

ISO 19202-1:2017-06 (E)

Summer toboggan runs - Part 1: Safety requirements and test methods

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	List of significant hazards	3
5	Safety requirements	5
5.1	Manufacturing	5
5.1.1	Materials	5
5.1.2	Safety measures against loosening of connections	5
5.1.3	Welded joints	5
5.1.4	Corrosion and surface protection, protection against rot	5
5.2	Toboggan	6
5.2.1	General	6
5.2.2	Toboggan for rail-guided summer toboggan runs	6
5.2.3	Toboggan for tub-guided summer toboggan runs	6
5.2.4	Braking	7
5.3	Track	7
5.3.1	Structural design of the system on the site	7
5.3.2	Rail-guided summer toboggan runs	7
5.3.3	Tub-guided summer toboggan runs	7
5.3.4	Visibility down the track and braking distances	8
5.4	Entrance and exit area	8
5.4.1	General	8
5.4.2	Entrance areas	9
5.4.3	End of downhill track	9
5.4.4	Exit areas	9
5.5	Uphill transport system	9
5.5.1	General	9
5.5.2	Technical design	9
5.5.3	Means of conveyance and connection to the means of conveyance	10
5.5.4	Tensioning devices	10
5.5.5	Drives and their components	10
5.6	Special safety equipment and precautions	11
5.7	Clearance zone	11
5.7.1	Downhill travel	11
5.7.2	Uphill transport	13
5.7.3	Squeezing and shearing points	13
5.8	Electrical equipment	14
5.8.1	Electrical systems	14
5.8.2	Control systems	14
6	Calculations	15
6.1	General	15
6.2	Actions	15
6.2.1	General	15
6.2.2	Permanent actions	15
6.2.3	Variable actions	16

6.2.4	Accidental actions	17
6.2.5	Impact	17
6.2.6	Vibrations occurring in directly passable components	18
6.3	Strength verification by calculation	18
6.3.1	General	18
6.3.2	Toboggan calculation	18
6.3.3	Tub calculation	19
6.3.4	Rail calculation	19
6.3.5	Calculation of supporting structure	19
6.3.6	Brake calculation	19
6.4	Verification of fatigue	20
6.4.1	General	20
6.4.2	Fatigue loads	20
6.5	Verification of stability	20
6.5.1	Safety against overturning, sliding and lifting off	20
6.5.2	Ground anchorages	22
7	Testing and inspection	26
7.1	General	26
7.2	Examination of the technical documentation	27
7.3	Acceptance test prior to commissioning (initial acceptance test)	27
7.3.1	General	27
7.3.2	Functional check	28
7.4	Periodic inspection	29
7.5	Inspection after modification	29
7.5.1	Examination of calculations	29
7.5.2	On-site inspection	29
7.6	Test report	30
8	Marking	30
8.1	Summer toboggan run	30
8.2	Toboggan	31
9	Commissioning	31
10	Technical documentation	31
10.1	General	31
10.2	Construction specification	31
10.3	Structural drawings and manufacturing drawings	31
10.4	Structural calculations	32
10.5	Risk assessment	32
10.6	Operating manual	32
	Annex A (informative) Example of load combinations in accordance with EN 1993	33
	Annex B (normative) Track calculation	35
	Bibliography	44