

DIN EN ISO/ASTM 52931:2023-07 (E)

Additive manufacturing of metals - Environment, health and safety - General principles for use of metallic materials (ISO/ASTM 52931:2023)

Contents		Page
European foreword.....		4
Foreword.....		5
Introduction.....		6
1	Scope	7
2	Normative references	7
3	Terms and definitions	7
4	Abbreviations	7
5	Methodology	8
5.1	General.....	8
5.2	Chemical hazard methodology.....	10
6	Source data	10
6.1	General.....	10
6.2	Input products and by-products.....	10
6.2.1	Safety data sheet.....	10
6.2.2	Product technical datasheet.....	11
6.3	Process.....	11
6.3.1	General.....	11
6.3.2	Means of storage and implementation.....	11
6.4	Feedback from experience.....	11
6.4.1	Incident reports.....	11
6.4.2	Technical and normative watch.....	12
6.4.3	Measurement reports and analyses.....	12
7	Risk assessment	12
7.1	Identification of hazards.....	12
7.2	Documentation on hazards.....	12
7.2.1	General.....	12
7.2.2	Identification of hazards related to inputs.....	13
7.2.3	Hazards related to substances generated during additive manufacturing.....	17
7.2.4	Hazards related to fire and explosion.....	17
7.3	Identification of exposing situations.....	17
7.4	Characterization and risk rating.....	21
7.4.1	General.....	21
7.4.2	Rating of risks related to contamination, inhalation or skin contact.....	21
7.4.3	Rating the risks related to explosion.....	22
8	Prevention and protective measures	23
8.1	General.....	23
8.2	Workplaces.....	23
8.2.1	Floors and walls.....	23
8.2.2	Air flow rate.....	24
8.2.3	Fire.....	24
8.2.4	Electric.....	25
8.2.5	Powder storage.....	25
8.2.6	Best practices for workplaces for personnel.....	26
8.3	Process.....	26
8.4	Organization.....	26
8.4.1	General.....	26
8.4.2	Training of personnel.....	27

8.4.3	Information for personnel	27
8.4.4	Limitation of exposed personnel	27
8.4.5	Reduction of exposure.....	27
8.4.6	Personal protective equipment.....	28
8.5	Waste management.....	29
8.5.1	General	29
8.5.2	Contaminated filters.....	30
8.5.3	Waste from immersion vacuums and cleaning systems.....	30
8.5.4	General dry powder waste.....	30
Annex A (informative) Safety data sheet.....		31
Annex B (informative) Definition of limit values		33
Annex C (informative) Hazards related to fire and explosion.....		34
Annex D (informative) Overview of OEL for substances.....		36
Bibliography.....		40