

PENOXsulAM CHEMICAL FACT SHEET

Formulations

Penoxsulam was registered with the U.S. EPA for aquatic use in 2009. A registration review decision was released in 2019. The active ingredient is 2-(2,2-difluoroethoxy)-6-(trifluoromethyl-N-(5,8-dimethoxy[1,2,4]triazolo[1,5-c]pyrimidin-2-yl)benzenesulfonamide). It is labeled for control of emergent, floating-leaf and submersed vegetation using direct foliar, surface or subsurface application. Penoxsulam is available in liquid form. Commercial formulations approved for aquatic use in Wisconsin include Galleon® SC.*

Aquatic Use and Considerations

Penoxsulam is a systemic herbicide (i.e., it moves throughout the plant tissue). It is a WSSA Group 2 herbicide, meaning that the mechanism of action is by inhibiting acetolactate synthase (ALS), an enzyme necessary for plant growth. Affected plants will stop growing soon after treatment and become reddish at the tips. Plant decomposition usually occurs over two to four weeks following application. Penoxsulam should be applied to plants that are actively growing; mature plants require a higher concentration of herbicide and a longer contact time.

It is important to note that repeated use of herbicides in the same WSSA group (i.e., with the same mechanism of action) can lead to herbicide-resistant plants, even in aquatic environments. In order to reduce the risk of developing resistant genotypes, avoid using the same type of herbicides year after year, and utilize effective integrated pest management strategies as part of any long-term control program.

* Product names are provided solely for your reference and should not be considered exhaustive nor endorsements.

Penoxsulam must remain in contact with plants for around 60 days; supplemental applications following initial treatment may be required to maintain adequate concentration exposure time (CET). Due to the long CET requirement, penoxsulam is likely best suited to large areas or whole-lake applications and should not be used in situations where rapid dilution can occur (e.g., localized treatments or moving water).

Penoxsulam is labeled to control invasive Eurasian watermilfoil (*Myriophyllum spicatum*) and curly-leaf pondweed (*Potamogeton crispus*). Native species that penoxsulam is also labeled to control include sago pondweed (*Stuckenia pectinata*), Illinois pondweed (*Potamogeton illinoensis*), pickerelweed (*Pontederia cordata*), southern naiad (*Najas guadalupensis*), duckweeds (*Lemna* spp.) and arrowhead (*Sagittaria* spp.).†

Post-Treatment Water Use Restrictions

There are no post-treatment restrictions on treated water use for swimming, fishing, human drinking water, or livestock drinking water. The concentration must be below 30 parts per billion (ppb) before treated water use for turf grass or rice irrigation, and below 1 ppb for other food crop irrigation.†

Herbicide Degradation, Persistence and Trace Contaminants

Penoxsulam is broken down in the water by light and microbes and has a half-life (the time it takes for half of the active ingredient to degrade) ranging from about 12 to 38 days. Penoxsulam will degrade faster in shallow, clear-water lakes than in turbid, shaded, or

† May vary by formulation, application rate, and/or product. Every product label must be carefully read and followed by the user.

deep lakes. It is relatively stable in water without sunlight, which means it may be persistent in light-limited areas. Some of the degradation products of penoxsulam are more persistent than penoxsulam itself in the environment; one degradation product has a half-life ranging from 67 to 770 days.

Penoxsulam doesn't bind to sediments, so leaching into groundwater is likely. Three of the more persistent degradates are also mobile through sediments and are likely to leach into groundwater.

Impacts on Fish and Other Aquatic Organisms

Penoxsulam has low toxicity to animals since its mechanism of action targets an enzyme not found in animals. It is practically non-toxic to freshwater fish and slightly toxic to freshwater invertebrates and birds. Penoxsulam does not bioaccumulate (the process by which chemicals in the environment or in a food source are taken up by plants or animals) in fish or freshwater clams.

Human Health

Penoxsulam may be harmful if inhaled during mixing or application. Wear personal protective equipment and follow label instructions while handling.

There is currently no evidence of birth defects or genetic mutations in mammals after long-term exposure to penoxsulam, although some indication of endocrine disruption warrants further study. Penoxsulam is classified as "Suggestive Evidence of Carcinogenic Potential," meaning there is evidence it may be carcinogenic in mammals, but there is not enough information to extrapolate the risk to humans.

For Additional Information

U.S. Environmental Protection Agency (EPA)
Office of Pesticide Programs
epa.gov/pesticides

Wisconsin Department of Agriculture, Trade,
and Consumer Protection
[datcp.wi.gov/Pages/Programs_Services/ACMOv
erview.aspx](http://datcp.wi.gov/Pages/Programs_Services/ACMOverview.aspx)

Wisconsin Department of Natural Resources
608-266-2621
dnr.wi.gov/lakes/plants

Wisconsin Department of Health Services
dhs.wisconsin.gov

National Pesticide Information Center
1-800-858-7378
npic.orst.edu

