

# DIN EN 12671:2016-09 (E)

## Chemicals used for treatment of water intended for human consumption - Chlorine dioxide generated in situ

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
Introduction .....		5
<b>1</b>	<b>Scope .....</b>	<b>6</b>
<b>2</b>	<b>Normative references .....</b>	<b>6</b>
<b>3</b>	<b>Description .....</b>	<b>6</b>
<b>3.1</b>	<b>Identification .....</b>	<b>6</b>
<b>3.1.1</b>	<b>Chemical name .....</b>	<b>6</b>
<b>3.1.2</b>	<b>Synonym or common name .....</b>	<b>6</b>
<b>3.1.3</b>	<b>Relative molecular mass .....</b>	<b>6</b>
<b>3.1.4</b>	<b>Empirical formula .....</b>	<b>6</b>
<b>3.1.5</b>	<b>Chemical formula .....</b>	<b>6</b>
<b>3.1.6</b>	<b>CAS Registry Number .....</b>	<b>6</b>
<b>3.1.7</b>	<b>EINECS reference .....</b>	<b>6</b>
<b>3.2</b>	<b>Presentation form .....</b>	<b>7</b>
<b>3.3</b>	<b>Physical properties .....</b>	<b>7</b>
<b>3.3.1</b>	<b>Appearance .....</b>	<b>7</b>
<b>3.3.2</b>	<b>Density .....</b>	<b>7</b>
<b>3.3.3</b>	<b>Solubility in water .....</b>	<b>7</b>
<b>3.3.4</b>	<b>Vapour pressure .....</b>	<b>7</b>
<b>3.3.5</b>	<b>Boiling point at 101,3 kPa .....</b>	<b>8</b>
<b>3.3.6</b>	<b>Crystallization point .....</b>	<b>8</b>
<b>3.3.7</b>	<b>Specific heat .....</b>	<b>8</b>
<b>3.3.8</b>	<b>Viscosity (dynamic) .....</b>	<b>8</b>
<b>3.3.9</b>	<b>Critical temperature .....</b>	<b>8</b>
<b>3.3.10</b>	<b>Critical pressure .....</b>	<b>8</b>
<b>3.3.11</b>	<b>Physical hardness .....</b>	<b>8</b>
<b>3.3.12</b>	<b>Dissolution heat .....</b>	<b>8</b>
<b>3.4</b>	<b>Chemical properties .....</b>	<b>8</b>
<b>4</b>	<b>Purity criteria .....</b>	<b>9</b>
<b>4.1</b>	<b>General .....</b>	<b>9</b>
<b>4.2</b>	<b>Composition of in situ generated product .....</b>	<b>9</b>
<b>4.3</b>	<b>Impurities and main by-products .....</b>	<b>9</b>
<b>4.4</b>	<b>Chemical parameters .....</b>	<b>9</b>
<b>5</b>	<b>Test methods .....</b>	<b>10</b>
<b>5.1</b>	<b>Sampling .....</b>	<b>10</b>
<b>5.2</b>	<b>Determination of chlorine dioxide and chlorite concentrations .....</b>	<b>10</b>
<b>5.2.1</b>	<b>General .....</b>	<b>10</b>
<b>5.2.2</b>	<b>Principle .....</b>	<b>10</b>
<b>5.2.3</b>	<b>Reagents .....</b>	<b>11</b>
<b>5.2.4</b>	<b>Apparatus .....</b>	<b>12</b>
<b>5.2.5</b>	<b>Procedure .....</b>	<b>12</b>
<b>5.2.6</b>	<b>Expression of results .....</b>	<b>13</b>
<b>6</b>	<b>Labelling, distribution and storage .....</b>	<b>13</b>
<b>6.1</b>	<b>Labelling according to the EU legislation .....</b>	<b>13</b>

6.2	Means of distribution .....	15
6.3	Storage, stability .....	15
<b>Annex A (informative) General information on chlorine dioxide .....</b>		<b>16</b>
A.1	Origin .....	16
A.1.1	Raw materials .....	16
A.1.2	Manufacturing process .....	16
A.2	Use .....	17
A.2.1	Function .....	17
A.2.2	Form in which it is used .....	17
A.2.3	Treatment dose .....	17
A.2.4	Means of application .....	17
A.2.5	Secondary effects .....	17
A.2.6	Removal of excess product .....	17
A.3	Spectrometric method for specific determination of ClO <sub>2</sub> .....	17
A.3.1	Principle .....	17
A.3.2	Reagents .....	18
A.3.3	Apparatus .....	18
A.3.4	Procedure .....	19
A.3.5	Precision .....	20
A.3.6	Specificity .....	20
A.4	Determination of chlorite and chlorate ions contents in aqueous chlorine dioxide as produced by the reactors .....	20
A.4.1	General .....	20
A.4.2	Sample collection and preparation .....	20
A.4.3	Principle .....	20
A.4.4	Reagents .....	20
A.4.5	Apparatus .....	21
A.4.6	Procedure .....	21
A.4.7	Expression of results .....	22
A.4.8	Detection limit .....	22
<b>Annex B (normative) General rules relating to safety .....</b>		<b>23</b>
B.1	Rules for safe handling and use .....	23
B.2	Emergency procedures .....	23
B.2.1	First aid .....	23
B.2.2	Spillage .....	23
B.2.3	Fire .....	23
<b>Bibliography .....</b>		<b>24</b>