



>>Entry Name: Trimethylsilyl trifluoromethanesulfonate

Synonym(s): Trimethylsilyl triflate

CAS Registry Number: 27607-77-8

$\text{F}_3\text{CSO}_2\text{OSiMe}_3$

Molecular Formula: $\text{C}_4\text{H}_9\text{F}_3\text{O}_3\text{SSi}$

Molecular Weight: 222.26

Accurate Mass: 221.999376

Percentage Composition: C 21.62%; H 4.08%; F 25.64%; O 21.60%; S 14.43%; Si 12.64%

Source/Synthesis: Synth. from $\text{Cl}_3\text{CSiMe}_3 + \text{F}_3\text{CSO}_3\text{H}$ at 120°

Use/Importance: Commercially available silylation reagent and catalyst for transnucleosidations; silylates alcohols, carboxylic acids; with Et_3N , α -silylates nitriles, esters; converts ketones, esters, amides to silyl enol ethers; converts 1,3-diketones to bis-trimethylsilyl enol ethers; with DBU converts epoxides to allylic trimethylsilyl ethers; catalyst for redn. of acetals to ethers by Me_3SiH or Et_3SiH ; effects *erythro*-selective aldol condensations of silyl enol ethers with aldehydes, ketones, acetals; catalyses acetalisation of aldehydes, ketones by alkoxytrimethylsilanes; catalyses reaction of dimethyl acetals with $\text{H}_2\text{C}=\text{CHCH}_2\text{SiMe}_3 \rightarrow$ homoallyl ethers; catalyses condensation of ketene silyl acetals with imines $\rightarrow$ mainly *anti*- β -amino esters which can be cyclised to *trans*- β -lactams; catalyses rearrangement of β -ketosilanes to kinetic silyl enol ethers; catalyses Beckmann fragmentation

Physical Description: Liq.

Boiling Point: Bp_{750} 140°. Bp_{10} 36.5°

Aldrich: 22564-9

Fluka: 91741

Sigma: T0785

Other: Davos Chemical Corp.

References:

- Aldrich Library of FT-IR Spectra*, 1st edn., 1985, **2**, 1118C, (*ir*)
Schmeisser, M. *et al.*, *Chem. Ber.*, 1970, **103**, 868-879, (*synth*)
Simchen, G. *et al.*, *Synthesis*, 1976, 259-261, (*use, reaction with carbonyl compds*)
Azuma, T. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 3347-3353, (*transnucleosidation*)
Emde, H. *et al.*, *Synthesis*, 1977, 636-637; 867-869, (*synth, use*)
Murata, S. *et al.*, *J.A.C.S.*, 1979, **101**, 2738-2739; 1980, **102**, 3248-3249, (*use, epoxide cleavage, aldol condensations*)
Tsunoda, T. *et al.*, *Tet. Lett.*, 1979, 4679-4680; 1980, **21**, 71-74; 1357-1358, (*use, redn of acetals, acetalisation of aldehydes, ketones*)
Fieser and Fieser's Reagents for Organic Synthesis, Wiley, 1980, **8**, 514, (*use*)
Krägeloh, K. *et al.*, *Synthesis*, 1981, 30-32, (*use, reaction with 1,3-diketones*)
Morita, T. *et al.*, *Synthesis*, 1981, 745-746, (*use, silylation of alcohols, acids*)
Noyori, R. *et al.*, *Tetrahedron*, 1981, **37**, 3899-3910, (*rev*)
Demuth, M. *et al.*, *Synthesis*, 1982, 827, (*synth, pmr, ms*)
Nishiyama, H. *et al.*, *Tet. Lett.*, 1983, **24**, 4021-4024, (*use, Beckmann fragmentation*)
Yamamoto, Y. *et al.*, *Chem. Lett.*, 1984, 1967-1968, (*use, rearrangement catalyst*)
Aizpurua, J.M. *et al.*, *Tet. Lett.*, 1985, **26**, 6113-6114, (*pmr, synth*)
Guanti, G. *et al.*, *Tet. Lett.*, 1987, **28**, 4331-4334; 4335-4338, (*use, condensation catalyst*)
Gassman, P.G. *et al.*, *J.O.C.*, 1988, **53**, 5574-5576, (*use, reaction with acetals*)
Murata, S. *et al.*, *Tetrahedron*, 1988, **44**, 4259-4275, (*use, condensation catalyst*)
Zhdankin, V.V. *et al.*, *Tet. Lett.*, 1990, **31**, 4821-4824, (*reaction with iodosobenzene*)