Trimethylsilyl-diazomethane (TMS-diazomethane) is a volatile methylating agent used as a non-explosive alternative to diazomethane for generating methyl esters from carboxylic acids. Even though it is not explosive, TMS-diazomethane is still toxic by inhalation, causing severe pulmonary edema up to several hours after initial exposure. In October 2008, Roland Daigle died of pulmonary edema after being exposed to TMS-diazomethane while working at a non-functioning fume hood.

Methyl esters can be produced by dissolving the acid in methanol and adding a slight excess of TMS-diazomethane. The reaction is complete when the yellow color of the TMS-diazomethane has faded. This usually occurs within an hour. Methanol is required in the solvent to suppress the production of acylsilane artifacts.

When the reaction is complete, quench by slowly adding acetic or formic acid until the yellow color has vanished, and gas evolution ceases.

References

1. TMS-diazomethane is available as a 2M solution in hexanes, but a preparation can be found in *Organic Syntheses, Coll. Vol. 8, p.612 (1993); Vol. 68, p.1 (1990).*

Contributors

- Kiwi, Chemoptoplex