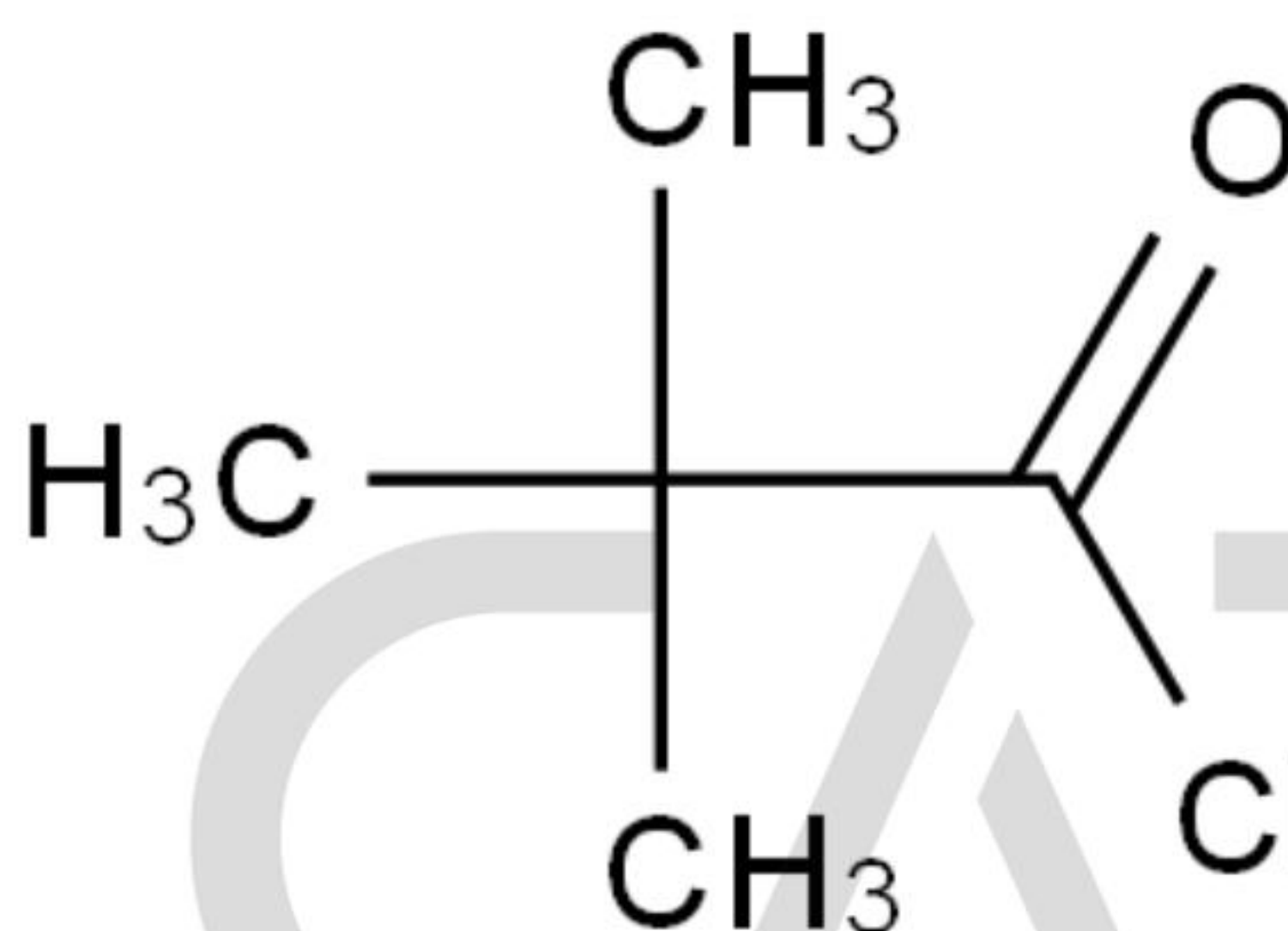


# Certificate of Analysis

## Reference Material & Standard

|                    |                                   |                   |                                                                                     |
|--------------------|-----------------------------------|-------------------|-------------------------------------------------------------------------------------|
| Product Name:      | Pivaloyl Chloride                 | Catalogue Number: | CCPD103406                                                                          |
| Synonyms:          | N/A                               | Lot Number:       | 0427-RE-0092                                                                        |
| CAS Number:        | 3282-30-2                         | Expiry Date:      | May 07, 2027                                                                        |
| Molecular Formula: | C <sub>5</sub> H <sub>9</sub> ClO | Storage:          | 2°C ~ 8°C Protected from light and Sealed                                           |
| Molecular Weight:  | 120.58                            | Warning:          |  |

Chemical Structure:



| Test Items     | Method            | Results           |
|----------------|-------------------|-------------------|
| Appearance     | Visual inspection | Colourless Liquid |
| Identification | GCMS&CNMR&HNMR    | Confirmed         |
| Purity         | GC                | 97.352%           |
| Water Content  | Karl Fischer      | 0.1931%           |
| Assay          |                   | 97.2%             |
| Uncertainty    |                   | ±2.0%             |

## Comment:

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

Assay (%) = (100% - Water Content) \* 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:

*Lisa*

Approved by General Manager:

*David*

Date: May 08, 2023

Date: May 09, 2023

Date: May 09, 2023

