

DIN 19643-1:2012-11 (E)

Treatment of water of swimming pools and baths - Part 1: General requirements

| Contents | | Page |
|-----------------|---|-------------|
| Foreword | | 5 |
| 1 | Scope | 6 |
| 2 | Normative references | 6 |
| 3 | Terms and definitions | 12 |
| 4 | General | 15 |
| 5 | Water quality requirements | 15 |
| 5.1 | General | 15 |
| 5.2 | Filling water requirements | 16 |
| 5.2.1 | General | 16 |
| 5.2.2 | Primary filling water requirements | 16 |
| 5.2.3 | Secondary filling water requirements | 17 |
| 5.3 | Supply water and pool water requirements | 17 |
| 6 | Design and structural requirements for pools and technical equipment rooms | 20 |
| 6.1 | General | 20 |
| 6.2 | Pool or bath design | 20 |
| 6.3 | Water balancing tanks | 20 |
| 6.4 | Contact surfaces | 21 |
| 6.5 | Technical equipment rooms | 21 |
| 6.5.1 | General | 21 |
| 6.5.2 | Room for filter systems | 21 |
| 6.5.3 | Chemical feeder room | 22 |
| 6.5.4 | Disinfection equipment and ozone plant rooms | 22 |
| 6.5.5 | Monitoring equipment room | 22 |
| 6.5.6 | Repairs workshop and spare parts stores | 22 |
| 6.5.7 | Disinfectant store rooms | 22 |
| 7 | Requirements for baths and pools | 22 |
| 7.1 | General | 22 |
| 7.2 | Diving pools | 22 |
| 7.3 | Swimming pools | 22 |
| 7.4 | Variable depth pools | 23 |
| 7.5 | Artificial wave pools | 23 |
| 7.6 | Pools for non-swimmers | 23 |
| 7.7 | Paddling pools | 23 |
| 7.8 | Pools with water slides and water slides having a shallow exit | 23 |
| 7.9 | Small-scale pools | 23 |
| 7.10 | Exercise pools | 23 |
| 7.11 | Therapeutic pools | 24 |
| 7.12 | Walk-through pools | 24 |
| 7.13 | Spa pools (bubbling pools) | 24 |
| 7.13.1 | General | 24 |
| 7.13.2 | Spa pools (bubbling pools) (for restricted access) | 24 |
| 7.13.3 | Spa pools (bubbling pools) (for open access) | 24 |
| 7.14 | Warm-water pools | 25 |
| 7.15 | Cold-water plunge pools | 25 |
| 7.16 | Treading pools | 25 |

