DIN EN ISO/ASTM 52938-1:2025-12 (E)

Additive manufacturing of metals - Environment, health and safety - Part 1: Safety requirements for PBF-LB machines (ISO/ASTM 52938-1:2025)

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **3**

4 Safety requirements and measures ... **3**
4.1 General ... 3
4.2 Protective measures ... 3
4.2.1 General ... 3
4.2.2 Safeguards ... 3
4.2.3 Control devices ... 4
4.2.4 Control systems ... 4
4.3 Protection against mechanical hazards ... 7
4.3.1 Stability ... 7
4.3.2 Moving parts ... 7
4.3.3 Protection against slipping, tripping or falling ... 8
4.4 Protection against electrical hazards ... 8
4.4.1 General ... 8
4.4.2 Protection from electrostatic phenomena ... 8
4.5 Protection against thermal hazards ... 8
4.6 Vibration reduction measures ... 9
4.7 Noise reduction measures ... 9
4.8 Protection against laser radiation hazards ... 10
4.9 Protection against pneumatic hazards ... 10
4.10 Protection against hydraulic hazards ... 10
4.11 Protection against hazards generated by materials and substances ... 10
4.11.1 Metal powder handling and recovery ... 10
4.11.2 Particles during part removal from powder bed and post-processing ... 11
4.11.3 Explosion and fire hazards ... 11
4.11.4 Hazards generated by inert gases ... 13
4.12 Protection against ergonomic hazards ... 13
4.13 Hazards generated by overpressure ... 13
4.14 Hazards generated by failure of power supply ... 13

5 Verification of safety requirements and/or measures ... **14**
5.1 General ... 14
5.2 Verification based on noise emission values ... 15

6 Information for use ... **16**
6.1 General ... 16
6.2 Cleaning and maintenance ... 16
6.3 Handling ... 17

7 Marking ... **17**

Annex A (informative) **List of significant hazards** ... **19**

Annex B (normative) **Overview of required performance level (PLr)** ... **23**

Annex C (normative) **Noise test code** ... **24**

Bibliography ... **29**