

# Recommendations for the planning, construction and maintenance of private swimming and natural pools

From the RWA rulebook committee "*Private Schwimm-/Badeteiche*" (Private Swimming/Natural Pools)

By arrangement with the working group "*Private Schwimm-/Badeteiche*" (Private Swimming/Natural Pools)

## User information

Anybody is free to consult and use the FLL technical rules. An obligation to apply the rulings contained herein may arise from legal or administrative regulations, contracts or other legal bases.

The FLL bodies of rules and regulations are the result of shared technical/scientific work which is performed on an unsalaried (i.e. voluntary) basis. The fundamental principles and rules which are applied when the technical rules are drawn up ensure that they are professional.

FLL bodies of rules and regulations are an important source of information which will help users to conduct themselves professionally in normal applications. However, it would be impossible for them to cover every specific application that may occur. In some situations, more far-reaching or more restrictive measures may be necessary. Nonetheless, they form a benchmark for proper technical conduct. This benchmark is also significant in terms of the legal system.

FLL bodies of rules and regulations are intended to be adopted as the "approved rules of technique".

By applying the FLL bodies of rules and regulations, nobody can deprive himself of his responsibility for his own actions. In this respect, everyone acts at his own risk.

Anybody who discovers an error or misinterpretation in an FLL body of rules and regulations which could result in incorrect application is asked to inform the FLL about this immediately so that any faults can be remedied.

Modal auxiliary verbs (e. g. should, shall, must) and their informational value play a special role in terms of clear understanding of the body of rules and regulations. Notes are contained in DIN 820 "*Normungsarbeit*" (standardization principles).

<b>Preface</b>	.....	<b>5</b>
<b>1</b>	<b>Scope of validity, purpose</b> .....	<b>7</b>
<b>1.1</b>	<b>Scope of validity</b> .....	<b>7</b>
<b>1.2</b>	<b>Purpose</b> .....	<b>7</b>
<b>2</b>	<b>Definition of terms</b> .....	<b>8</b>
<b>3</b>	<b>Legal and normative principles</b> .....	<b>11</b>
<b>3.1</b>	<b>Acts, ordinances</b> .....	<b>11</b>
3.1.1	Federal level.....	11
3.1.2	Regional level ( <i>Länder</i> ).....	12
<b>3.2</b>	<b>DIN standards, German construction award and contract procedures (VOB)</b> ....	<b>12</b>
<b>3.3</b>	<b>Guidelines, fact sheets and worksheets</b> .....	<b>13</b>
<b>4</b>	<b>Biology and chemistry of a natural pool</b> .....	<b>14</b>
<b>4.1</b>	<b>Limnological principles</b> .....	<b>14</b>
<b>4.2</b>	<b>Significance of biocenoses</b> .....	<b>14</b>
<b>4.3</b>	<b>Significance of the nutrients nitrogen and phosphorus</b> .....	<b>15</b>
<b>4.4</b>	<b>Importance of hygiene</b> .....	<b>16</b>
<b>4.5</b>	<b>Importance of use intensity</b> .....	<b>17</b>
<b>4.6</b>	<b>Notes on the fill-up water</b> .....	<b>18</b>
<b>5</b>	<b>Water purification, water circulation</b> .....	<b>19</b>
<b>5.1</b>	<b>Water purification</b> .....	<b>19</b>
5.1.1	General information.....	19
5.1.2	Biological techniques .....	19
5.1.2.1	Plant-based (predominantly macrobiological) techniques.....	20
5.1.2.2	Soil-based (predominantly microbiological) techniques .....	20
5.1.3	Physical and/or chemical techniques .....	21
<b>5.2</b>	<b>Water circulation</b> .....	<b>21</b>
<b>6</b>	<b>Types of natural pools</b> .....	<b>22</b>
<b>7</b>	<b>Planning, description of services</b> .....	<b>30</b>
<b>7.1</b>	<b>General information</b> .....	<b>30</b>
<b>7.2</b>	<b>Site criteria</b> .....	<b>30</b>
7.2.1	Surrounding conditions – location of the property .....	30
7.2.2	Size of property .....	30
7.2.3	Location within the property .....	30
7.2.4	Subsoil .....	31
7.2.5	Legal duty to maintain safety, bounds.....	32
<b>7.3</b>	<b>Space requirements</b> .....	<b>33</b>
7.3.1	Swimming area .....	33
7.3.2	Regeneration area .....	33
7.3.3	Supplementary areas .....	33

<b>7.4</b>	<b>Equipment elements.....</b>	<b>33</b>
<b>7.5</b>	<b>Description of services .....</b>	<b>34</b>
<b>8</b>	<b>Building requirements.....</b>	<b>35</b>
<b>8.1</b>	<b>General information.....</b>	<b>35</b>
<b>8.2</b>	<b>Excavation.....</b>	<b>35</b>
<b>8.3</b>	<b>Separation of swimming area and regeneration area .....</b>	<b>36</b>
<b>8.4</b>	<b>Sealing.....</b>	<b>36</b>
<b>8.5</b>	<b>Swimming area .....</b>	<b>37</b>
8.5.1	General information .....	37
8.5.2	Ground coverings .....	38
8.5.3	Formation of the waterside/pool edge .....	38
8.5.4	Entry and exit points, walkways, diving boards .....	38
<b>8.6</b>	<b>Regeneration area .....</b>	<b>39</b>
<b>8.7</b>	<b>Water circulation.....</b>	<b>39</b>
8.7.1	General information .....	39
8.7.2	Technical flow through the swimming area.....	39
8.7.3	Technical flow through the regeneration area .....	40
8.7.4	Pool overflow (emergency overflow).....	41
8.7.5	Depth extraction.....	41
8.7.6	Bottom drain .....	41
8.7.7	Water feed/water return .....	41
<b>8.8</b>	<b>Plants, planting work.....</b>	<b>42</b>
8.8.1	General information .....	42
8.8.2	Completion, status ready for acceptance inspection .....	43
8.8.3	Pre-maturity care of the plants.....	44
<b>9</b>	<b>Acceptance inspection, claims due to defects .....</b>	<b>45</b>
<b>9.1</b>	<b>Acceptance inspection of the building work .....</b>	<b>45</b>
<b>9.2</b>	<b>Claims due to defects.....</b>	<b>45</b>
<b>10</b>	<b>Maintenance .....</b>	<b>46</b>
<b>10.1</b>	<b>General information.....</b>	<b>46</b>
<b>10.2</b>	<b>Checks (inspection).....</b>	<b>46</b>
<b>10.3</b>	<b>Care.....</b>	<b>47</b>
<b>10.4</b>	<b>Maintenance of the structural objects and technical installations .....</b>	<b>49</b>
<b>10.5</b>	<b>Repairs.....</b>	<b>49</b>
	<b>List of references/bibliography .....</b>	<b>50</b>
	<b>Appendix (for information purposes) .....</b>	<b>53</b>
	<b>Appendix 1: Checklist for customer consultation .....</b>	<b>53</b>
	<b>Appendix 2: Biological processes for water purification (examples).....</b>	<b>56</b>
	<b>Appendix 3: Evaporation.....</b>	<b>57</b>
	<b>Appendix 4: Scientific information about cercaries .....</b>	<b>59</b>