

Certificate of Analysis

Product Name: THIABENDAZOLE
PESTANAL™, analytical standard
Product Number: 45684
Batch Number: BCBV5436
Brand: Sigma-Aldrich
CAS Number: 148-79-8
Formula: C₁₀H₇N₃S
Formula Weight: 201.25
Expiration Date: JUL 2022
Quality Release Date: 08 AUG 2017

| TEST | SPECIFICATION | RESULT |
|---------------------|-----------------------|----------|
| APPEARANCE (COLOR) | WHITE TO OFF WHITE | WHITE |
| APPEARANCE (FORM) | POWDER OR CRYSTALS | POWDER |
| PURITY (GC AREA %) | ≥ 98.0 % | 98.6 % |
| MELTING POINT | 298 - 304 C | 302 C |
| WATER | ≤ 1.0 % | 0.09 % |
| PROTON NMR SPECTRUM | CONFORMS TO STRUCTURE | CONFORMS |



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Sigma-Aldrich warrants that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

45684 Thiabendazole

Lot Number: BCBV5436

Sample Name: T39427_001_GC

Shimadzu GC-2010 Plus

| | | | |
|--------------------------|----------------------------------|--------------------------------|------------------|
| Injector : | 250 °C | GC Serial Number: | C11805270206 US |
| Detector (FID): | 320 °C | Injection Time: | 25.07.17 17:02 |
| Carriergas: | Helium | Sample Type: | unknown |
| Velocity: | 40.0 cm/s | Channel: | GC_2 |
| Temp. Control: | see Figure 1 | Sequence Creation Time: | 04.07.17 15:51 |
| Split Ratio: | 100:1 | Sequence Created By: | Mirela Brdanovic |
| Range: | - | Time Processed: | 11.08.17 09:14 |
| Injection Volume: | 1.0 µl | Processed By: | Markus Urthaler |
| Vial Number: | 4 | | |
| Run Time: | 20.00 min | | |
| Column: | Equity-1, 30 m x 0.25 mm, 1.0 µm | | |
| Sample Prep.: | ca 20mg sample in 2ml methanol | | |

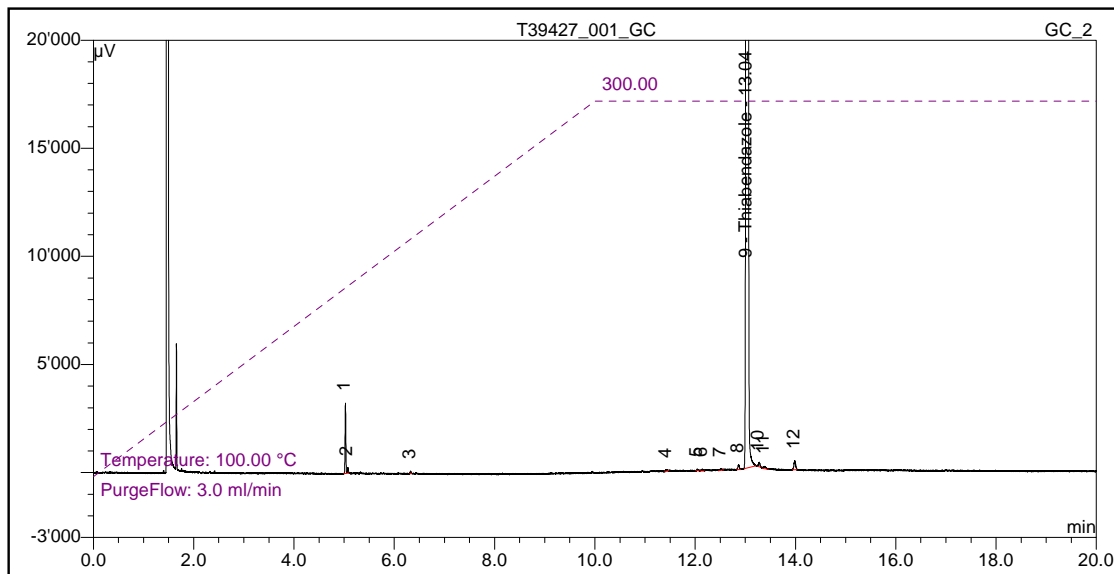


Figure 1: Zoomed Chromatogram and Temperatur Program

| No. | Ret.Time min | Peak Name | Type | Height µV | Area µV*min | Amount | Rel.Area % |
|--------|-----------------|---------------|------|--------------|----------------|--------|---------------|
| 1 | 5.028 | n.a. | BM | 3257 | 59.4046 | n.a. | 0.714 |
| 2 | 5.074 | n.a. | MB | 269 | 5.5508 | n.a. | 0.067 |
| 3 | 6.325 | n.a. | BMB | 115 | 1.7783 | n.a. | 0.021 |
| 4 | 11.430 | n.a. | BMB* | 80 | 2.8125 | n.a. | 0.034 |
| 5 | 12.042 | n.a. | BMB* | 76 | 1.9471 | n.a. | 0.023 |
| 6 | 12.143 | n.a. | BMB* | 88 | 3.4967 | n.a. | 0.042 |
| 7 | 12.516 | n.a. | BMB* | 83 | 3.0967 | n.a. | 0.037 |
| 8 | 12.871 | n.a. | BMB* | 210 | 7.2075 | n.a. | 0.087 |
| 9 | 13.040 | Thiabendazole | BMB | 245305 | 8210.3329 | n.a. | 98.619 |
| 10 | 13.274 | n.a. | BMB | 204 | 6.9992 | n.a. | 0.084 |
| 11 | 13.377 | n.a. | BMB* | 108 | 6.3367 | n.a. | 0.076 |
| 12 | 13.988 | n.a. | BMB | 423 | 16.3450 | n.a. | 0.196 |
| Total: | | | | 250218 | 8325.3079 | | 100.000 |