

hyd-RO-dosetm WATER CHEMISTRY SUMMARY AT 75.0 % RECOVERY

WATER CHEMISTRY

| CATIONS (mg/L) | Raw | Feed | Product | Brine |
|------------------------------|--------|--------|---------|--------|
| Calcium(as Ca) | 107.00 | 107.00 | 0.285 | 427.14 |
| Magnesium(as Mg) | 34.00 | 34.00 | 0.136 | 135.59 |
| Barium(as Ba) | 0.0400 | 0.0400 | 0.00139 | 0.156 |
| Strontium(as Sr) | 1.20 | 1.20 | 0.00160 | 4.80 |
| Sodium(as Na) | 370.00 | 370.00 | 9.87 | 1450 |
| Potassium(as K) | 12.00 | 12.00 | 0.272 | 47.18 |
| Lithium(as Li) | 0.00 | 0.00 | 0.00 | 0.00 |
| Iron(as Fe) | 0.00 | 0.00 | 0.00 | 0.00 |
| Ammonia(as NH ₃) | 0.00 | 0.00 | 0.00 | 0.00 |
| Aluminum(as Al) | 0.00 | 0.00 | 0.00 | 0.00 |
| Boron(as B) | 0.00 | 0.00 | 0.00 | 0.00 |

ANIONS (mg/L)

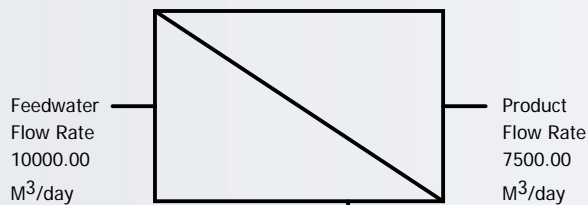
| | | | | |
|---|--------|--------|---------|--------|
| Chloride(as Cl) | 470.00 | 470.00 | 11.28 | 1846 |
| Sulfate(as SO ₄) | 34.00 | 34.00 | 0.544 | 134.37 |
| Dissolved CO ₂ (as CO ₂) | 9.61 | 8.09 | 8.09 | 8.09 |
| Bicarbonate(as HCO ₃) | 151.89 | 153.40 | 5.60 | 570.28 |
| Carbonate(as CO ₃) | 1.44 | 1.45 | < 0.001 | 31.91 |
| Silica(as SiO ₂) | 8.00 | 8.00 | 0.171 | 31.49 |
| Phosphate(as PO ₄) | 0.00 | 0.00 | 0.00 | 0.00 |
| H ₂ S (as H ₂ S) | 0.00 | 0.00 | 0.00 | 0.00 |
| Fluoride(as F) | 0.900 | 0.900 | 0.0252 | 3.52 |
| Nitrate(as NO ₃) | 496.98 | 496.98 | 13.25 | 1948 |

pH CONTROL FEED TO RAW WATER(mg/L)

93% Sulfuric Acid -0.399

SYSTEM SPECIFICATIONS

Used in Dosage and Feed Rate Calculations



OPERATING CONDITIONS

| | |
|-----------------|--------------|
| % Recovery | 75.00 |
| Hours per day | 24.00 |
| Days per week | 7.00 |
| Weeks per year | 52.00 |
| Load factor (%) | 95.00 |
| MEMBRANE TYPE: | Filmtec BW30 |

Brine Flow
2500.00
M³/day

SCALE POTENTIAL AND CONTROL

| SATURATION LEVEL | | Raw | Feed | Product | Brine |
|----------------------|--|------|------|---------|-------|
| Calcite | CaCO ₃ | 1.26 | 1.27 | 0.00 | 31.18 |
| Aragonite | CaCO ₃ | 1.10 | 1.11 | 0.00 | 27.16 |
| Witherite | BaCO ₃ | 0.00 | 0.00 | 0.00 | 0.01 |
| Strontianite | SrCO ₃ | 0.05 | 0.05 | 0.00 | 1.29 |
| Magnesite | MgCO ₃ | 0.31 | 0.31 | 0.00 | 7.88 |
| CaSO ₄ | Anhydrite | 0.01 | 0.01 | 0.00 | 0.06 |
| Gypsum | CaSO ₄ *2H ₂ O | 0.02 | 0.02 | 0.00 | 0.09 |
| Barite | BaSO ₄ | 0.14 | 0.14 | 0.00 | 0.86 |
| Celestite | SrSO ₄ | 0.00 | 0.00 | 0.00 | 0.02 |
| Tricalcium phosphate | Ca ₃ (PO ₄) ₂ | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydroxylapatite | Ca ₅ (PO ₄) ₃ (OH) | 0.00 | 0.00 | 0.00 | 0.00 |
| Fluorite | CaF ₂ | 0.00 | 0.00 | 0.00 | 0.06 |
| Silica | SiO ₂ | 0.07 | 0.07 | 0.00 | 0.27 |
| Brucite | Mg(OH) ₂ | 0.00 | 0.00 | 0.00 | 0.00 |
| Magnesium silicate | MgSiO ₃ | 0.00 | 0.00 | 0.00 | 0.06 |
| Ferric hydroxide | Fe(OH) ₃ | 0.00 | 0.00 | 0.00 | 0.00 |
| Siderite | FeCO ₃ | 0.00 | 0.00 | 0.00 | 0.00 |
| Strengite | FePO ₄ | 0.00 | 0.00 | 0.00 | 0.00 |

SIMPLE INDICES

| | | | | |
|----------------------|-------|-------|-------|------|
| Langelier Saturation | 0.14 | 0.15 | N/A | 1.61 |
| Ryznar Stability | 7.32 | 7.31 | N/A | 4.85 |
| Puckorius(Practical) | 7.30 | 7.28 | N/A | 4.42 |
| Larson-Skold | 5.50 | 5.45 | 3.59 | 5.27 |
| Stiff Davis Index | -0.04 | -0.04 | -5.65 | 1.50 |

PARAMETERS

| | | | | |
|-------------------|-------|-------|-------|-------|
| pH | 7.60 | 7.60 | 5.94 | 8.06 |
| Temperature(°C) | 25.00 | 25.00 | 25.00 | 25.00 |
| Calculated T.D.S. | 1702 | 1702 | 51.14 | 6658 |
| Calculated Cond. | 2578 | 2578 | 66.06 | 8605 |

DOSAGE

| | | |
|-----------------------|-------|------|
| ATMP 40%(mg/L) | 0.775 | 3.10 |
| kg/day to Feedwater | 7.36 | |

SYSTEM IDENTIFICATION

hyd-RO-dose Printout Example
Customization Available

Sample ID: 0
Report Date: 06-02-2009
Sample Date: 06-02-2009 at 1700

