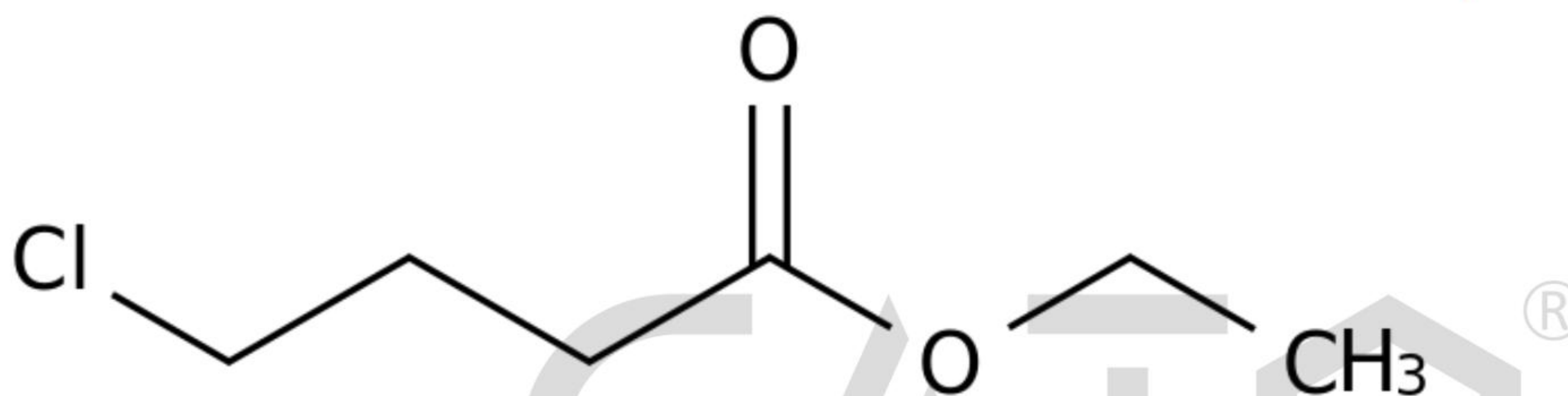


Certificate of Analysis

Reference Material & Standard

Product Name:	Ethyl 4-Chlorobutyrate	Catalogue Number:	CCHM703851
Synonyms:	N/A	Lot Number:	0715-RC-0012
CAS Number:	3153-36-4	Expiry Date:	Jul 18, 2024
Molecular Formula:	C ₆ H ₁₁ ClO ₂	Storage:	2°C ~ 8°C Protected from light and Sealed
Molecular Weight:	150.60	Warning:	
Chemical Structure:			



Test Items	Method	Results
Appearance	Visual inspection	Colorless Liquid
Identification	GCMS&HNMR	Confirmed
Purity	GC	99.765%
Water Content	Karl Fischer	0.2912%
Assay		99.5%
Uncertainty		±2.0%

Comment:

1. The calculation of the 100% method follows the formula (calculated on the non-dried basis):

$\text{Assay (\%)} = (100\% - \text{Water Content}) * \text{Purity GC (\%)} / 100\%$

Water Content 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:

Hin Lam

Reviewed by:

Debia

Approved by General Manager:

David

Date: Jul 19, 2021

Date: Jul 19, 2021

Date: Jul 19, 2021

