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Product Information

N-ETHYLMALEIMIDE

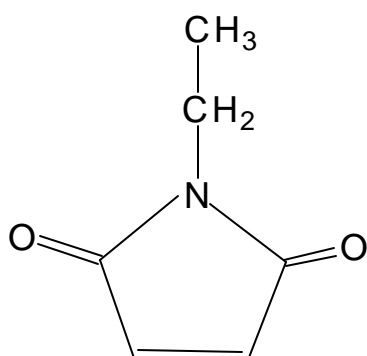
Product Number **E3876 AND E1271**

Storage Temperature 2-8 °C

CAS #: 128-53-0

Synonyms: NEM

Product Description



Appearance: Powder, white to faint yellow in color¹

Molecular formula: C₆H₇NO₂

Molecular weight: 125.1

Melting point: 45°C² **Note that the liquid is a lachrymator.**

E^{mM}(300-305nm) = 0.620 (0.1 M phosphate buffer), pH 6.0-7³⁻⁵

NEM has long been used as a reagent for use in sulfhydryl (-SH, thiol) determinations^{1,3,5}, with a sensitivity to 0.0001 M.⁴ The spectrum has a maximum absorbance at approximately 300 nm, which disappears as NEM reacts stoichiometrically with sulfhydryl groups. Sigma tests NEM for suitability as a thiol reagent; the procedure is available on request from Research Technical Service.¹ One micromole/mL cysteine will give a change of absorbance of 0.60 at pH 6 with excess NEM.³ The reaction is affected by the presence of urea⁴ and is reversible under some conditions.⁶

Because of its quantitative reaction with thiol groups, NEM has been used to study protein structures and to inactivate enzymes, for example: NEM binding by human hemoglobin and its effect on oxygen

equilibrium⁷, inactivation of isocitrate dehydrogenase by modification of cysteinyl residues⁸, inhibition of galactosyl transferase⁹ and yeast alcohol dehydrogenase.¹⁰ It has been reported as an inhibitor of numerous other enzymes.¹¹

NEM is offered as reagent grade E3876 and as SigmaUltra E1271, which has been analyzed for trace metal ions.

Preparation Instructions

NEM gives a clear solution in ethanol at 50 mg/mL. Although NEM dissolves in water (at least 50 mg in 4 mL), aqueous solutions of NEM are unstable. The rate of hydrolysis is pseudo-first order and significantly dependent on pH. The half-lives of solutions at different pH were reported.⁶

pH	Half-life (hrs)
6.5	160
7.0	48
7.5	9
8.0	1.7
8.25	0.7
8.5	0.33

It is recommended to prepare fresh solutions for each usage, although at or below pH 7.0, the concentration should be essentially constant for about three hours at room temperature.⁶

Storage/Stability

NEM is sensitive to moisture. It is packaged under argon. When stored as indicated this product has a shelf-life two years.

References

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7. Riggs, A., *J. Biol. Chem.*, 236, 1948-1954 (1961).
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11. Zollner, H., *Handbook of Enzyme Inhibitors*, 2nd Ed. (VCH Publishers, 1993), pp. 728-730.

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