| | | |
|--------|--|----|
| 7.17 | Additional water circulation or air-injection systems for all types of pool | 25 |
| 8 | Nominal load, load capacity factor, minimum overflow and flow rates | 25 |
| 8.1 | General | 25 |
| 8.2 | Flow rates | 26 |
| 8.2.1 | Nominal load, load capacity factor and treatment flow rate | 26 |
| 8.2.2 | Minimum overflow and pool flow rate | 26 |
| 8.3 | Calculations based on the water area of a pool | 27 |
| 8.4 | Calculations based on the pool volume | 27 |
| 8.5 | Calculations based on the nominal load of a pool | 27 |
| 8.5.1 | General | 27 |
| 8.5.2 | Special case for the rehabilitation of outdoor swimming pools: documented pollution load | 28 |
| 8.6 | Particular specifications | 28 |
| 9 | Hydraulic system requirements | 30 |
| 9.1 | General | 30 |
| 9.2 | Pool flow | 30 |
| 9.3 | Overflow edge | 31 |
| 9.4 | Overflow channel and grating | 31 |
| 9.5 | Water balancing tanks | 32 |
| 9.5.1 | Raw water tank | 32 |
| 9.5.2 | Backwashing water tank | 32 |
| 9.5.3 | Backwashing waste water tank | 32 |
| 9.5.4 | Balancing and storage tank volumes | 33 |
| 9.6 | Components which might cause hydraulic malfunction | 33 |
| 10 | Requirements for the water treatment facility | 33 |
| 10.1 | General | 33 |
| 10.2 | Filters | 34 |
| 10.2.1 | Fixed bed filters (rapid filters) | 34 |
| 10.2.2 | Ultrafiltration systems | 35 |
| 10.2.3 | Precoat filters | 35 |
| 10.3 | Machinery and accessories | 35 |
| 10.3.1 | Pumps | 35 |
| 10.3.2 | Flushing air fans | 35 |
| 10.4 | Screens | 36 |
| 10.5 | Pipework and accessories | 36 |
| 10.5.1 | Pipe sizing | 36 |
| 10.5.2 | Pipe materials | 36 |
| 10.5.3 | Valves | 37 |
| 10.6 | Filling water pipe | 37 |
| 10.7 | Instrumentation and monitoring devices | 37 |
| 10.7.1 | Measuring instruments | 37 |
| 10.7.2 | Water sampling valves | 37 |
| 10.8 | Corrosion protection | 38 |
| 10.8.1 | General | 38 |
| 10.8.2 | Active corrosion protection | 38 |
| 10.8.3 | Passive corrosion protection | 38 |
| 10.9 | Inspection of corrosion protection system | 38 |
| 11 | Chemical feed requirements | 38 |
| 11.1 | General | 38 |
| 11.2 | Chlorine dosage control | 39 |
| 11.2.1 | Chlorination | 39 |
| 11.2.2 | Disinfectants | 40 |
| 11.2.3 | Chlorinators | 40 |
| 11.3 | Dosing of chemicals to adjust the pH value and acid neutralizing capacity | 42 |
| 11.3.1 | General | 42 |
| 11.3.2 | Chemicals used to adjust the pH value and acid neutralizing capacity | 42 |
| 11.4 | Automatically controlled dosage | 43 |
| 11.4.1 | Sampling of test water from pools or baths | 43 |

| | | |
|--------|---|----|
| 11.4.2 | Measurement of chlorine content | 44 |
| 11.4.3 | Control device | 44 |
| 12 | Process combinations for pool and bath water treatment | 44 |
| 13 | Operation of swimming and bathing facilities | 45 |
| 13.1 | General | 45 |
| 13.2 | Cleaning | 45 |
| 13.2.1 | General | 45 |
| 13.2.2 | Pools and baths | 45 |
| 13.2.3 | Overflow channel | 46 |
| 13.2.4 | Water balancing tanks | 46 |
| 13.3 | Testing the facilities | 46 |
| 13.4 | Filter backwashing | 47 |
| 13.4.1 | General | 47 |
| 13.4.2 | Single-layer and multi-layer filters | 47 |
| 13.4.3 | Precoat filters | 47 |
| 13.4.4 | Ultrafiltration systems | 47 |
| 13.5 | Adding filling water | 48 |
| 13.6 | In-house monitoring and maintenance | 48 |
| 13.6.1 | General | 48 |
| 13.6.2 | Keeping a logbook | 48 |
| 13.6.3 | Inspection and care of plant, machinery, equipment and pool linings | 50 |
| 13.6.4 | Servicing and preventive maintenance | 50 |
| 13.7 | Additional requirements for the operation of spa pools (bubbling pools) having a separate treatment facility | 51 |
| 13.8 | Shutdown and re-commissioning | 51 |
| 13.8.1 | General | 51 |
| 13.8.2 | Outdoor swimming pools | 51 |
| 13.8.3 | Spa pools (bubbling pools) | 52 |
| 13.9 | Special operating considerations | 52 |
| 13.9.1 | Partial load operation outside of pool opening hours | 52 |
| 13.9.2 | Partial load operation with load-dependent regulation during pool opening hours | 52 |
| 13.9.3 | Algal growth | 52 |
| 13.9.4 | Operation of additional water circulation systems | 53 |
| 13.10 | Accident prevention | 53 |
| 14 | Monitoring water quality during operation | 53 |
| 14.1 | Frequency of checks | 53 |
| 14.2 | Sampling points and sampling | 53 |
| 14.3 | Scope of testing | 54 |
| 14.4 | Evaluation and measures to be taken if legionella are detected | 57 |
| 15 | Acceptance conditions | 60 |
| | Bibliography | 61 |