------------------------------|
| Product Name:      | 4-Fluorobenzoic Acid                          | Catalogue Number:   | CCPD101733                                |
| Synonyms:          | N/A                                           | Lot Number:         | 0203-RH-0077                              |
| CAS Number:        | 456-22-4                                      | Expiry Date:        | Feb 02, 2030                              |
| Molecular Formula: | C <sub>7</sub> H <sub>5</sub> FO <sub>2</sub> | Storage:            | Room Temp Protected from light and Sealed |
| Molecular Weight:  | 140.11                                        | Shipping Condition: | Shipping at Room Temperature              |

Warning:



Chemical Structure:



| Test Items     | Method            | Results         |
|----------------|-------------------|-----------------|
| Appearance     | Visual inspection | Off-White Solid |
| Identification | GCMS&HNMR         | Confirmed       |
| Purity         | GC                | 99.734%         |
| Loss On Drying | TGA               | 0.0647%         |
| Assay          |                   | 99.7%           |
| Uncertainty    |                   | ±0.2%           |

## Comment:

1. The calculation of the mass balance method follows the formula (calculated on the non-dried basis):

$$\text{Assay (\%)} = (100\% - \text{Loss On Drying}) * \text{Purity GC (\%)} / 100\%$$

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:

*Nice*

Reviewed by:

*Hin Lam*

Approved by General Manager:

*David*

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Add: 3rd Floor, Building B, No.179, Guangpu Rd East, Huangpu District, Guangzhou, China

Tel: +86-20-81960175

Email: [supports@cato-chem.com](mailto:supports@cato-chem.com)

Web: <https://www.cato-chem.com>

