



CERTIFICATE OF ANALYSIS

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|--------------|-------------|
| Product | MUG |
| Grade | Ultra Pure |
| Product Code | MB2251 |
| Formula | C16H20O11 |
| MW | 388.33 |
| CAS# | 881005-91-0 |
| Lot No | |

| Test Items | Specifications | Results |
|---|--------------------------------------|---------|
| Appearance | White crystalline powder | |
| Color of Solution (1 % in water, 60 °C) | Colorless | |
| Turbidity (0.1 % in water) | ≤ 2.0 NTU | |
| Water Content (K. Fischer) | 8.0 - 10.2 % | |
| Specific Optical Rotation [alpha]D (c = 0.25 in water, 35 °C) | -119.0 to -113.0 | |
| Sodium Hydroxide Titration (0.1mol/L) (calculated for dihydrate) | 99.0 - 101.0 % | |
| Purity (TLC) (50 mg in 1.5 ml water/acetone 1:2; butanol/acetic acid/water 6:3:1; UV 254 nm, sulfuric acid) | ≥99 area-% | |
| Free 4-MU (TLC; 50 mg in 1.5 ml water/acetone 1:2; toluene/acetone 5:1; UV 366 nm after treating with ammonia) | ≤25 mg/kg | |
| FT-IR Spectrum | corresponds to reference spectrum | |

Storage: -20°C