

# DIN EN 453:2015-04 (E)

## Food processing machinery - Dough mixers - Safety and hygiene requirements

---

<b>Contents</b>		<b>Page</b>
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>Terms, definitions and description .....</b>	<b>7</b>
<b>3.1</b>	<b>Terms and definitions .....</b>	<b>7</b>
<b>3.2</b>	<b>Description .....</b>	<b>7</b>
<b>4</b>	<b>List of significant hazards .....</b>	<b>8</b>
<b>5</b>	<b>Safety and hygiene requirements and/or protective measures .....</b>	<b>9</b>
<b>5.1</b>	<b>General .....</b>	<b>9</b>
<b>5.2</b>	<b>Mechanical hazards .....</b>	<b>10</b>
<b>5.2.1</b>	<b>General .....</b>	<b>10</b>
<b>5.2.2</b>	<b>Zone 1 - Volume covered by the movement of the kneading tools .....</b>	<b>10</b>
<b>5.2.3</b>	<b>Zone 2 - Space between bowl and frame .....</b>	<b>11</b>
<b>5.2.4</b>	<b>Zone 3 - Bowl driving mechanism .....</b>	<b>12</b>
<b>5.2.5</b>	<b>Zone 4 - Kneading tool-holder driving, positioning and adjusting mechanism .....</b>	<b>12</b>
<b>5.2.6</b>	<b>Loss of stability .....</b>	<b>13</b>
<b>5.2.7</b>	<b>Guide rollers and bowl .....</b>	<b>13</b>
<b>5.2.8</b>	<b>Power operated guards and bowl .....</b>	<b>13</b>
<b>5.3</b>	<b>Electrical hazards .....</b>	<b>13</b>
<b>5.3.1</b>	<b>General .....</b>	<b>13</b>
<b>5.3.2</b>	<b>Safety requirements related to electromagnetic phenomena .....</b>	<b>13</b>
<b>5.3.3</b>	<b>Protection against electric shock .....</b>	<b>13</b>
<b>5.3.4</b>	<b>Power circuits .....</b>	<b>14</b>
<b>5.3.5</b>	<b>Protection against earth faults in control circuits .....</b>	<b>14</b>
<b>5.4</b>	<b>Motor enclosures .....</b>	<b>14</b>
<b>5.5</b>	<b>Emergency stop .....</b>	<b>14</b>
<b>5.6</b>	<b>Noise reduction .....</b>	<b>14</b>
<b>5.7</b>	<b>Protection against dust emission .....</b>	<b>14</b>
<b>5.8</b>	<b>Hygiene requirements .....</b>	<b>14</b>
<b>5.9</b>	<b>Hazards generated by neglecting ergonomic principles .....</b>	<b>16</b>
<b>6</b>	<b>Verification of safety and hygiene requirements and/or measures .....</b>	<b>17</b>
<b>7</b>	<b>Information for use .....</b>	<b>18</b>
<b>7.1</b>	<b>General .....</b>	<b>18</b>
<b>7.2</b>	<b>Instruction handbook .....</b>	<b>18</b>
<b>7.3</b>	<b>Marking .....</b>	<b>20</b>
<b>Annex A (normative)</b>	<b>Noise test code for dough mixers - Grade 2 of accuracy .....</b>	<b>21</b>
<b>A.1</b>	<b>Installation and mounting conditions .....</b>	<b>21</b>
<b>A.2</b>	<b>Operating conditions .....</b>	<b>21</b>
<b>A.3</b>	<b>Measurements .....</b>	<b>21</b>
<b>A.4</b>	<b>Emission sound pressure level determination .....</b>	<b>21</b>
<b>A.5</b>	<b>Sound power level determination .....</b>	<b>22</b>

<b>A.6</b>	<b>Measurement uncertainties</b> .....	<b>22</b>
<b>A.7</b>	<b>Information to be recorded</b> .....	<b>22</b>
<b>A.8</b>	<b>Information to be reported</b> .....	<b>23</b>
<b>A.9</b>	<b>Declaration and verification of noise emission values</b> .....	<b>23</b>
<b>Annex B (normative) Principles of design to ensure the cleanability of dough mixers</b> .....		<b>24</b>
<b>B.1</b>	<b>Terms and definitions</b> .....	<b>24</b>
<b>B.2</b>	<b>Materials of construction</b> .....	<b>24</b>
<b>B.3</b>	<b>Design</b> .....	<b>25</b>
<b>Annex C (informative) Method of measuring dust</b> .....		<b>43</b>
<b>C.1</b>	<b>Purpose of the test</b> .....	<b>43</b>
<b>C.2</b>	<b>Principle of the tests</b> .....	<b>43</b>
<b>C.3</b>	<b>Operating conditions</b> .....	<b>43</b>
<b>Bibliography</b> .....		<b>45</b>