ortho-Methoxy furanyl fentanyl

The Drug Enforcement Administration's Special Testing and Research Laboratory generated this monograph using structurally confirmed reference material.

1. GENERAL INFORMATION

**IUPAC Name:**  
N-(2-methoxyphenyl)-N-(1-phenethylpiperidin-4-yl)furan-2-carboxamide

**CAS#:**  
101343-50-4

**Synonyms:**  
2-methoxy Fu-F, o-methoxy Fu-F, ortho-methoxy Fu-F, 2-methoxy Furanyl fentanyl, o-methoxy Furanyl fentanyl, 
N-(2-methoxyphenyl)-N-[1-(2-phenylethyl)piperidin-4-yl]furan-2-carboxamide

**Source:**  
DEA Reference Material Collection

**Appearance:**  
White powder

**UV$_{max}$(nm):**  
Not determined

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 (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>C$<em>{25}$H$</em>{28}$N$<em>{2}$O$</em>{3}$</td>
<td>404.50</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>
3. QUALITATIVE DATA

3.1 NUCLEAR MAGNETIC RESONANCE

Sample Preparation: Dilute analyte to ~15 mg/mL in methanol-$d_4$ containing TMS for 0 ppm reference and 1,4-BTMSB-$d_4$ 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: *ortho*-Methoxy furanyl fentanyl; Lot# 0546722-3; methanol-$d_4$; 400MHz
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); 30m 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: 21.83 min

EI Mass Spectrum: ortho-Methoxy furanyl fentanyl; Lot# 0546722-3
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### 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: 8
- Aperture: 80

FTIR ATR (Diamond 1 Bounce): *ortho-Methoxy furanyl fentanyl; Lot# 0546722-3*