SANS 241 : 2006 (Ed. 6)

DRINKING WATER

Quality Requirements

MICROBIOLOGICAL SAFETY REQUIREMENTS

1	2	3	4	5
Determinand	Unit	Allowable Compliance Contribution [a]		
		95% of samples, min.	4% of samples, max.	1% of samples, max.
		Upper Limits		
E.coli [b]	count/100 ml	Not Detected	Not Detected	1
Total Coliform Bacteria [c]	count /100 ml	-	-	-
Heterotrophic Plate Count [c]	count per ml	-	-	-

[a] The allowable compliance contribution shall be at least 95% to the limits indicated in column 3, with a maximum of 4% and 1% respectively, to the limits indicated in column 4 and column 5. The objective of disinfection should, nevertheless be to attain 100% compliance to the limits indicated in column 3.

[b] Definitive preferred indicator of faecal pollution.

[c] Only used as an alert indicator of possible problems.

PHYSICAL, ORGANOLEPTIC AND CHEMICAL REQUIREMENTS

1	2	3	4	5
Determinand	Unit	Class 1 (recommended operational limit)	Class II (max. allowable for limited duration)	Class II water consumption period,[a] max.
Physical and Organoleptic Requirements				
Colour (aesthetic)	mg/l Pt	<20	20–50	No Limit [b]
Conductivity at 25 deg.C (aesthetic)	mS/m	<150	150-370	7 years
Dissolved Solids (aesthetic)	mg/l	<1000	1000-2400	7 years
Odour (aesthetic)	TON	<5	5-10	No Limit [b]
pH Value at 25 deg.C (aesthetic/operational)	pH units	5,0-9,5	4,0-10,0	No Limit [c]
Taste (aesthetic)	FTN	<5	5-10	No Limit
Turbidity (aesthetic/operational/ indirect health)	NTU	<1	1-5	No Limit [d]

NOTE : Shaded areas indicate routine monitoring parameters

1	2	3	4	5
Determinand	**Unit**	**Class 1 (recommended operational limit)**	**Class II (max. allowable for limited duration)**	**Class II water consumption period,[a] max.**
Chemical Requiements – Macro-Determinands				
Ammonia (as N) (operational)	mg/l	<1,0	1,0-2,0	No Limit [d]
Calcium as Ca (aesthetic/operational)	mg/l	<150	150-300	7 years
Chloride (as Cl^-) (aesthetic)	mg/l	<200	200-600	7 years
Fluoride (as F) (health)	mg/l	<1,0	1,0-1,5	1 year
Magnesium (as Mg) (aesthetic/health)	mg/l	<70	70-100	7 years
Nitrate & Nitrite (as N) (health)	mg/l	<10	10-20	7 years
Potassium (as K) (operational/health)	mg/l	<50	50-100	7 years
Sodium (as Na) (aesthetic/health)	mg/l	<200	200-400	7 years
Sulphate (as $SO_4^=$) (health)	mg/l	<400	400-600	7 years
Zinc (as Zn) (aesthetic/health)	mg/l	<5,0	5,0-10	1 year
Chemical Requirements – Micro-Determinands				
Aluminium (as Al) (health)	µg/l	<300	300-500	1 year
Antimony (as Sb) (health)	µg/l	<10	10-50	1 year
Arsenic (as As) (health)	µg/l	<10	10-50	1 year
Cadmium (as Cd) (health)	µg/l	<5	5-10	6 months
Total Chromium (as Cr) (health)	µg/l	<100	100-500	3 months
Cobalt (as Co) (health)	µg/l	<500	500-1000	1 year
Copper (as Cu) (health)	µg/l	<1000	1000-2000	1 year
Cyanide (recoverable) (as CN^-) (health)	µg/l	<50	50-70	1 week
Iron (as Fe) (aesthetic/operational)	µg/l	<200	200-2000	7 years [b]
Lead (as Pb) (health)	µg/l	<20	20-50	3 months
Manganese (as Mn) (aesthetic)	µg/l	<100	100-1000	7 years
Mercury (as Hg) (health)	µg/l	<1	1-5	3 months
Nickel (as Ni) (health)	µg/l	<150	150-350	1 year
Selenium (as Se) (health)	µg/l	<20	20-50	1 year
Vanadium (as V) (health)	µg/l	<200	200-500	1 year

NOTE : Shaded areas indicate routine monitoring parameters

1	2	3	4	5
Determinand	**Unit**	**Class 1 (recommended operational limit)**	**Class II (max. allowable for limited duration)**	**Class II water consumption period,[a] max.**
Chemical Requirements – Organic Determinand				
Dissolved Organic Carbon (as C) (aesthetic/health)	mg/l	<10	10-20	3 months [e]
Total Trihalomethanes (health)	µg/l	<200	200-300	10 years [f]
Phenols (aesthetic/health)	µg/l	<10	10-70	No Limit [b]

[a] The limits for the consumption of Class II water are based on the consumption of 2 litres of water per day by a person of mass 70 kg over a period of 70 years. Columns 4 and 5 shall be applied together.

[b] The limits given are based on aesthetic aspects.

[c] No primary health effect – low pH values can result in structural problems in the distribution system.

[d] These values can indicate process efficiency and risks associated with pathogens.

[e] When dissolved organic carbon is deemed of natural origin, the consumption period can be extended.

[f] This is a suggested value because trihalomethanes have not been proven to have any effect on human health.

OPERATIONAL WATER QUALITY ALERT VALUES

1	2	3
Determinand	**Unit**	**Alert Value**
Turbidity	NTU	5
Residual Chlorine	mg/l	<0,5 [a]
Heterotrophic Plate Count [b]	count/ml	5 000
[Total] Coliform bacteria [c]	count/100 ml	10

[a] Dependent on network characteristics and chlorine demand. A residual of 0,5 mg/l applies to the waterwork's final water. The appropriate level in distribution system is 0,2 mg/l. Where other disinfectants are used, appropriate alert levels should be slected.

[b] Process indicator that provides information on treatment efficiency and after-growth in distribution networks.

[c] Indicates potential faecal pollution and provides information on treatment efficiency and after-growth.