# ANALYTICAL REPORT

**N-Methylcarfentanyl (C17H24N2O3)**

**methyl 1-methyl-4-(N-phenylpropanamido)piperidine-4-carboxylate**

**Remark** – other active cpd. detected: **none**

<table>
<thead>
<tr>
<th>Sample ID:</th>
<th>1871-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample description:</td>
<td>powder - white</td>
</tr>
<tr>
<td>Sample type:</td>
<td>RM-reference material</td>
</tr>
<tr>
<td>Comments:</td>
<td>CHIRON Lot#18462,</td>
</tr>
<tr>
<td>Date of entry (DD/MM/YYYY):</td>
<td>15/11/2017</td>
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</tbody>
</table>

### Substance identified-structure¹ (base form)

![Structure Image]

**Systematic name:** methyl 1-methyl-4-(N-phenylpropanamido)piperidine-4-carboxylate

**Other names:**
- 4-Piperidinecarboxylic acid, 1-methyl-4-[(1-oxopropyl)phenylamino]-, methyl ester; 1-methyl-4-[(1-oxopropyl)phenylamino]-4-Piperidinecarboxylic acid, methyl ester; R-32395;
- n-methyl Norcarfentanil

**Formula (per base form):** C17H24N2O3

**M_r (g/mol):** 304.39

**Salt form:** HCl

**StdInChIKey (per base form):** KKEVIELPQLXPRR-UHFFFAOYSA-N

**Other active cpd. detected:** none

**Add.info (purity..):** 99.9 %

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¹ Created by OPSIN free tool: [http://opsin.ch.cam.ac.uk/](http://opsin.ch.cam.ac.uk/)  DOI: 10.1021/ci100384d
Report updates

<table>
<thead>
<tr>
<th>date</th>
<th>comments (explanation)</th>
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<tbody>
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Supporting information

<table>
<thead>
<tr>
<th>Analytical technique:</th>
<th>applied</th>
<th>remarks</th>
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</thead>
<tbody>
<tr>
<td>GC-MS (EI ionization)</td>
<td>+</td>
<td>NFL GC-RT (min): 7,77 BP(1): 96; BP(2): 155, BP(3): 140,</td>
</tr>
<tr>
<td>FTIR-ATR</td>
<td>+</td>
<td>direct measurement</td>
</tr>
<tr>
<td>GC-IR (condensed phase)</td>
<td>+</td>
<td>always as base form</td>
</tr>
</tbody>
</table>

1. **GC-MS** (Agilent): GC-method is RT locked to tetracosane (9.258 min). Injection volume 1 ml and split mode (1:50). Injector temperature: 280 °C. Chromatographic separation: on column HP1-MS (100% dimethylpolysiloxane), length 30 m, internal diameter 0.25 mm, film thickens 0.25 μm. Carrier gas He: flow-rate 1.2 ml/min. GC oven program: 170 °C for 1 min, followed by heating up to 190 °C at rate 8 °C/min, then heating up to 293 °C at a rate of 18 °C/min, hold for 7.1 min, then heating at 50 °C/min up to 325 °C and finally 6.1 min isothermal. MSD source EI = 70 eV. GC-MS transfer line T= 235°C, source and quadropole temperatures 280°C and 180°C, respectively. Scan range m/z scan range: from 50 (30 until 6 min.) to 550 (300 until 6 min) amu.

2. **FTIR-ATR** (Perkin Elmer): scan range 4000-400 cm⁻¹; resolution 4 cm⁻¹

3. **GC-MS-IR** condensed phase (GC-MS (Agilent) & IR (Spectra analyses-Danny))
   MSD source EI = 70 eV. GC-MS transfer line T= 235°C, source and quadropole temperatures 280°C and 180°C, respectively. Scan range m/z scan range: from 50 (30 until 6 min.) to 550 (300 until 6 min) amu.
   IR (condensed (solid) phase): IR scan range 4000 to 650, resolution 4 cm⁻¹.

4. **HPLC-TOF** for exact monoisotopic mass and empirical formula control - results are not shown in the report.
ANALYTICAL RESULTS

MS (EI)

Abundance

m/z→

m/z 51.0 70.1 110.0 115.0 140.0 155.1 189.1 219.1 247.2 273.1 304.2

Scn 1556 (7.766 min): N-Methylicarleamicryl-HCl_1871-17_CHID\text{.}\text{dat}_{\text{e}}.\text{ms}
FTIR-ATR - sample as received

IR (condensed phase – after chromatographic separation)