

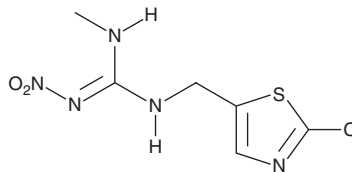
# PRODUCT INFORMATION



## Clothianidin

Item No. 29605

**CAS Registry No.:** 210880-92-5  
**Formal Name:** [C(E)]-N-[(2-chloro-5-thiazolyl)methyl]-N'-methyl-N''-nitro-guanidine  
**MF:** C<sub>6</sub>H<sub>8</sub>ClN<sub>5</sub>O<sub>2</sub>S  
**FW:** 249.7  
**Purity:** ≥98%  
**UV/Vis.:** λ<sub>max</sub>: 220, 269 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

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

Clothianidin is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, clothianidin should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Clothianidin has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

### Description

Clothianidin is a neonicotinoid insecticide and an active metabolite of the prodrug thiamethoxam (Item No. 25784).<sup>1</sup> It binds to nicotinic acetylcholine receptors (nAChRs; IC<sub>50</sub> = 0.6 nM for housefly head membranes) and activates non-desensitizing nAChRs in cockroach neurons *in vitro* (IC<sub>50</sub> = 1,520 nM). Clothianidin induces mortality in adult *M. persicae* (LC<sub>95</sub> = 1.28 mg/L), as well as *H. virescens* and *S. frugiperda* second instar larvae when used at a concentration of 8 mg/L in a leaf-dip bioassay. *In vivo*, clothianidin (>25 mg/kg) increases the number of premature births in rabbits and reduces the length and weight of fathead minnows (*P. promelas*) when administered in tank water at a concentration of 20 mg/L.<sup>2</sup> Formulations containing clothianidin have been used as insecticides in residential and agricultural settings.

### References

1. Nauen, R., Ebbinghaus-Kintscher, U., Salgado, V.L., *et al.* Thiamethoxam is a neonicotinoid precursor converted to clothianidin in insects and plants. *Pest. Biochem. Phys.* **76(2)**, 55-69 (2003).
2. Gibbons, D., Morrissey, C., and Mineau, P. A review of the direct and indirect effects of neonicotinoids and fipronil on vertebrate wildlife. *Environ. Sci. Pollut. Res. Int.* **22(1)**, 103-118 (2015).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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