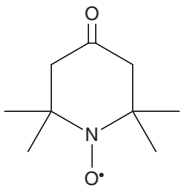
PRODUCT INFORMATION

TEMPONE

Item No. 14877

CAS Registry No.:	2896-70-0
Formal Name:	2,2,6,6-tetramethyl-4-oxo-1-piperidinyloxy
Synonyms:	4-oxo-TEMPO, Triacetoneamine nitroxide
MF:	$C_9H_{16}NO_2$
FW:	170.2
Purity:	≥98%
UV/Vis.:	λ_{max}: 236 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

TEMPONE is supplied as a crystalline solid. A stock solution may be made by dissolving the TEMPONE in the solvent of choice, which should be purged with an inert gas. TEMPONE is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of TEMPONE in these solvents is approximately 30 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of TEMPONE can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of TEMPONE in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

2,2,6,6-Tetramethylpiperidin-1-oxyl (TEMPO) is a stable radical that will react with reactive oxygen species (ROS).[1] This conversion, followed by ESR, provides an indirect way to monitor ROS production in biological systems. TEMPONE is the 4-oxo derivative of TEMPO. In addition to possible uses as a spin trap, this nitroxyl radical can be used in hydrogen transfer experiments and as a polarizing agent in dynamic nuclear polarization NMR spectroscopy.[2,3] TEMPONE and other nitroxyl radicals have also been shown to reduce mean arterial pressure in spontaneously hypertensive rats when administered intravenously.[4]

References

1. Ban, S., Nakagawa, H., Suzuki, T., *et al.* Novel mitochondria-localizing TEMPO derivative for measurement of cellular oxidative stress in mitochondria. *Bioorg. Med. Chem. Lett.* **17**, 2055-2058 (2007).
2. Wu, A., Mader, E.A., Datta, A., *et al.* Nitroxyl radical plus hydroxylamine pseudo self-exchange reactions: Tunneling in hydrogen atom transfer. *J. Am. Chem. Soc.* **131(33)**, 11985-11997 (2009).
3. Lumata, L., Merritt, M., Khemtong, C., *et al.* The efficiency of DPPH as a polarising agent for DNP-NMR spectroscopy. *RSC Adv.* **2(33)**, 12812-12817 (2012).
4. Patel, K., Chen, Y., Dennehy, K., *et al.* Acute antihypertensive action of nitroxides in the spontaneously hypertensive rat. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* **290(1)**, R37-R43 (2006).

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