

DIN EN 1114-1:2012-01 (E)

Plastics and rubber machines - Extruders and extrusion lines - Part 1: Safety requirements for extruders

| Contents | | Page |
|--------------------|---|-------------|
| Foreword | | 4 |
| Introduction | | 5 |
| 1 | Scope | 6 |
| 2 | Normative references | 6 |
| 3 | Terms and definitions | 8 |
| 4 | List of significant hazards | 9 |
| 4.1 | General | 9 |
| 4.2 | Mechanical hazards | 10 |
| 4.3 | Hazards due to electrical energy | 11 |
| 4.4 | Thermal hazards | 12 |
| 4.5 | Hazards generated by noise | 12 |
| 4.6 | Hazards resulting from materials and substances processed, used and/or exhausted by the machinery | 12 |
| 4.7 | Fire hazards | 12 |
| 4.8 | Hazards due to falling from height | 12 |
| 4.9 | Hazards due to unsuitable ergonomics | 12 |
| 5 | Safety requirements and/or protective measures | 12 |
| 5.1 | General | 12 |
| 5.2 | Mechanical hazards | 12 |
| 5.2.1 | Drive and power transmission | 12 |
| 5.2.2 | Screw shaft | 13 |
| 5.2.3 | Openings in the barrel | 13 |
| 5.2.4 | Feeding system | 13 |
| 5.2.5 | Excess pressure protection | 15 |
| 5.2.6 | Screen changer | 15 |
| 5.2.7 | Melt/gear pump | 16 |
| 5.2.8 | Melt pipes and adaptors | 16 |
| 5.2.9 | Static mixer | 16 |
| 5.2.10 | Extruder head | 16 |
| 5.2.11 | Power operated horizontal movement of the complete machine or parts of it | 16 |
| 5.3 | Electrical energy | 17 |
| 5.3.1 | General | 17 |
| 5.3.2 | Supply disconnecting (isolating) device | 17 |
| 5.3.3 | Protection against direct contact | 17 |
| 5.3.4 | Protection against indirect contact | 17 |
| 5.3.5 | Electrostatic phenomena | 17 |
| 5.4 | Thermal hazards | 17 |
| 5.4.1 | Hot machine parts | 17 |
| 5.4.2 | Hot extruded products, hot gases and hot liquids | 18 |
| 5.5 | Noise | 18 |
| 5.5.1 | General | 18 |
| 5.5.2 | Noise reduction at source by design | 18 |
| 5.5.3 | Information connected with noise hazards | 18 |
| 5.6 | Materials and substances processed, used and/or exhausted by the machinery | 19 |
| 5.7 | Fire hazards | 19 |

| | | |
|--|--|----|
| 5.8 | High level working places | 19 |
| 5.9 | Ergonomics | 19 |
| 5.10 | Emergency stop | 19 |
| 6 | Verification of conformity with safety requirements and/or protective measures | 19 |
| 7 | Information for use | 21 |
| 7.1 | Minimum marking on the machine | 21 |
| 7.2 | Instruction manual | 22 |
| Annex A (normative) Noise test code | | 24 |
| A.1 | Introduction | 24 |
| A.2 | Determination of the A-weighted emission sound pressure level at the workstation | 24 |
| A.3 | Determination of the A-weighted sound power level | 24 |
| A.4 | Mounting and operating conditions | 25 |
| A.5 | Information to be recorded and reported | 25 |
| A.5.1 | General | 25 |
| A.5.2 | General data | 25 |
| A.5.3 | Mounting and operating conditions | 25 |
| A.5.4 | Standards | 26 |
| A.5.5 | Noise data | 26 |
| A.6 | Declaration and verification of noise emission values | 26 |
| Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC | | 27 |
| Bibliography | | 28 |