# Product Information

**January 2025**

## Practical Advice on Derivatization

Purpose of derivatization:

- Improvement of the detection limit (especially for ECD and GC/MS) by introducing detector-specific groups
- Conversion of easily decomposable substances into stable, volatile derivatives
- Conversion of low-volatility substances into more volatile derivatives
- Shielding of polar groups that tend to adsorb

The following table is meant to help you select derivatization methods and derivatization agents. The list makes no claim to completeness. Please ask us if you have specific problems regarding derivatization. We are happy to help you.
A detailed overview of “Chemical Derivatization in Gas Chromatography” is given in the book of the same name by J. Drozd, Elsevier Publishers, Amsterdam, ISBN 0-444-41917-9.

**Our data sheets with instructions for handling the individual derivatization agents can be found as product information at www.cs-chromatographie.de.**

| Substance class | Method | Derivatizing agents | Remarks |
|---|---|---|---|
| Alcohols | Acylation 20-30 min at 60-100 °C<br>Silylation 20-30 min at 60-100 °C | MBTFA<br>MSTFA, BSTFA | 1:4 with pyridine, DMF, THF, AN |
| Amines | Acylation 1-2 h at 60-80 °C<br>Silylation 30 min at RT | TFAA, HFBA<br>MBTFA | 1:4 with pyridine, DMF, THF, AN |
| Amine hydrochlorides | Silylation 20-30 min at 60-100 °C | MSTFA | |
| Amino acids | Silylation 20-30 min at 60-100 °C<br>Acylation 1-2 h at 60-80 °C | BSA<br>TFAA, HFBA | |
| Barbiturates | Methylation | TMAH | Methylation „On-Column“ |
| Carboxylic acids | Silylation 20-30 min at 60-100 °C<br>Methylation 20-30 min at 80 °C<br>Methylation 20-30 min at 80 °C | MSTFA<br>DMF-DMA<br>TMSH | Solvent pyridine, DMF, THF |
| Glycols | Silylation 20-30 min at 60-100 °C | TSIM, Silyl-1139 | Solvent pyridine, DMF |
| Nucleotides | Silylation 20-30 min at 60-100 °C | Silyl-21, Silyl-2110 | Solvent pyridine |
| Phenols | Acylation 1-2 h at 60-80 °C<br>Acylation 20-30 min at 60-100 °C<br>Silylation 20-30 min at 60-100 °C<br>Methylation 20-30 min at 80 °C | HFBA<br>MBTFA<br>MSA, BSA, BSTFA<br>TMSH | Solvent benzene<br>1:4 with pyridine, DMF, THF, AN<br>Potentially 1 % TMCS as catalyst<br>Best method for pentachlorophenol |
| Steroids | Silylation 20-30 min at 60-100 °C<br>Silylation 3-6 h at 80 °C<br>Silylation 6-24 h at 80 °C | Silyl-2110<br>BSA-TMCS 5:1<br>TSIM-BSA-TMCS 3:3:2 | For sterically unhindered or only slighlty hindered steroids<br>For sterically hindered steroids |
| Thiols | Acylation 1-2 h at 60-80 °C<br>Silylation 20-30 min at 60-100 °C | MBTFA<br>MSTFA | 1:4 with pyridine, DMF, THF, AN |
| Sugars | Silylation 20-30 min at 60-100 °C<br>Silylation 20-30 min at 60-100 °C | Silyl-21, Silyl-2110<br>TSIM | Solvent pyridine |