

# DIN EN 15774:2011-10 (E)

## Food processing machinery - Machines for processing fresh and filled pasta (tagliatelle, cannelloni, ravioli, tortellini, orecchiette and gnocchi) - Safety and hygiene requirements

---

<b>Contents</b>		<b>Page</b>
Foreword .....		7
Introduction .....		8
<b>1</b>	<b>Scope .....</b>	<b>9</b>
<b>2</b>	<b>Normative references .....</b>	<b>10</b>
<b>3</b>	<b>Terms and definitions and description of machines .....</b>	<b>11</b>
3.1	Terms and definitions .....	11
3.2	Description of machines for processing fresh and filled pasta .....	11
3.2.1	discontinuous manually loaded kneading machines with or without lifting and tilting devices (Figure 1) .....	11
3.2.2	continuous kneading machine (see Figure 2) .....	12
3.2.3	combination of dough kneading and dough sheet forming machine (see Figure 7) .....	17
3.2.4	forming machine processing one single dough sheet (see Figure 8) .....	18
3.2.5	forming machine processing two dough sheets (see Figure 9) .....	19
3.2.6	dough sheet forming machine (see Figure 10) .....	20
3.2.7	sizing roller machine (see Figure 11) .....	21
3.2.8	dough transport shuttle machine (see Figure 12) .....	22
3.2.9	steam pasteurizer machine (see Figure 13) .....	23
3.2.10	cooler machine (see Figure 14) .....	24
3.2.11	dough sheet cutting machine (see Figure 15) .....	25
3.2.12	gnocchi machine (see Figure 16) .....	26
3.2.13	typical shapes pasta machine (see Figure 17) .....	27
<b>4</b>	<b>List of significant hazards .....</b>	<b>28</b>
4.1	General .....	28
4.2	Mechanical hazards .....	28
4.2.1	General .....	28
4.2.2	Discontinuous manually loaded kneading machines with or without lifting and tilting devices .....	29
4.2.3	Continuous kneading machine .....	30
4.2.4	Combination of dough kneading and dough sheet forming machine .....	31
4.2.5	Forming machine processing one single dough sheet .....	32
4.2.6	Forming machine processing two dough sheets .....	33
4.2.7	Dough sheet forming machine .....	34
4.2.8	Sizing roller machine .....	35
4.2.9	Dough transport shuttle machine .....	36
4.2.10	Steam pasteurizer machine .....	37
4.2.11	Cooler machine .....	38
4.2.12	Dough sheet cutting machine .....	39
4.2.13	Gnocchi machine .....	40
4.2.14	Typical shapes pasta machine .....	41
4.3	Electrical hazards .....	41
4.4	Thermal hazards .....	42
4.5	Hazards generated by noise .....	42
4.6	Hazards resulting from the inhalation of harmful mists and dusts .....	42
4.7	Hazards due to slip, trip and fall .....	42

4.8	Hazards generated by neglecting ergonomic principles .....	42
4.9	Hazards generated by neglecting hygienic design principles .....	43
4.10	Hazards due to loss of stability or overturning .....	43
5	Safety and hygiene requirements and/or protective measures .....	43
5.1	General .....	43
5.2	Mechanical hazards .....	43
5.2.1	Elimination of crushing hazards by design .....	43
5.2.2	Moving transmission parts .....	43
5.2.3	Moving parts contributing to the work .....	43
5.2.4	Bowl lid .....	44
5.3	Electrical hazards .....	44
5.3.1	General .....	44
5.3.2	Safety requirements relating to electromagnetic phenomena .....	44
5.3.3	Power circuits .....	44
5.3.4	Earth faults .....	44
5.3.5	Emergency stop .....	44
5.3.6	Degrees of protection of external enclosures of electrical equipment (see EN 60529:1991) .....	44
5.3.7	Supply disconnecting device .....	44
5.4	General aspects of controls .....	45
5.4.1	Hold to run control devices .....	45
5.4.2	Controls for maintenance or cleaning .....	45
5.4.3	Interlocking system of guards .....	45
5.4.4	Start warning .....	45
5.5	Thermal hazards .....	46
5.6	Noise reduction .....	46
5.7	Inhalation of harmful mists and dusts .....	46
5.8	Protective measures against slip, trip and fall .....	46
5.9	Ergonomic design principles .....	46
5.10	Hygiene requirements .....	47
5.10.1	General .....	47
5.10.2	Food area .....	47
6	Verification of safety and hygiene requirements and/or protective measures .....	54
7	Information for use .....	55
7.1	General .....	55
7.2	Operating instructions .....	56
7.3	Training of operators .....	57
7.4	Marking .....	57
7.5	Signals and warning devices .....	58
<b>Annex A (normative) Noise test code for machines for processing fresh and filled pasta (tagliatelle, cannelloni, ravioli, tortellini, orecchiette and gnocchi) (Grade 2) .....</b>		
<b>59</b>		
A.1	Definitions .....	59
A.2	Installation and mounting conditions .....	59
A.3	Operating conditions .....	59
A.4	Emission sound pressure level determination .....	59
A.5	Emission sound power level determination .....	60
A.6	Measurement uncertainties .....	60
A.7	Information to be recorded .....	60
A.8	Information to be reported .....	60
A.9	Declaration and verification of noise emission values .....	60
<b>Annex B (normative) Principles of design to ensure the cleanability of machinery .....</b>		
<b>62</b>		
B.1	Definitions .....	62
B.2	Material of construction .....	62
B.2.1	Type of materials .....	62
B.2.2	Surface conditions .....	62

