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## Certificate of Analysis

**Product Description:** Methotrexate, USP and EP Grade\_  
**Catalog Number:** 199855\_  
**Lot:** 9072H\_

**Formula:** C<sub>20</sub>H<sub>22</sub>N<sub>8</sub>O<sub>5</sub>

**CAS #:** 59-05-2

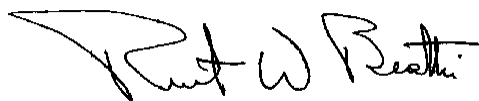
**Physical Description:** Yellow powder

**Formula Weight:** 454.46

**Storage:** +4°C

Test	Compendium	Specification	Results
Identity Test A	USP	Passes	Passes
Identity Test C	EP	Passes	Passes
Identity Test A	EP	Passes	Passes
Identity Test B	USP	Passes	Passes
Identity Test B	EP	Passes	Passes
Specific Rotation (anhydrous basis)	USP	+19° to +24°	+21.2°
Water	USP	≤12.0%	10.8%
Water	EP	≤13.0%	10.8%
Chromatographic Purity	USP	Passes	Passes
Related Substances	EP	Passes	Passes
(R)-Methotrexate	EP	≤3.0%	0.6%
Heavy Metals	EP	≤50 ppm	<20 ppm
Sulfated Ash	EP	≤0.1%	0.07%
Residue on Ignition	USP	≤0.1%	0.07%
Organic Volatile Impurities	USP	Passes	Passes

Methotrexate Content (anhydrous basis as $C_{20}H_{22}N_8O_5$ )	USP	Not less than 98% and not more than 102.0%	99.8%
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11/22/2005 - Robert Beattie

MP Biomedicals, LLC.

Technical Director

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<http://www.mpbio.com>

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Technical Service: 1-800-279-5490 (440-337-1200) Customer Service: 1-800-854-0530 (440-337-1200)