

ISO 20024:2020-02 (E)

Solid biofuels - Safe handling and storage of solid biofuel pellets in commercial and industrial applications

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
3.1	General terms	1
3.2	Risk management	3
3.3	Storage, handling and operation	6
3.4	Extinguishing media, extinguishing systems and detection	9
4	Guidance on how to use this document	9
5	Risk management	10
5.1	General	10
5.2	Introduction to the risk management process	12
5.2.1	General	12
5.2.2	Definition of scope	12
5.2.3	Hazard identification	12
5.2.4	Risk estimation	12
5.2.5	Risk evaluation	13
5.2.6	Risk reduction/control	13
6	Requirements for design and construction	14
6.1	General	14
6.2	Specific risk considerations for handling of solid biofuel pellets	15
6.3	Risk areas	17
6.4	General requirements and recommendations for safe handling	17
7	Requirements for safe operation and maintenance	18
7.1	General	18
7.2	General requirement for operation, maintenance and manuals	18
7.3	Documentation of operation procedures	19
7.4	Safety during operation	20
7.4.1	Operation	20
7.4.2	Housekeeping	20
7.4.3	Maintenance	21
7.4.4	Guidelines for visitors/contractors	22
7.5	Pre-planning of emergency operations	23
7.6	Personnel risks	24
8	Conveyor system and transfer points	24
8.1	General	24
8.2	Detection	24
8.3	Preparatory measures	25
8.3.1	Fire protection	25
8.3.2	Explosion protection	26

8.4	Additional information, recommendation and requirements on design and protection of conveyor systems	27
8.4.1	General	27
8.4.2	Detection systems	27
8.4.3	Fire protection	27
8.4.4	Explosion protection	28
9	Silos	28
9.1	General	28
9.2	Detection and temperature and gas monitoring	29
9.3	Preparatory measures	29
9.3.1	Fire protection	29
9.3.2	Explosion protection	30
9.4	Additional information, recommendation and requirements on design and protection of silos	31
9.4.1	General	31
9.4.2	Detection systems	31
9.4.3	Fire protection systems	31
9.4.4	Explosion protection	35
10	Large scale bunkers	35
10.1	General	35
10.2	Detection and temperature and gas monitoring in bunkers	36
10.3	Preparatory measures	37
10.3.1	Fire protection	37
10.3.2	Explosion protection	37
10.4	Additional information, recommendation and requirements on design and protection of bunkers	38
10.4.1	General	38
10.4.2	Detection systems	38
10.4.3	Fire protection systems	38
10.4.4	Explosion protection	40
11	Warehouse	41
11.1	General	41
11.2	Detection	41
11.3	Preparatory measures	42
11.3.1	Fire protection	42
11.3.2	Explosion protection	42
11.4	Additional information, recommendation and requirements on design and protection of warehouse	43
11.4.1	Detection systems	43
11.4.2	Fire protection	43
11.4.3	Explosion protection	44
Annex A (informative)	Description of solid biofuel pellets supply chain and general safety guidelines for unit operations	45
Annex B (informative)	Self-heating and off-gassing	60
Annex C (informative)	Dust as a fire and explosion hazard and mitigation of risks	66
Annex D (informative)	Safety aspects and guidance on handling various emergency situations	82
Annex E (informative)	Ventilation for cooling of bulk material	97
Annex F (informative)	Principle design of inert gas distribution system and inlet openings	98
Annex G (informative)	Examples of arrangement of various sensors and detection systems relevant to the biofuel pellet industry	101

Annex H (informative) Example for the risk assessment in a commercial medium size wood pellet store .107
Bibliography120