

# DIN EN ISO 24211:2022-12 (E)

## Vapour products - Determination of selected carbonyls in vapour product emissions (ISO 24211:2022)

---

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>3</b>
<b>Foreword</b> .....	<b>4</b>
<b>Introduction</b> .....	<b>5</b>
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>6</b>
<b>4 Principle</b> .....	<b>7</b>
<b>5 Reagents</b> .....	<b>7</b>
5.1 General.....	7
5.2 Solution preparation.....	8
5.3 Preparation of standards.....	8
5.3.1 General.....	8
5.3.2 HPLC calibration standards and working solutions.....	8
5.3.3 Primary carbonyl standards.....	8
5.3.4 Secondary carbonyl standards.....	9
5.3.5 Carbonyl working standards.....	9
<b>6 Apparatus</b> .....	<b>9</b>
<b>7 Procedure</b> .....	<b>10</b>
7.1 Preparation of test samples.....	10
7.2 Glass fibre filter pads handling.....	10
7.3 Aerosol collection and sample preparation.....	10
7.4 Determination of aerosol collected mass (ACM) and e-liquid vaporised mass (EVM).....	11
7.5 Test portion.....	11
7.6 Setting up the apparatus.....	12
7.7 Calibration of the HPLC system.....	13
7.8 Determination.....	13
<b>8 Expression of the results</b> .....	<b>13</b>
<b>9 Repeatability and reproducibility</b> .....	<b>14</b>
9.1 General.....	14
9.2 Results of an interlaboratory study.....	14
<b>10 Test report</b> .....	<b>16</b>
<b>Annex A (informative) DNPH solution (prepared with DNPH containing approximately 30 % water)</b> .....	<b>17</b>
<b>Annex B (informative) Example of calibration standards preparation</b> .....	<b>19</b>
<b>Annex C (informative) HPLC chromatogram of a typical aerosol sample containing carbonyls</b> .....	<b>20</b>
<b>Bibliography</b> .....	<b>21</b>