Analysis of limestone, water & instrument air

Lime-Stone:

Absorbent Name	LIMESTONE
Grain Size	Medium
Bond Index	13kWh/short-ton

Type of Absorbent		
	☑	Rock
	☐	Powder
	☐	Slurry
	☐	Others :

Feed Condition to Absorber			
	☐	Powder	
	☑	Slurry	30 wt%
	☐	Others :	

Absorbent Composition			Limestone			Note
			Design	Normal	Guarantee	
$CaCO_3$		wt%-d	79 (*1)	-	89 (*1)	
Dolomite($MgCa(CO_3)_2$)		wt%-d	0	-	0	
Inert	CaO	wt%-d	47-51.0 (*1)	-	-	
	MgO	wt%-d	0.9-2.0	-	-	
	Cl_2	wt%-d	<0.015	-	-	
	Al_2O_3	wt%-d	1.19-2.1	-	-	
	Si_2O_3	wt%-d	2.1-4.5	-	-	
	Fe_2O_3	wt%-d	0.45-1.0	-	-	
	TiO_2	wt%-d	<0.02	-	-	
	Na_2O	wt%-d	<0.16	-	-	
	K_2O	wt%-d	<0.01	-	-	
	P_2O_5	wt%-d	Traces	-	-	
	LOI	wt%-d	39.0-41.3	-	-	
	Total Sulphur	wt%-d	<0.1	-	-	
	Mn_2O_3	wt%-d	<0.12	-	-	
Density		kg/m³	1400			For volume
		kg/m³	1700			For torque, drive calculation and structual load calculation

N/D : Not detectable
(*1) Design condition limestone purity $CaCO_3$ 79%; Guarantee condition limestone purity $CaCO_3$ 89%

Process Water:

		CW Blowdown (*1)		
		Minimum	Normal	Maximum
Temperature at B.L.	deg.C		27	45
Pressure at B.L.	MPaG	-	-	-
pH	-	-	7.8-8.2	-
S.S.	mg/l	-	-	-
Composition				
Ca^{2+}	ppm CO_3Ca	-	153.6	-
Mg^{2+}	ppm CO_3Ca	-	42	-
Na^+	ppm CO_3Ca	-	75	-
K^+	ppm CO_3Ca	-		-
Oil and Grease	mg/l	-	-	-
N_2H_4	mg/l	-	-	-
HCO_3^-	ppm CO_3Ca	-	-	-
CO_3^{2-}	ppm CO_3Ca	-	-	-
Cl^-	ppm CO_3Ca	-	45	-
SO_4^{2-}	ppm CO_3Ca	-	118.5	-
Silica	mg/l	-	33	-
$To-NH_4$	mg/l	-	-	-
Fe^{2+}	mg/l	-	1	-
Cd	mg/l	-	-	-
NO_3^-	ppm CO_3Ca	-	-	-
B	mg/l	-	-	-
To-Inorganic	mg/l	-	-	-
Cu	microg/l	-	-	-
Hg	microg/l	-	-	-
Pb	microg/l	-	-	-
NO_2^-	microg/l	-	-	-
F^-	microg/l	-	-	-
Cr^{6+}	microg/l	-	-	-
Ni	microg/l	-	-	-
To-Zn	microg/l	-	-	-
BOD5	mg/l	-	-	-
COD Cr	mg/l	-	-	-
Total alkalinity	ppm CO_3Ca	-	107.1	-
Total Hardness	ppm CO_3Ca	-	-	-
Turbidity	NTU	-	60	-
Conductivity	micro m/m	-	-	-

(*1) Raw water Analysis is taken from tender documents (Part A-Section VI - Sub section II-A4)

Cooling Water

Water Source		DM Water					
		Available Value			Design Value		
		Minimum	Normal	Maximum	Minimum	Normal	Maximum
Supply Temp. at TP	deg.C	-	-	-	-	35	-
Return Temp. at TP	deg.C	-	-	-	-	45	-
ΔT	deg.C	-	-	-	-	10	-
Supply Press. at TP	MPaG	-	-	-	-	0.6(*1)	-
Return Press. at TP	MPaG	-	-	-	-	0.3(*1)	-

(*1) Assumed value

Instrument Air:

Air Source		-					
Dew Point (atmospheric)	deg.C	≦-40					
Oil Mist Contamination		☐ Contaminated					
		☑ Not Contaminated					

		Available Value			Design Value		
		Minimum	Normal	Maximum	Minimum	Normal	Maximum
Temperature at TP	deg.C	-	-	-	-	45(*1)	-
Pressure at TP	MPaG	-	-	-	0.55	-	0.8

(*1) In summer

Service Air

Air Source		-					

		Available Value			Design Value		
		Minimum	Normal	Maximum	Minimum	Normal	Maximum
Temperature at TP	deg.C	-	-	-	-	45(*1)	-
Pressure at TP	MPaG	-	-	-	0.55	-	0.8

(*1) In summer