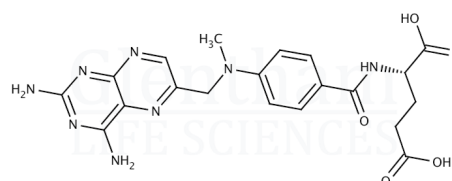


## Certificate of Analysis

Product Name Methotrexate hydrate  
Glentham Code GA6211  
CAS Number 133073-73-1  
MDL Number MFCD00150847  
Additional CAS 59-05-2  
PubChem SID 310276236  
Batch Number 647EDA

Molecular Weight 454.44 (anhydrous)  
Molecular Formula  $C_{20}H_{22}N_8O_5 \cdot xH_2O$   
Storage Temp. -20°C



| Property                                        | Specification                               | Batch 647EDA  |
|-------------------------------------------------|---------------------------------------------|---------------|
| Physical Description                            | Yellow to dark yellow powder                | Yellow powder |
| Identification (IR)                             | To conform to structure                     | Conforms      |
| Specific Optical Rotation ( $[\alpha]_{20/D}$ ) | +18.0 - +23.0 ° (c=0.1, 1M NaOH, anhydrous) | +19.5°        |
| Residue on Ignition                             | ≤ 0.1%                                      | 0.03%         |
| Any Individual Impurity                         | ≤ 0.5%                                      | 0.35%         |
| Total Organic Impurities                        | ≤ 2.0%                                      | 0.7%          |
| Water (KF)                                      | ≤ 12.0%                                     | 10.9%         |
| Assay                                           | ≥ 98.0%                                     | 99.3%         |

Specification Version v1.1  
Manufacture Date 2021-08-20  
Re-Test Date 2030-12-14

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](http://www.glentham.com) or contact us using the details above for the current version of this document.

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