1. GENERAL INFORMATION

**IUPAC Name:** 2-methoxy-N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]acetamide

**CAS#:** 101345-67-9

**Synonyms:** 2-methoxy-N-(1-phenethylpiperidin-4-yl)-N-phenylacetamide

**Source:** DEA Reference Material Collection

**Appearance:** White powder

**$\text{UV}_{\text{max}}$(nm):** 256.8 nm

2. CHEMICAL AND PHYSICAL DATA

2.1 CHEMICAL DATA

<table>
<thead>
<tr>
<th>Form</th>
<th>Chemical Formula</th>
<th>Molecular Weight</th>
<th>Melting Point ($^\circ$C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>C$<em>{22}$H$</em>{28}$N$_2$O$_2$</td>
<td>352.47</td>
<td>Not Determined</td>
</tr>
<tr>
<td>HCl</td>
<td>C$<em>{22}$H$</em>{28}$N$_2$O$_2$ HCl</td>
<td>388.93</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>
3. QUALITATIVE DATA

3.1 NUCLEAR MAGNETIC RESONANCE

Sample Preparation: Dilute analyte to ~12 mg/mL in methanol-$d_4$ containing TMS for 0 ppm reference and dimethylfumarate as quantitative internal standard.

Instrument: 400 MHz NMR spectrometer
Parameters: Spectral width: at least containing -3 ppm through 13 ppm
Pulse angle: 90°
Delay between pulses: 45 seconds

$^1$HNMR: methoxyacetyl fentanyl HCl; lot 0514903-14; methanol-$d_4$; 400MHz

![NMR Spectrogram](image-url)
3.2 GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Sample Preparation: Dilute analyte ~4 mg/mL in MeOH

**Instrument:** Agilent gas chromatograph operated in split mode with MS detector
**Column:** HP-5 MS (or equivalent); 30 m x 0.25 mm x 0.25 μm
**Carrier Gas:** Helium at 1.5 mL/min
**Temperatures:**
- Injector: 280°C
- MSD transfer line: 280°C
- MS Source: 230°C
- MS Quad: 150°C
- Oven program:
  1) 100°C initial temperature for 1.0 min
  2) Ramp to 280°C at 12 °C/min
  3) Hold final temperature for 9.0 min
**Injection Parameters:** Split Ratio = 25:1, 1 μL injected
**MS Parameters:**
- Mass scan range: 30-550 amu
- Threshold: 250
- Tune file: stune.u
- Acquisition mode: scan
**Retention Time:** 17.81 min

EI Mass Spectrum: methoxyacetyl fentanyl HCl; lot 0514903-14
3.3 INFRARED SPECTROSCOPY (FTIR)

**Instrument:** FTIR with diamond ATR attachment (1 bounce)

**Scan Parameters:**
- Number of scans: 32
- Number of background scans: 32
- Resolution: 4 cm\(^{-1}\)
- Sample gain: 1
- Aperture: 150

FTIR ATR (Diamond 1 Bounce): methoxyacetyl fentanyl HCl; lot 0514903-14