DIN EN 15165:2015-01 (E)

Food processing machinery - Forming machines - Safety and hygiene requirements

Contents

Page

Foreword 5

Introduction 6

1 Scope 7
1.1 General 7
1.2 Machine description 7
1.3 Combinations of forming machines and auxiliary devices and/or interchangeable equipment 10
1.3.1 Definition 10
1.3.2 Example for combinations 11

2 Normative references 11

3 Terms and definitions 12

4 List of significant hazards 13

5 Safety and hygiene requirements and/or -protective measures 17
5.1 General 17
5.2 Mechanical hazards - General 17
5.2.1 Guard interlocking 17
5.2.2 Cutting hazards 17
5.3 Forming machines with feed intake hopper 17
5.3.1 Technical solutions for infeed area 17
5.3.2 Specific requirements for types of hoppers 18
5.3.3 Mould filling area in the feed intake hopper 23
5.3.4 Crushing points between the mould plate and other parts of the machine 23
5.3.5 Ejector mechanism 24
5.3.6 Plastic film/paper interleaver (where fitted) 24
5.3.7 Mechanism to insert sticks (where fitted) 24
5.3.8 Meat ball roller (where fitted) 24
5.3.9 Drives (e.g. vee-belts and pulleys; chains and sprockets; gears, drive shafts and clutches) 24
5.3.10 Discharge conveyor (where fitted) 25
5.3.11 Loading devices 25
5.3.12 Additional requirements for lift-tilt devices 25
5.4 Additional requirements for table top machines with tray 27
5.4.1 Infeed side 27
5.4.2 Outfeed side 29
5.5 Electrical hazards 30
5.5.1 General 30
5.5.2 Emergency stop-device 30
5.5.3 Protection against water ingress 30
5.5.4 On- and Off-switch 32
5.5.5 Safety requirements related to electromagnetic phenomena 32
5.6 Hydraulic and pneumatic hazards 32
5.7 Hazards from loss of stability 32
5.8 Noise reduction 32
5.9 Ergonomic requirements 32
5.10 Hygiene and cleaning 33

6 Verification of safety and hygiene requirements and/or protective measures 35

7 Information for use 37
7.1 General 37
7.2 Instruction handbook 37
7.3 Marking 39

Annex A (normative) Noise test code for forming machines (grade 2) 40

A.1 Sound measurements 40
A.2 Installation and mounting conditions 42
A.3 Operating conditions 42
A.4 Measurement 42
A.5 Information to be recorded 42
A.6 Information to be reported 42
A.7 Declaration and verification of noise emission values 43

Annex B (normative) Design principles to ensure the cleanability of forming machines 44

B.1 Terms and definitions 44
B.2 Materials of construction 45
B.3 Design 45

Bibliography 51

Figures Figure 1 -- Floor machines 9

Figure 2 -- Table top machine with tray 10

Figure 3 -- Example of combination 11

Figure 4 -- Danger zones 16

Figure 5 -- Forming machine with feed intake hopper and switch bar/light barrier - safety distances 20

Figure 6 -- Forming machines with divided hopper - safety distances 21

Figure 7 -- Forming machine with feed intake hopper -- Example: ladder - safety distances 22

Figure 8 -- Forming machine with feed intake hopper -- Example: step, two-hand control 22

Figure 9 -- Plough in feed intake hopper 23

Figure 10 -- Safety device for container position 27

Figure 11 -- Infeed and outfeed side of table top machines 29

Figure 12 -- Outfeed side of table top machines 30

Figure 13 -- On/Off switch with hood 31

Figure 14 -- Hygiene areas of forming machines 34

Figure 15 -- Hygiene areas of forming machines 35

Figure A.1 -- Position of measuring point 41

Figure B.1 -- Joined surfaces - food area 44

Figure B.2 -- Corners and radii in food area 45

Figure B.3 -- Angles in the food area 46

Figure B.4 -- Intersecting surfaces in the food area 47

Figure B.5 -- Acceptable joining elements - head profiles 48

Figure B.6 -- Castors - dimensions examples 49

Tables Table 1 -- List of significant hazards 14

Table 2 -- Verification list 36