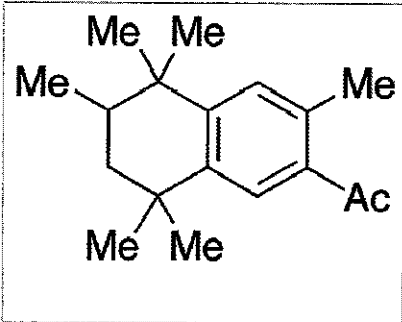


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CERTIFICATE OF ANALYSIS

1. Identification

| | | | |
|----------------------------|--|---------------------------|--|
| Catalogue Number: | T539800 | CAS Number: | 21145-77-7 |
| Product: | Tonalide | Synonym: | 1-(5,6,7,8-Tetrahydro-3,5,5,6,8,8-hexamethyl-2-naphthalenyl)-ethanone; 5',6',7',8'-Tetrahydro-3',5',5',6',8',8'-hexamethyl-2'-acetoneaphthone; AHMT (perfume); Extralide; Fixolide; NSC 19550; |
| Structure: |  | | |
| Lot Number: | 12-ANR-50-1 | Purity: | 98% |
| Shipping Condition: | This Product Is Stable To Be Shipped At Room Temperature | Storage Condition: | Refrigerator |
| | | Molecular Formula: | C ₁₈ H ₂₆ O |
| | | Molecular weight: | 258.4 |
| | | Source of Product: | N/A |
| | | Solubility: | Chloroform (Slightly), Ethyl Acetate (Slightly) |

2. Warning

Warning 1:

Warning 2:

Warning 3:

3. Analytical Information

| Tests: | Specifications: | Results: |
|--------------------|-----------------------|-------------------------------|
| NMR | Conforms to structure | Conforms |
| MS | Conforms to Structure | Conforms |
| Melting Point | Report Results | 55 - 57°C |
| Elemental Analysis | Conforms | Refer: Additional Information |
| Appearance | | White to Off-White Solid |

Additional Information:

TLC Conditions: SiO₂; Hexanes : Ethyl Acetate = 8 : 2; Visualized with UV, AMCS, and KMnO₄; Single Spot, R_f = 0.70. 1H NMR and MS conform to structure. Elemental Analysis: (Found) %C: 83.29, %H: 9.62; (Calculated) %C: 83.67, %H: 10.14

Purity is based on the analytical results of the tests performed. NMR and TLC may have an accuracy +-2%. Isotopic purity is based on mass distribution observed.

4. Signatures

| Reviewed By | Reviewed By | C of A Approved By | Test Date | Retest Date |
|---|-------------|--------------------|------------|-------------|
| Philip Chan | | | 12/19/2017 | 12/16/2024 |
|  | | | | |