



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		
<i>E.coli</i> ^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

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Determinand	Unit	Class 1 (recommended operational limit)	Class II (max. allowable for limited duration)	Class II water consumption period, ^a max.
Chemical Requirements – 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 <u>week</u>
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

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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
<p>^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.</p> <p>^b The limits given are based on aesthetic aspects.</p> <p>^c No primary health effect – low pH values can result in structural problems in the distribution system.</p> <p>^d These values can indicate process efficiency and risks associated with pathogens.</p> <p>^e When dissolved organic carbon is deemed of natural origin, the consumption period can be extended.</p> <p>^f This is a suggested value because trihalomethanes have not been proven to have any effect on human health.</p>				

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
<p>^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 selected.</p> <p>^b Process indicator that provides information on treatment efficiency and after-growth in distribution networks.</p> <p>^c Indicates potential faecal pollution and provides information on treatment efficiency and after-growth.</p>		

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