آکـــــام استخر

کیفیت آب استخرهای شنا بر اساس استاندارد DIN آلمان

آکـــــام استخر
طراح و مجری سیستم های تصفیه استخرهای شنا و پارک های آبی

گرداورنده: مهندس امید شکوه
0912-5508969

Acknowledged rules of technology (DIN 19643)

- 1984 First engineering rules released(DIN 19643)
- 1989 First revision
- 1984 -89 Practical experience is gathered
- 1997 DIN 19643 part1, 2 and 3
- 1999 DIN 19643 part4
- 2000 DIN 19643 part5

DIN 19643 part1: Treatment of poolwater

General requirements

- Disinfection capacity:Reduction of 10^4 *P. aeruginosa in 30 sec*
- Chemistry:Reduction of organic substances by a dequate treatment
- Treatment: Combination of coagulation, filtration, oxidation, adsorption
- Fill-upwater: Generally drinking water quality

Maximum values:

- Fe 0.1 mg/l,
- Mn 0.05 mg/l
- $NH_4$2 mg/l
- P 0.005 mg/l

Requiremes for poolwater quality

Microbiology:

- *E. coli0 in 100 ml*
- *P. aeruginosa0 in 100 ml*
- Aerobic count 100 cfu/ ml
- Legionella0 in 1 ml/ 100 ml

Requirements for poolwater quality

Chemistry:

- pH 6.5 –7.6
- Nitrate Max. 20 mg/l above fill-up water
- $KMnO_4$-consumption Max. 3 mg/l above fill-up water
- Oxidation-reduction potential 750 -770 mV
- Free chlorine 0.3 –0.6 mg/l
- Combinedchlorine Max. 0.2 mg/l
- THMMax. 0.2 mg/l

Structural and technical requirements

- Materials may not influence the water treatment
- Water depth, necessary water area/ bather, nominal load sand necessary flow rates are listed
- 30 l fresh water/ day and bather are minimum
- Requirements for filter construction, disinfection and backwashing are defined
- Continuous and automatic dosing of disinfectant necessary
- Continuous measurement and automatic control technology for freechlorine, Ph and oxidation-reduction potential necessary

Further requirements

- Disinfectantsystems areclearlydescribed
- Technicaloperationof a poolisdescribed
- Controlpointsand monitoringparametersarelisted

DIN 19643 part2 -5: Process combinations

DIN 19643-2:

adsorption–coagulation–filtration-chlorine disinfection

DIN 19643 part2

- Adsorption: dissolved and colloidal substances adsorbon granular activated carbon after regulation of pH and acid capacity
- Coagulation: Coagulation with Al and Fe salts
- Filtration: Filtration with rapid filters or multiple layer filters
- Minimum time between two backwash cyles 24h Clear definitions for backwashing requirements Filtrate: no pathogens, turbidity max. 0.1 FNU, combined chlorine max. 0.2 mg/l, THM max. 0.02 mg/l, P max. 0.005 mg/l
- Chlorination:

Normal pools freechlorine 0.3 –0.6 m/l

Whirlpools 0.7 –1 mg/l

DIN 19643 part2 -5: Processcombinations

- DIN 19643-2: adsorption–coagulation–filtration–chlorine disinfection
- DIN 19643-3: coagulation-filtration-ozonation-sorpitive filtration-chlorine disinfection
- DIN 19643-4: coagulation–ozonation–multiple layer filtration–chlorine disinfection
- DIN 19643-5:coagulation–single layer filtration–adsorptionto activated carbon-chlorine disinfection

The German pool water philosophyrules of technology (DIN 19643)

1. Reduction of dissolved and colloidal substances as far as possible

4. Concentration of free chlorine as low as necessary to retain enough disinfection capacity

5. Only achievable by application of clearly defined treatment processes including sorption to activated carbon

3. Reduction of disinfection by-products as far as possible

2. Ensuringa good disinfection by maintaining the oxidation-reduction potential at 750 mV

آکـــــام استخر

با تشکر از توجه شما

https://t.me/Atlas_Abi
www.akamestakhr.ir
www.akamestakhr.com
Mobile: 09125508969-09120212235