

KRANSPOORT

P.O. Box 7555
MIDDELBURG
1050

CHEMICAL ANALYSIS

Our Ref: KRA / 122 - 123/E /11/10

Date Received: 16 November 2010

Date Reported : 6 December 2010

Quantity Analyzed: 2

Attention: Mr. M. Schmidt

Attention: Mr. Frans Ellis

Analysis Results mg/l	Kranspoort Raw	SANS Standards -241 (2005)	
		Class I (recommended operational limit)	Class II (max. allowable for limited duration)
Total Dissolved Solids	54	< 1 000	> 1 000 - 2 400
Nitrate & Nitrite as N	0.18	< 10	> 10 - 20
Chlorides as Cl	9.0	< 200	> 200 - 600
Total Alkalinity as CaCO ₃	28		
Fluoride as F	<0.20	< 1.0	> 1.0 - 1.5
Sulphate as SO ₄	6.3	< 400	> 400 - 600
Total Hardness as CaCO ₃	25		
Calcium Hardness as CaCO ₃	13		
Magnesium Hardness as CaCO ₃	12		
Calcium as Ca	5.25	< 150	> 150 - 300
Magnesium as Mg	2.94	< 70	> 70 - 100
Sodium as Na	7.70	< 200	> 200 - 400
Potassium as K	1.04	< 50	> 50 - 100
Iron as Fe	0.11	< 0.20	> 0.20 - 2.0
Manganese as Mn	<0.01	< 0.10	> 0.10 - 1.0
Conductivity at 25° C in mS/m	8.4	< 150	> 150 - 370
pH-Value at 25° C	7.50	5.0 - 9.5	> 4.0 - 10.0
Turbidity as N.T.U.	9.40	< 1	> 1 - 5
Free Residual Chlorine Cl ₂	<0.1		
Total Residual Chlorine Cl ₂	<0.1		
Free & Saline Ammonia NH ₃ as N	<0.20		
Aluminium as Al	<0.01	< 0.30	> 0.30 - 0.50

All heavy metal analyses have been performed on filtered samples.

Tests marked with an asterisk * are not SANAS accredited

These results are related only to the items tested

QUALITY CONTROL CHECKS	
Cation Balance	0.87
Anion Balance	0.96
% Difference	-4.7
Measured TDS	54
Calculated TDS	50
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6

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		Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
<i>Selenium as Se</i>	<0.01	<0.02	>0.02 - 0.05
<i>Vanadium as V</i>	<0.01	<0.20	>0.2 - 0.5
<i>Total Organic Carbon (TOC)</i>	To Follow		
<i>Phenolic Compounds</i>	<0.005	<0.01	>0.01 - 0.07
<i>Cyanide as CN</i>	<0.01	<0.05	>0.05 - 0.07
<i>Cadmium as Cd</i>	<0.003	<0.005	>0.005 - 0.01
<i>Cobalt as Co</i>	<0.01	<0.50	>0.50 - 1.0
<i>Total Chromium as Cr</i>	<0.01	<0.10	>0.10 - 0.50
<i>Copper as Cu</i>	<0.01	<1.0	>1.0 - 2.0
<i>Antimony as Sb</i>	<0.005	<0.01	>0.01 - 0.05
<i>Nickel as Ni</i>	<0.01	<0.15	>0.15 - 0.35
<i>Lead as Pb</i>	<0.01	<0.02	>0.02 - 0.05
<i>Zinc as Zn</i>	0.02	<5.0	>5.0 - 10.0
<i>Arsenic as As</i>	<0.01	<0.01	>0.01 - 0.05
<i>Mercury as Hg</i>	<0.001	<0.001	>0.001 - 0.005
<i>Colour as Pt-Co*</i>	5	<20	>20 - 50
<i>Odour*</i>	No offensive odour		
<i>Taste*</i>	Acceptable Taste		

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P.L.G. UYS (M.D.)

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Analysis Results mg/l	Kranspoort Final	SANS Standards -241 (2005)	
		Class I (recommended operational limit)	Class II (max. allowable for limited duration)
Total Dissolved Solids	62	< 1 000	> 1 000 - 2 400
Nitrate & Nitrite as N	0.12	< 10	> 10 - 20
Chlorides as Cl	14	< 200	> 200 - 600
Total Alkalinity as CaCO ₃	26		
Fluoride as F	<0.20	< 1.0	> 1.0 - 1.5
Sulphate as SO ₄	6.9	< 400	> 400 - 600
Total Hardness as CaCO ₃	31		
Calcium Hardness as CaCO ₃	18		
Magnesium Hardness as CaCO ₃	13		
Calcium as Ca	7.28	< 150	> 150 - 300
Magnesium as Mg	3.11	< 70	> 70 - 100
Sodium as Na	8.43	< 200	> 200 - 400
Potassium as K	1.11	< 50	> 50 - 100
Iron as Fe	<0.01	< 0.20	> 0.20 - 2.0
Manganese as Mn	0.01	< 0.10	> 0.10 - 1.0
Conductivity at 25° C in mS/m	10.6	< 150	> 150 - 370
pH-Value at 25° C	7.38	5.0 - 9.5	> 4.0 - 10.0
Turbidity as N.T.U.	0.40	< 1	> 1 - 5
Free Residual Chlorine Cl ₂	3.0		
Total Residual Chlorine Cl ₂	4.0		
Free & Saline Ammonia NH ₃ as N	<0.20		
Aluminium as Al	<0.01	< 0.30	> 0.30 - 0.50

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QUALITY CONTROL CHECKS	
Cation Balance	1.01
Anion Balance	1.07
% Difference	-2.5
Measured TDS	62
Calculated TDS	57
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.5

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		Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
Selenium as Se	<0.01	<0.02	>0.02 - 0.05
Vanadium as V	<0.01	<0.20	>0.2 - 0.5
Total Organic Carbon (TOC)	To follow		
Phenolic Compounds	<0.005	<0.01	>0.01 - 0.07
Cyanide as CN	<0.01	<0.05	>0.05 - 0.07
Cadmium as Cd	<0.003	<0.005	>0.005 - 0.01
Cobalt as Co	<0.01	<0.50	>0.50 - 1.0
Total Chromium as Cr	<0.01	<0.10	>0.10 - 0.50
Copper as Cu	<0.01	<1.0	>1.0 - 2.0
Antimony as Sb	<0.005	<0.01	>0.01 - 0.05
Nickel as Ni	<0.01	<0.15	>0.15 - 0.35
Lead as Pb	<0.01	<0.02	>0.02 - 0.05
Zinc as Zn	0.03	<5.0	>5.0 - 10.0
Arsenic as As	<0.01	<0.01	>0.01 - 0.05
Mercury as Hg	<0.001	<0.001	>0.001 - 0.005
Colour as Pt-Co*	5	<20	>20 - 50
Odour*	No offensive odour		
Taste*	Acceptable Taste		

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CHEMICAL ANALYSIS : TRIHALOMETHANES

Date Received : 16 November 2010

Analysis Results - µg/l [ppb]	Kranspoort Raw	Kranspoort Final
<i>Bromoform</i>	< 5	< 5
<i>Chloroform</i>	< 5	114
<i>Bromodichloromethane</i>	< 10	22
<i>Dibromochloromethane</i>	< 2	< 2
<i>Trichloroethylene (TCE)</i>	< 5	< 5

ppb - parts per billion

STANDARDS 241 (2006)

<i>Class 1 (acceptable)</i>	< 200 µg/l
<i>Class 2 (max. allowable)</i>	200 - 300 µg/l

P.L.G. UYS (M.D.)