

Thioglycolic acid

Thioglycolic acid (TGA) is the organic compound HSCH₂CO₂H. TGA is often called mercaptoacetic acid (MAA). It contains both a thiol (mercaptan) and carboxylic acid functional groups. It is a colorless liquid with a strongly unpleasant odor. TGA is miscible with polar organic solvents.^{[4][5]}

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Uses

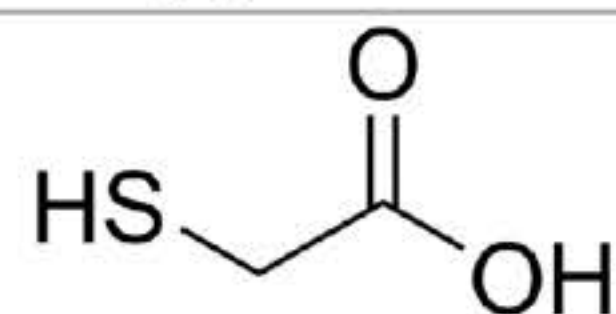
TGA is used as a chemical depilatory and is still used as such, especially in salt forms, including calcium thioglycolate and sodium thioglycolate. TGA is the precursor to ammonium thioglycolate that is used for permanents. TGA and its derivatives break the disulfide bonds in the cortex of hair. One reforms these broken bonds in giving hair a "perm." Alternatively and more commonly, the process leads to depilation as is done commonly in leather processing. It is also used as an acidity indicator, manufacturing of thioglycolates, and in bacteriology for preparation of thioglycolate media.^[5] In fact thioglycolysis reactions used on condensed tannins to study their structure.

Organotin derivatives of thioglycolic acid isooctyl esters are widely used as stabilizers for PVC. These species have the formula R₂Sn(SCH₂CO₂C₈H₁₇)₂.^[5]

Applying TGA can soften nails and then fix pincer nails in the correct position.

Sodium thioglycolate is a component of a special bacterial growth media : thioglycolate broth. It is also used in so-called "fallout remover"^[6] or "wheel cleaner" to remove iron oxide residue from rims.^[7] Ferrous iron combines with thioglycolate to form red-violet^[8] ferric thioglycolate.^{[9][10]}

Thioglycolic acid^[1]



Names

Preferred IUPAC name

Sulfanylacetic acid

Other names

2-Sulfanylacetic acid
2-Mercaptoacetic acid
Acetyl mercaptan
Mercaptoacetate
Mercaptoacetic acid
Thioglycolic acid
Thiovanic acid^[2]

Identifiers

| | |
|------------------|--|
| CAS Number | 68-11-1 (http://www.commonchemistry.org/ChemicalDetail.aspx?ref=68-11-1) ✓ |
| 3D model (JSmol) | Interactive image (https://chemapps.stolaf.edu/jmol/jmol.php?model=C%28C%28%3DO%29O%29S) |
| ChEBI | CHEBI:30065 (https://www.ebi.ac.uk/chebi/searchId.do?chebiId=30065) ✓ |
| ChEMBL | ChEMBL116455 (https://www.ebi.ac.uk/chembl/db/index.php/compound/inspect/ChEMBL116455) ✓ |
| ChemSpider | 1101 (http://www.chemspider.com) |

^[1] Goetz N, Gataud P, Bore P. Gas-chromatographic determination of mercaptoacetic acid in hair-waving and diplatory products. *Cosmet Sci Technol Ser.* 1985, 4:65-79.

^[2] Vandeputte M, Dryon L, Van Den Winkel P, Mertens J, Massart DL. Determination of thioglycolic acid using a silver sulfide single crystal electrode. *Analysis.* 1975,3:500-504.

Further reading

- Okada K, Okada E. Novel treatment using thioglycolic acid for pincer nails. *J. Dermatol.* 2012, volume 39, pp. 996-999.