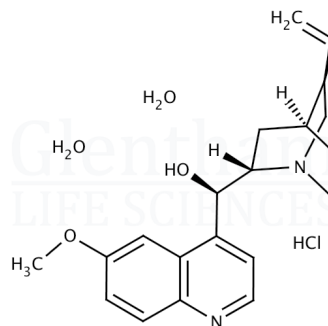


Certificate of Analysis

| | |
|----------------|---------------------------------|
| Product Name | Quinine hydrochloride dihydrate |
| Glentham Code | GA8217 |
| CAS Number | 6119-47-7 |
| EINECS | 205-001-1 |
| MDL Number | MFCD00078498 |
| Additional CAS | 130-89-2 |
| Additional CAS | 60-93-5 ($\cdot 2\text{HCl}$) |
| PubChem SID | 310279542 |
| Batch Number | 093VWX |

| | |
|-------------------|---|
| Molecular Weight | 396.91 |
| Molecular Formula | $\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2 \cdot \text{HCl} \cdot 2\text{H}_2\text{O}$ |
| Storage Temp. | +20°C |



| Property | Specification | Batch 093VWX |
|--------------------------------|---|----------------------------------|
| Physical Description | White or almost white crystalline powder | Conforms |
| Identification | Identification tests A, B, C, D, E | Conforms |
| Appearance of Solution | Clear, and colour \leq Y6 | Conforms |
| pH (1% in water) | 6.0 - 6.8 | 6.3 |
| Specific Optical Rotation | -245 - -258 ° | -251° |
| Other Cinchona Alkaloids | Dihydroquinine hydrochloride: \leq 10.0% | 5.3% |
| | Any impurity eluted before quinine: \leq 5.0% | 1.9% |
| | Any Other Impurity: \leq 2.5% | 0.0% |
| Loss on Drying | 6.0 - 10.0 % | 7.0% |
| Sulphated Ash | \leq 0.1% | \leq 0.1% |
| Sulphates | \leq 500ppm | Conforms |
| Barium Test | No turbidity produced | Conforms |
| Heavy Metals | \leq 10ppm | Conforms |
| Assay | 99.0 - 101.0 % | 99.4% |
| Pharmacopoeia Specification(s) | Conforms to BP, EP | Conforms to BP2019, Ph. Eur. 9.0 |

| | |
|-----------------------|------------|
| Specification Version | v1.0 |
| Manufacture Date | 2017-11-13 |
| Re-Test Date | 2028-04-30 |

Glentham Life Sciences confirm that the above referenced product conformed to the information displayed in this document on the quality release date. Please check www.glentham.com or contact us using the details above for the current version of this document.

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