

# PRODUCT INFORMATION



## Tiafenacil

Item No. 42290

CAS Registry No.: 1220411-29-9

Formal Name: N-[2-[[2-chloro-5-[3,6-dihydro-3-methyl-2,6-dioxo-4-(trifluoromethyl)-1(2H)-pyrimidinyl]-4-fluorophenyl]thio]-1-oxopropyl]-β-alanine, methyl ester

MF: C<sub>19</sub>H<sub>18</sub>ClF<sub>4</sub>N<sub>3</sub>O<sub>5</sub>S

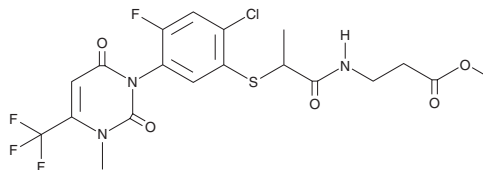
FW: 511.9

Purity: ≥98%

Supplied as: A 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

Tiafenacil is supplied as a solid. A stock solution may be made by dissolving the tiafenacil in the solvent of choice, which should be purged with an inert gas. Tiafenacil is soluble (≥10 mg/ml) in ethanol. Tiafenacil is sparingly soluble (1-10 mg/ml) in DMSO.

### Description

Tiafenacil is an herbicide.<sup>1</sup> It inhibits protoporphyrinogen IX oxidase (PPO; IC<sub>50</sub> = 28 nM for the *A. thaliana* enzyme). Foliar application of tiafenacil (1 μM per day for seven days) induces death in velvetleaf (*A. theophrasti*), amaranth (*A. cruentus*), soybean (*G. max*), and rapeseed (*B. napus*) seedlings. It induces death in common lambsquarters (*C. giganteum*), kochia (*K. scoparia*), redroot pigweed (*A. retroflexus*), and green foxtail (*S. viridis*) in pre-plant field studies when applied at a concentration of 49.6 g/ha.<sup>2</sup> Tiafenacil is toxic to zebrafish (EC<sub>50</sub> = 821.7 μg/L).<sup>3</sup> It induces hypoactivity, increases reactive oxygen species (ROS) levels, and decreases heart rate in zebrafish when used at a concentration of 10 μg/L. Formulations containing tiafenacil have been used for weed control in residential and agricultural areas.

### References

1. Park, J., Ahn, Y.O., Nam, J.-W., *et al.* Biochemical and physiological mode of action of tiafenacil, a new protoporphyrinogen IX oxidase-inhibiting herbicide. *Pestic. Biochem. Physiol.* **152**, 38-44 (2018).
2. Montgomery, C.L.-M., Spackman, J.A., Schroeder, K.L., *et al.* Efficacy, crop response, and economics of alternatives to glyphosate for pre-plant weed control in small grains. *Agrosyst. Geosci. Environ.* **7**(3), e20551 (2024).
3. Ivantsova, E., Konig, I., Lopez-Scarim, V., *et al.* Molecular and behavioral toxicity assessment of tiafenacil, a novel PPO-inhibiting herbicide, in zebrafish embryos/larvae. *Environ. Toxicol. Pharmacol.* **98**:104084, (2023).

#### 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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#### CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897

[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM

WWW.CAYMANCHEM.COM