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## Product Information

### CAFFEINE (ANHYDROUS)

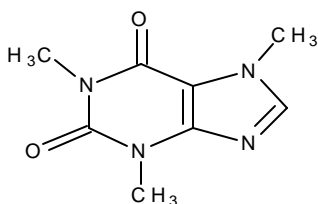
Product Number **C0750**

Storage Temperature RT

CAS #: 58-08-2

Synonyms: 1,3,7-trimethylxanthine;

Methyltheobromine; 3,7-dihydro-1,3,7-trimethyl-1H-purine-2,6-dione



#### Product Description

Appearance: white powder

Molecular Formula: C<sub>8</sub>H<sub>10</sub>N<sub>4</sub>O<sub>2</sub>

Molecular Weight: 194.2

Melting point: 238°C<sup>1</sup>

Sublimes above 178°C at atmospheric pressure, but will sublime at 160-165°C at 1 mm Hg

Extensive analytical data have been published.<sup>2-4</sup>

pK<sub>a</sub> = 14.0 at 25°C<sup>4</sup>

E<sup>mM</sup>(272 nm) = 9.3-9.4 (0.1 M HCl)<sup>5</sup>

The product is synthetic, prepared according to the Taub synthesis method.<sup>6</sup>

A popular central nervous system (CNS) stimulant. Caffeine is a well-known drug commonly used as a mild stimulant, found in dietary sources such as coffee, tea, and cocoa. It is believed to act through adenosine receptors and monoamine neurotransmitters.<sup>7</sup> It is an adenosine receptor antagonist and adenosine 3',5'-cyclic monophosphate (cAMP) phosphodiesterase inhibitor.<sup>8,9</sup> Thus, levels of cAMP increase in cells following treatment with caffeine.<sup>10</sup> It has been reported to affect cellular calcium levels, releasing calcium from intracellular stores.<sup>11</sup> It overrides the cell cycle effects of various chemicals such as protease inhibitors, thereby preventing apoptosis<sup>12-14</sup>; and it has been shown to inhibit cellular DNA repair mechanisms.<sup>15,16</sup>

#### Precautions and Disclaimer

Keep tightly sealed.

#### Preparation Instructions

The solubility in ethanol is 1 g in 66 ml (approx. 15 mg/ml).<sup>1</sup> Caffeine is also soluble in water (approx. 16 mg/ml at room temperature, 200 mg/ml at 80°C, or 666 mg/ml in boiling water. Solubility in water is increased by adding dilute acid (e.g. HCl or citric acid).<sup>1,4</sup> Caffeine is decomposed by strong bases.<sup>4</sup>

#### Storage/Stability

Stored at room temperature this product has a shelf-life of 4 years. Solutions in organic solvents (e.g. methanol or ethanol) are stable at 2-8°C for several years.<sup>5</sup>

#### References

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