

DIN EN 12921-4:2010-06 (E)

Machines for surface cleaning and pretreatment of industrial items using liquids and vapours - Part 4: Safety of machines using halogenated solvents (includes Amendment A1:2008)

Contents		Page
Foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	6
4	List of significant hazards	8
5	Safety requirements and/or measures	10
5.1	General	10
5.2	Mechanical hazards	10
5.3	Safety requirements and measures against electrical hazards	11
5.4	Safety requirements and measures against thermal hazards	11
5.5	Safety requirements and measures against noise	12
5.6	Safety requirements and measures against hazards generated by materials and substances processed, used or emitted by the cleaning machine	12
5.7	Safety requirements and measures against hazard combinations	17
5.8	Safety requirements and measures against failure of energy supply	17
5.9	Safety requirements and measures against failure of control systems	18
6	Verification of the safety requirements and/or measures	18
6.1	General	18
6.2	Mechanical	18
6.3	Electrical	18
6.4	Thermal	18
6.5	Noise	18
6.6	Material and substances processed, used or emitted by the cleaning machines	18
6.7	Hazard combinations	22
6.8	Failure of energy supply	22
6.9	Control systems	22
7	Information for use	22
7.1	General	22
7.2	Instruction handbook	22
7.3	Minimum marking	24
Annex A (informative)	Examples and description of types of cleaning machines using halogenated solvents and design parameters	25
A.1	Examples and description of types of cleaning machines using halogenated solvents	25
A.2	Characteristics for halogenated solvents	30
Annex B (informative)	A-deviations	31

Annex ZA (informative) !Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC, amended by 98/79/EC"	32
Annex ZB (informative) !Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC"	33
Bibliography	34
Figures Figure A.1 -- Collection chamber cleaning machine using halogenated solvents - type Ia ...	25
Figure A.2 -- Single chamber cleaning machine using halogenated solvents - type Ib	26
Figure A.3 -- Enclosed open cleaning machine using halogenated solvents - type II-a	27
Figure A.4 -- Open top tank	28
Figure A.5a -- Freeboard zones	29
Figure A.5b -- Cooling zone and safety zone	29
Figure A.5c -- Refrigerated zone	29