

DIN EN ISO 20024:2020-09 (E)

Solid biofuels - Safe handling and storage of solid biofuel pellets in commercial and industrial applications (ISO 20024:2020)

Contents		Page
European foreword		4
Foreword		5
Introduction		6
1 Scope		7
2 Normative references		7
3 Terms and definitions		7
3.1 General terms		7
3.2 Risk management		9
3.3 Storage, handling and operation		12
3.4 Extinguishing media, extinguishing systems and detection		15
4 Guidance on how to use this document		15
5 Risk management		16
5.1 General		16
5.2 Introduction to the risk management process		18
5.2.1 General		18
5.2.2 Definition of scope		18
5.2.3 Hazard identification		18
5.2.4 Risk estimation		18
5.2.5 Risk evaluation		19
5.2.6 Risk reduction/control		19
6 Requirements for design and construction		20
6.1 General		20
6.2 Specific risk considerations for handling of solid biofuel pellets		21
6.3 Risk areas		23
6.4 General requirements and recommendations for safe handling		23
7 Requirements for safe operation and maintenance		24
7.1 General		24
7.2 General requirement for operation, maintenance and manuals		24
7.3 Documentation of operation procedures		25
7.4 Safety during operation		26
7.4.1 Operation		26
7.4.2 Housekeeping		27
7.4.3 Maintenance		27
7.4.4 Guidelines for visitors/contractors		28
7.5 Pre-planning of emergency operations		29
7.6 Personnel risks		30
8 Conveyor system and transfer points		30
8.1 General		30
8.2 Detection		31
8.3 Preparatory measures		31
8.3.1 Fire protection		31
8.3.2 Explosion protection		32
8.4 Additional information, recommendation and requirements on design and protection of conveyor systems		33
8.4.1 General		33
8.4.2 Detection systems		33
8.4.3 Fire protection		33
8.4.4 Explosion protection		34

9	Silos	35
	9.1 General.....	35
	9.2 Detection and temperature and gas monitoring.....	35
	9.3 Preparatory measures.....	36
	9.3.1 Fire protection.....	36
	9.3.2 Explosion protection.....	37
	9.4 Additional information, recommendation and requirements on design and protection of silos.....	37
	9.4.1 General.....	37
	9.4.2 Detection systems.....	37
	9.4.3 Fire protection systems.....	38
	9.4.4 Explosion protection.....	42
10	Large scale bunkers	42
	10.1 General.....	42
	10.2 Detection and temperature and gas monitoring in bunkers.....	43
	10.3 Preparatory measures.....	43
	10.3.1 Fire protection.....	43
	10.3.2 Explosion protection.....	44
	10.4 Additional information, recommendation and requirements on design and protection of bunkers.....	44
	10.4.1 General.....	44
	10.4.2 Detection systems.....	44
	10.4.3 Fire protection systems.....	45
	10.4.4 Explosion protection.....	47
11	Warehouse	47
	11.1 General.....	47
	11.2 Detection.....	48
	11.3 Preparatory measures.....	48
	11.3.1 Fire protection.....	48
	11.3.2 Explosion protection.....	49
	11.4 Additional information, recommendation and requirements on design and protection of warehouse.....	49
	11.4.1 Detection systems.....	49
	11.4.2 Fire protection.....	50
	11.4.3 Explosion protection.....	51
	Annex A (informative) Description of solid biofuel pellets supply chain and general safety guidelines for unit operations	52
	Annex B (informative) Self-heating and off-gassing	67
	Annex C (informative) Dust as a fire and explosion hazard and mitigation of risks	73
	Annex D (informative) Safety aspects and guidance on handling various emergency situations	89
	Annex E (informative) Ventilation for cooling of bulk material	104
	Annex F (informative) Principle design of inert gas distribution system and inlet openings	105
	Annex G (informative) Examples of arrangement of various sensors and detection systems relevant to the biofuel pellet industry	108
	Annex H (informative) Example for the risk assessment in a commercial medium size wood pellet store	114
	Bibliography	127