

DIN EN 12151:2008-05 (E)

Machinery and plants for the preparation of concrete and mortar - Safety requirements

Contents	Page
Foreword	5
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	9
4 List of significant hazards	12
5 Safety requirements and/or protective measures	14
5.1 Common requirements for all groups of machines	14
5.1.1 High pressure fluid injection hazard from hydraulic or pneumatic systems	14
5.1.2 Electrical hazards	14
5.1.3 Main switches and control panels	14
5.1.4 Emergency stop	15
5.1.5 Thermal hazard	15
5.1.6 Hazard generated by noise	15
5.1.7 Ergonomic design	15
5.1.8 Weather conditions	15
5.1.9 Permanent means of access	15
5.1.10 Fire protection	16
5.1.11 Assembly	16
5.1.12 Electrical Magnetic Compatibility (EMC) of machines	16
5.1.13 Further requirements	16
5.2 Specific requirements relating to different types of machines	16
5.2.1 General	16
5.2.2 Small mobile tipping drum mixers for domestic and industrial use (see Annex B)	16
5.2.3 All other mixers, e.g. tipping drum mixers (stationary), trough-, pan-, through-flow mixers (see Annex B)	20
5.2.4 Ground tipping systems (see Annex B)	24
5.2.5 Radial scrapers and radius lift arms (see Figures B.2 to B.6)	25
5.2.6 Skip hoist system (see Figure B.8)	26
5.2.7 Dosing equipment (see Figure B.9 in Annex B)	28
5.2.8 Aggregate distribution chute (see Figure B.10)	30
5.2.9 Mobile mixing plant (see figure B.13 in Annex B)	31
5.2.10 Waste concrete reprocessing plant (see Figures B.20, B.21 and B.22)	31
6 Verification of safety requirements and/or protective measures	32
7 Information for use	33
7.1 Instruction handbook	33
7.1.1 General	33
7.1.2 Small mobile tipping drum mixers for domestic and industrial use	33
7.1.3 All other mixers, e.g. tipping drum mixers (stationary), trough mixers, pan mixers, through- flow mixers	34
7.1.4 Ground tipping systems	34
7.1.5 Scraper radius, bridge and dragline plant	34
7.1.6 Skip hoists	35

7.1.7	Dosing equipment	35
7.1.8	Aggregate distribution chute	35
7.1.9	Mobile mixing plant	35
7.1.10	Waste concrete reprocessing plant	35
7.1.11	Information of machine marking, see 7.2	36
7.2	Marking	36
7.2.1	General	36
7.2.2	Specifically for hydraulic and pneumatic systems	36
7.2.3	Specifically for electrical equipment	37
7.2.4	Specifically for internal combustion engine	37
7.2.5	Specifically for control stations, working platforms, accesses and lifting equipment	37
7.2.6	Mixer with an electrical class II motor	37
7.2.7	Underground buffer stock area	37
Annex A (normative) Stability, ground surface, headroom and access requirements		38
A.1	Ground surface and headroom of operation areas	38
A.2	General access	38
A.3	Stability test of small mobile tipping drum mixers	39
Annex B (informative) Illustration of mixer and plants		40
Annex C (normative) Noise test code		60
C.1	Scope	60
C.2	Sound power level determination	60
C.2.1	Mixers	60
C.2.2	Plants	61
C.3	Emission sound pressure level determination	62
C.3.1	Mixers	62
C.3.2	Plants	62
C.4	Installation conditions	62
C.5	Operating conditions	62
C.6	Information to be recorded	63
C.7	Information to be reported	63
C.8	Declaration of noise emission values	63
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC		64
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC		65
Bibliography		66
Figures Figure A.1 -- Tipping drum mixer (plan view)		39
Figure A.2 -- Tipping drum mixer (side view)		39
Figure B.1 -- Small mobile tipping drum mixer		40
Figure B.2 -- Example of a dragline scraper and a star plant		41
Figure B.3 -- Example of a scraper radius plant (front view)		42
Figure B.4 -- Protection walls and safety barrier for plant with one radius lift arm		43
Figure B.5 -- Protection walls and safety barrier for plant with one or more radius lift arm(s)		44
Figure B.6 -- Radius lift arm with buckets		45
Figure B.7 -- Example of a ground tipping hopper		46

Figure B.8 -- Example of a skip hoist system	47
Figure B.9 -- Dosing equipment of a batching plant	48
Figure B.10 -- Aggregate distribution system (e.g. distribution shoot)	49
Figure B.11 -- Example of concrete production plant with the plant featuring in-line hopper aggregate storage equipment	50
Figure B.12 -- Example of a vertical mixing plant fed by conveyor belt or bucket elevator	51
Figure B.13 -- Example of a mobile mixing	52
Figure B.14 -- Tipping drum mixer	52
Figure B.15 -- Chute discharge mixer	53
Figure B.16 -- Reversing drum mixer	53
Figure B.17 --Trough mixer	54
Figure B.18 -- Stationary pan with concentrically placed rotating paddles	55
Figure B.19 -- Example of a through-flow mixer	56
Figure B.20 -- Waste concrete reprocessing plant (above ground)	57
Figure B.21 -- Waste concrete reprocessing plant (plant partly underground)	58
Figure B.22 -- Waste concrete reprocessing plant	59
Figure B.23 -- Dimensions of outlet hopper of through-flow mixers	59
Figure C.1 -- Microphone array on the hemisphere (12 microphone positions)	61