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Appendix A: Specifications of Chitosan

Item	Standard	Testing Result
Character	Straw Yellow Powder	Straw Yellow Powder
pH	3~6	5.3
Appearance of the Solution	Colorless Transparent	Colorless Transparent
DAC	≥90%	95.5%
Loss on Drying	≤10.0%	8.8%
Residue on Ignition	≤1.0%	0.78%
Viscosity	20-200 MPA.S	70MPA.S
Solubility	Over 99% in Water	Over 99.5% in Water

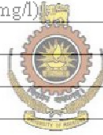


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Appendix B: Drinking Water Standards

Source: Sri Lanka Standards for potable water – SLS 614, 1983

PARAMETER	Highest Desirable level	Maximum permissible level
A. Physico-Chemical		
Electrical conductivity at 25°C µs/cm	750	3500
Total solids (mg/l)	500	2000
Colour (Hazen Units)	5	30
Taste	Unobjectionable	-
Odour	Unobjectionable	-
Turbidity (NTU)	2	8
Chloride (Cl ⁻) (mg/l)	200	1200
Fluoride (F ⁻) (mg/l)	-	1.5
Iron (Fe) (mg/l)	0.3	1
Manganese (Mn) (mg/l)	0.05	0.5
Copper (Cu) (mg. l)	0.05	1.5
Zinc (Zn) (mg/l)	5	15
Calcium (Ca) (mg/l)	100	240
Magnesium (Mg) (mg/l)	30	150
Total Phosphates (PO ₄ ³⁻) (mg/l)	-	2.0
Sulphate (SO ₄ ²⁻) (mg/l)	200	400
Total Alkalinity (as CaCO ₃) (mg/l)	200	400
Total Hardness (as CaCO ₃) (mg/l)	250	600
Free Ammonia (as NH ₃) (mg/l)	-	0.06
Nitrate (NO ₃ ⁻) (mg/l)	-	45
Nitrite (NO ₂ ⁻) (mg/l)	-	0.01
pH	7.0 – 8.5	6.5 – 9.0
Arsenic (As) (mg/l)	-	0.05
Cadmium (Cd) (mg/l)	-	0.005
Chromium (Cr) (mg/l)	-	0.05
Cyanide (CN ⁻) (mg/l)	-	0.05
Lead (Pb) (mg/l)	-	0.05
Mercury (Hg) (mg/l)	-	0.001
Selenium (Se) (mg/l)	-	0.01
Free Residual Chlorine (as Chlorine) (mg/l)	-	0.2
Polynuclear aromatic hydrocarbons (mg/l)	-	0.0002
Phenolic compounds (as phenolic OH) (mg/l)	0.001	0.002
Grease & Oil (mg/l)	-	1.0
COD (Chemical Oxygen Demand) (mg/l)	-	10
Radioactive materials		
Gross alpha radioactivity (pCi/l)	-	3
Gross beta radioactivity (pCi/l)	-	30
B. Bacteriological		
Total Coliforms / 100 ml	Absent in (i) 95% of the samples in a year and (ii) in any two consecutive samples	10
E.Coli/100ml	Absent	Absent



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Appendix C:

Calculation of Chitosan: Bitumen Ratio

CRS1 Emulsion

Bitumen percentage in emulsion as a fraction	=	0.64
Emulsifier percentage as a fraction	=	0.0023
Fraction of Chitosan replacement of emulsifier	=	0.8
Therefore, Chitosan percentage as a fraction	=	0.0023×0.8
	=	0.00184
Chitosan: Bitumen Ratio	=	0.00184:0.64
	=	<u>0.00288</u>

CSS1 Emulsion

Bitumen percentage in emulsion as a fraction	=	0.63
Emulsifier percentage as a fraction	=	0.009
Fraction of Chitosan replacement of emulsifier	=	0.2
Therefore, Chitosan percentage as a fraction	=	0.009×0.2
	=	0.0018
Chitosan: Bitumen Ratio	=	0.0018:0.63
	=	<u>0.00286</u>



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Appendix D: Specifications for Industrial Kerosene (P-012) - Ceylon Petroleum Corporation

Property/Test	Test (IP)	Method(ASTM-D)	Specifications
Appearance			Clear, bright and visually free from solid matter undissolved water at normal ambient temperature
Colour, visual			Yellow
Density @ 15° C kg/m ³	160	1298	775-840
DISTILLATION	123	86	
IBP ° C			Report
10% Vol. @ ° C			Maxc. 205
20% Vol. @ ° C			Report
50% Vol. @ ° C			Report
90% Vol. @ ° C			Report
End Point ° C			Max. 300
Residue % Vol.Max			1.5
Loss % Vol. Max.			1.5
COMBUSTION			
Smoke point mm		1322	19
Flash point °C	170	56	Min 38
COMPOSITION			
Acidity, total mg KOH/g	354	3242	0.05
Aromatic % Vol. Max.	156	1319	25.0
Olefin, % Vol. Max.	156	1319	5.0
Sulpher, total % mass Max.		4294	0.30
Sulpher, Mercaptantotal % mass Max.	342	3227	0.003
Or Doctor Test	30	4952	Negative
Cu Corrosion 2 hrs. @ 100 ° C	154	130	1



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