<b>B.3</b>	<b>Design</b> .....	<b>63</b>
<b>B.3.1</b>	<b>Connections of internal surfaces</b> .....	<b>63</b>
<b>B.3.2</b>	<b>Surface assemblies and overlaps</b> .....	<b>65</b>
<b>B.3.3</b>	<b>Fasteners</b> .....	<b>67</b>
<b>B.3.4</b>	<b>Machines on the floor</b> .....	<b>68</b>
<b>B.3.5</b>	<b>Ventilation opening</b> .....	<b>70</b>
<b>B.3.6</b>	<b>Hinges</b> .....	<b>71</b>
<b>B.3.7</b>	<b>Control panel</b> .....	<b>71</b>

<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC</b> .....	<b>72</b>
---	-----------

<b>Bibliography</b> .....	<b>73</b>
---------------------------	-----------

<b>Figures Figure 1a -- Discontinuous manually loaded kneading machines without lifting and tilting system</b> .....	<b>12</b>
--	-----------

<b>Figure 1b -- Discontinuous manually loaded kneading machines with lifting and tilting system</b> .....	<b>12</b>
---	-----------

<b>Figure 2 -- Continuous kneading machine</b> .....	<b>13</b>
--	-----------

<b>Figure 3a -- Kneading bowl singles shaft</b> .....	<b>14</b>
---	-----------

<b>Figure 3b -- Kneading bowl double shaft</b> .....	<b>14</b>
--	-----------

<b>Figure 4 -- Premixing device</b> .....	<b>15</b>
---	-----------

<b>Figure 5 -- Dosing device for flour, semolina or other milled product</b> .....	<b>16</b>
--	-----------

<b>Figure 6a -- Device for dough stabilization vertical</b> .....	<b>17</b>
---	-----------

<b>Figure 6b -- Device for dough stabilization by belt</b> .....	<b>17</b>
--	-----------

<b>Figure 7 -- Combination of dough kneading and dough sheet forming machine</b> .....	<b>18</b>
--	-----------

<b>Figure 8 -- Forming machine processing one single dough sheet</b> .....	<b>19</b>
--	-----------

<b>Figure 9 -- Forming machine processing two dough sheets</b> .....	<b>20</b>
--	-----------

<b>Figure 10 -- Dough sheet forming machine</b> .....	<b>21</b>
---	-----------

<b>Figure 11 -- Sizing roller machine</b> .....	<b>22</b>
---	-----------

<b>Figure 12 -- Dough transport shuttle machine</b> .....	<b>23</b>
---	-----------

<b>Figure 13 -- Steam pasteurizer machine</b> .....	<b>24</b>
---	-----------

<b>Figure 14 -- Cooler machine</b> .....	<b>25</b>
--	-----------

<b>Figure 15 -- Dough sheet cutting machine</b> .....	<b>26</b>
---	-----------

<b>Figure 16 -- Gnocchi machine</b> .....	<b>27</b>
---	-----------

<b>Figure 17 -- Typical shapes pasta machine</b> .....	<b>28</b>
--	-----------

<b>Figure 18 -- Danger zones of discontinuous manually loaded kneading machine with or without lifting and tilting devices</b> .....	<b>29</b>
--	-----------

<b>Figure 19 -- Danger zones of continuous kneading machine</b> .....	<b>30</b>
---	-----------

<b>Figure 20 -- Danger zones of combination of dough kneading and dough sheet forming machine</b> ....	<b>31</b>
--	-----------

Figure 21 -- Danger zones of forming machine processing one single dough sheet .....	32
Figure 22 -- Danger zones of forming machine processing two dough sheets .....	33
Figure 23 -- Danger zones of dough sheet forming machine .....	34
Figure 24 -- Danger zones of sizing roller machine .....	35
Figure 25 -- Danger zones of dough transport shuttle machine .....	36
Figure 26 -- Danger zones of steam pasteurizer machine .....	37
Figure 27 -- Danger zones of cooler machine .....	38
Figure 28 -- Danger zones of dough sheet cutting machine .....	39
Figure 29 -- Danger zones of gnocchi machine .....	40
Figure 30 -- Danger zones of typical shapes pasta machine .....	41
Figure 31 -- Discontinuous manually loaded kneading machine, without or with lifting and tilting devices .....	47
Figure 32 -- Continuous kneading machine .....	48
Figure 33 -- Combination of dough kneading and dough sheet forming machine .....	48
Figure 34 -- Forming machine processing one single dough sheet .....	49
Figure 35 -- Forming machine processing two dough sheets .....	50
Figure 36 -- Dough sheet forming machine .....	50
Figure 37 -- Sizing roller machine .....	51
Figure 38 -- Dough transport shuttle machine .....	51
Figure 39 -- Steam pasteurizer machine .....	52
Figure 40 -- Cooler machine .....	52
Figure 41 -- Dough Sheet cutting machine .....	53
Figure 42 -- Gnocchi machine .....	53
Figure 43 -- Typical shape pasta machine .....	54
Figure B.1 .....	64
Figure B.2 .....	64
Figure B.3 .....	64
Figure B.4 .....	65
Figure B.5 .....	65
Figure B.6 .....	66
Figure B.7 .....	66
Figure B.8 .....	67

**Figure B.9 ..... 67**  
**Figure B.10 ..... 68**  
**Figure B.11 ..... 69**  
**Figure B.12 ..... 69**  
**Figure B.13 ..... 69**  
**Figure B.14 ..... 70**  
**Figure B.15 ..... 70**  
**Figure B.16 ..... 71**  
**Tables Table 1 ..... 55**