>>**Entry Name: (Trimethylsilyl)acetic acid,** 9CI, 8CI

**CAS Registry Number:** 2345-38-2

$Me_3SiCH_2COOH$

**Molecular Formula:** $C_5H_{12}O_2Si$
**Molecular Weight:** 132.234
**Accurate Mass:** 132.060657
**Percentage Composition:** C 45.42%; H 9.15%; O 24.20%; Si 21.24%
**Source/Synthesis:** Synth. from $Me_3SiCH_2MgCl + CO_2$
**Use/Importance:** Commercially available versatile synthon; dianion adds to ketones → RR'C=CHCOOH after elimination; also opens epoxides and substitutes alkyl bromides, iodides
**Physical Description:** Cryst.
**Melting Point:** Mp 40-42°
**pKa Value:** p$K_{a1}$ 10 (MeOH) p$K_{a1}$ 5.22 ($H_2O$)

**Aldrich:** 34161-4
**Fluka:** 92757

>>**Derivative:** Me ester
**Synonym(s):** Methyl trimethylsilylacetate

**CAS Registry Number:** 2916-76-9

**Molecular Formula:** $C_6H_{14}O_2Si$
**Molecular Weight:** 146.261
**Accurate Mass:** 146.076307
**Percentage Composition:** C 49.27%; H 9.65%; O 21.88%; Si 19.20%
**Use/Importance:** Commercially available; Li deriv. used in Peterson reaction
**Physical Description:** Liq.
**Boiling Point:** $Bp_{13}$ 38-39°
**Refractive Index:** $n_D^{20}$ 1.4140
**Aldrich:** 23496-6
**Fluka:** 92764

>>**Derivative:** Et ester
**Synonym(s):** Ethyl trimethylsilylacetate. ETSA

**CAS Registry Number:** 4071-88-9

**Molecular Formula:** $C_7H_{16}O_2Si$
**Molecular Weight:** 160.288
**Accurate Mass:** 160.091957
**Percentage Composition:** C 52.45%; H 10.06%; O 19.96%; Si 17.52%
**Use/Importance:** Commercially available silylating agent, also undergoes Reformatsky-type reactions; with catalytic $Bu_4NF$, silylates 1-alkynes, thiols; alcohols, ketones → silyl enol ethers. Li deriv. used in Peterson olefination of ketones; adds 1,4- to pyridinium salts; also couples with vinyl halides in presence of $NiBr_2$; adds to aldehydes, ketones to give alkylidenation
**Physical Description:** Moisture-sensitive liq.
**Boiling Point:** Bp 156-159°. $Bp_{40}$ 76-77°
**Refractive Index:** $n_D^{20}$ 1.4150
**Aldrich:** 20912-0
**Fluka:** 92756
**Rare Chemicals Library:** S3646-4
**Sigma:** E5880

>>**Derivative:** *tert*-Butyl ester
**Synonym(s):** *tert*-Butyl trimethylsilylacetate

**CAS Registry Number:** 41108-81-0

**Molecular Formula:** $C_9H_{20}O_2Si$
**Molecular Weight:** 188.341
**Accurate Mass:** 188.123257
**Percentage Composition:** C 57.40%; H 10.70%; O 16.99%; Si 14.91%
**Use/Importance:** Li deriv. adds to ketones; thermol. of product gives α,β-unsatd. esters (Peterson-type)
**Physical Description:** Liq.
**Boiling Point:** $Bp_{13}$ 67°