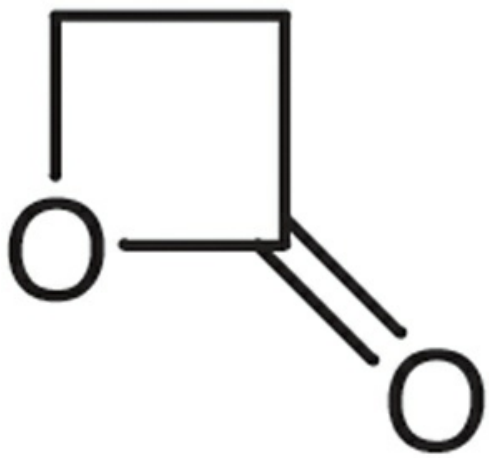
Product Data Sheet

Product Name: β-Propiolactone
Cat. No.: GC19847

Chemical Properties

Cas. No.	57-57-8		
Formula	C3H4O2	M.Wt	72.06
Solubility	DMSO : 100 mg/mL (1387.73 mM; Need ultrasonic)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Background

β-Propiolactone is an inactivating agent often applied for the inactivation of viruses and preparation of viral vaccines [1]. β-Propiolactone can cause irreversible alkylation of nucleic acids as well as acetylation and cross-linking involving proteins, DNA, or RNA[2]. β-Propiolactone forms adducts with nucleobases (primarily guanine), and induces extensive modifications of nucleobases, nucleosides, and synthetic peptides[2]. Low concentrations of β-Propiolactone at 1:2000 (v/v) can effectively inactivate SARS-CoV-2, resulting in the loss of viral protein content and the integrity of structural

protein antigens; while the high concentration leads to the aggregation of large numbers of virus particles, which may result in insufficient inactivation and loss of antigenic activity[3]. β-Propiolactone is widely used as an internal standard to optimize the analytical conditions of gas chromatography and high-performance liquid chromatography, thereby enabling the precise determination of trace-related compounds[4].

References:

[1] Uittenbogaard J P, Zomer B, Hoogerhout P, et al. Reactions of β-propiolactone with nucleobase analogues, nucleosides, and peptides: Implications for the inactivation of viruses[J]. Journal of Biological Chemistry, 2011, 286(42): 36198-36214.
[2] Pilchová V, Prajeeth C K, Jendrny P, et al. β-Propiolactone (BPL)-inactivation of SARS-co-V-2: in vitro validation with focus on saliva from COVID-19 patients for scent dog training[J]. Journal of virological methods, 2023, 317: 114733.
[3] Gupta D, Parthasarathy H, Sah V, et al. Inactivation of SARS-CoV-2 by β-propiolactone causes aggregation of viral particles and loss of antigenic potential[J]. Virus research, 2021, 305: 198555.
[4] Mirjalili S Z, Sabourian R, Chavoshi F, et al. β-Propiolactone, its application and assay methods[J]. Analytical Methods, 2025, 17(38): 7608-7617.