

| Section              | Sub Section         | Test  | Standard#  | Document Name/Title  |
|----------------------|---------------------|---|--|--|
| Chemical             | Ch.-Soil            | acid soluble sulphate                               | <b>Bs 1377:part 3:1990</b>   | Determination of Acid Soluble Sulphate Content in Soil   |
|                      |                     | carbonate content                                   | <b>Bs 1377:part 36:1990</b>  | Determination of Carbonate Content Test in Soil  |
|                      |                     | Loss of ignition                                    | <b>Bs 1377:part 3:1990</b>   | Determination of Loss on Ignition  |
|                      |                     | organic matter                                      | <b>Bs 1377:part 3:1990</b>   | Determination of Organic Matter in Soil  |
|                      |                     | soil acid -s chloride                               | <b>Bs 1377:part 3:1990</b>   | Determination of Acid Soluble Chloride Content Test in Soil  |
|                      |                     | soil PH value                                       | <b>Bs 1377:part 3:1990</b>   | Determination of pH Value of Soil  |
|                      |                     | soil total salts                                    | <b>Bs 1377:part 3:1990</b>   | Total Dissolved Solid in Soil  |
|                      |                     | soil water -s sulphate                              | <b>Bs 1377:part 3:1990</b>   | Determination Water Soluble of Sulphate Content Test in Soil   |
|                      |                     | soil water-s chloride                               | <b>Bs 1377:part 3:1990</b>   | Determination of Water Soluble Chloride Content Test in Soil   |
|                      |                     | Potential Alkali Reactivity                         | <b>ASTM C 289</b>  | Determination of Potential Alkali Reactivity   |
|                      | Ch.-Agg.            | Agg acid -s chloride                                | <b>Bs 812 Part 117-1988</b>  | Determination of Acid-Soluble Chloride Salts in Aggregate  |
|                      |                     | Agg acid -s sulphate                                | <b>Bs 812 Part 118-1988</b>  | Determination of Acid Soluble Sulphate Content in Aggregate  |
|                      |                     | Agg- soundness                                      | <b>ASTM C 88</b><br><b>BS 812:Part 212</b>                                 | Soundness Of Aggregate By Use Of Sodium Sulphate or Magnesium Sulphate<br>Determination of Aggregate Soundness |
|                      |                     | Agg water -s chloride                               | <b>Bs 812 Part 117-1988</b>  | Determination of Water-Soluble Chloride Salts in Aggregate   |
|                      |                     | Agg- water-s sulphate                               | <b>Bs 812 Part 118-1988</b>  | Determination of Water Extract Sulphate Content in Aggregate   |
|                      |                     | Potential alkali                                    | <b>ASTM C289-94</b>  | Standard Test Method for Potential Alkali-Silica Reactivity of Aggregate (Chemical Method)                     |
|                      | Ch.-Concrete        | Aggregate- Orgamin Impurities                       | <b>ASTM C40</b>  | Test Method for Organic Impurities in Fine Aggregates for Concrete   |
|                      |                     | Calcium oxide                                       | <b>BS 1881:Part 124:1988</b>   | Determination of Calcium Oxide in Concrete   |
|                      |                     | chloride content                                    | <b>BS 1881:Part 124:1988</b>   | Determination of Chloride Content in Concrete  |
| <b>ASTM C1218</b>    |                     |   | Determination of Chloride Content by Water Extract                         |  |
| <b>ASTM C1152</b>    |                     |   | Determination of Chloride Content by Acid Extract                          |  |
| concrete AGG-content |                     | <b>BS 1881:Part 124:1988</b>                        | Determination of Cement and Aggregate Content in Concrete                  |  |
| insoluble residue    |                     | <b>BS 1881:Part 124:1988</b>                        | Determination of Insoluble Residue in Concrete                             |  |
| Loss of ignition     |                     | <b>ASTM C114/C113</b>                               | Fly ash Loss of Ignition   |  |
| organic impurities   |                     | <b>ASTM C-40-99</b>                                 | Standard Test Method for Organic Impurities in Fine Aggregate for Concrete |  |
| PH Value             |                     | <b>BS 3068-2-50</b>                                 | Determination of Water Ph  |  |
| soluble silica       |                     | <b>BS 1881:Part 124:1988</b>                        | Determination Of Soluble Silica in Concrete                                |  |
| sulphate content     |                     | <b>BS 1881:Part 124:1988</b>                        | Determination of Sulfate Content in Concrete                               |  |
| Fineness             |                     | <b>ASTM C430</b>                                    | Microsilica Fineness   |  |
| Chloride Migration   | <b>NT Build 492</b> | Chloride Migration                                  |  |  |
| Sodium & Potassium   | <b>BS 3068-2-51</b> | Determination of Sodium & Potassium Oxides in Water |  |  |

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|--------------------------|--|--------------------------|--|
| <b>Chemic Ch.-Cement</b> | Ammonium hydroxide                             | <b>BS 4550:-2:1970</b>   | Determination Of Ammonium Hydroxide Group Content in Cement  |
|                          | Calcium oxide                                  | <b>BS 4550- 2:1970</b>   | Determination of Total Calcium Oxide of Cement   |
|                          |  | <b>BSEN 196-2 C13.14</b> | Determination of calcium oxide by EDTA (alternative method)  |
|                          | chloride content                               | <b>BS 4550-2:1970</b>    | Determination of Chloride Content in Cement  |
|                          |  | <b>BESN 196-2</b>        | Determination of Chloride Content in Cement  |
|                          | insoluble residue                              | <b>BS 4550-2:1970</b>    | Determination of Insoluble Residue in Cement   |
|                          | iron oxide                                     | <b>BS 4550-2:1970</b>    | Determination of Iron Oxide in Cement  |
|                          | Lime content                                   | <b>BS 4550-2:1970</b>    | Determination of Free Lime Content in Cement   |
|                          | Loss of ignition                               | <b>BS 4550-2:1970</b>    | Determination of Cement Loss on Ignition   |
|                          |  | <b>BSEN 196-2 C7</b>     | Determination of loss of Ignition  |
|                          | Magnesia                                       | <b>BS 4550-2:1970</b>    | Determination of Magnesia in Cement  |
|                          | Physical Properties                            | <b>BS EN 197-1</b>       | Specification and conformity criteria of common cement   |
|                          | sulphuric anhydride                            | <b>BS 4550-2:1970</b>    | Determination of Sulfuric Anhydride Content in Cement  |
|                          | total silica                                   | <b>BS 4550-2:1970</b>    | Determination of Total Silica in Cement  |
|                          |  | <b>BSEN 196-2 C13.10</b> | Determination of Silica oxide  |
|                          | total sulphur                                  | <b>BS 4550-2:1970</b>    | Determination of Total Sulfur Content in Cement  |
|                          | Fineness                                       | <b>BSEN 196-6</b>        | Determination of Fineness  |
|                          | Strength Test                                  | <b>BSEN 196-1</b>        | Determination of Strength  |
|                          | Setting Time & Soundness                       | <b>BSEN 196-3</b>        | Determination of Setting time and Soundness  |
|                          | Taking & Preparing Sample                      | <b>BSEN 196-7</b>        | Method of taking & preparing sample of Cement  |
|                          | Normal Consistency                             | <b>ASTM C 187</b>        | Normal Consistency of Portland Cement  |
|                          | HCL acid & Ammonium Ch & precipitation         | <b>BSEN 196-2 C13.5</b>  | Decomposition with Hcl Acid and ammonium chloride and precipitation of silica (Alternative Method) |
|                          | Pure Silica                                    | <b>BSEN 196-2 C13.6</b>  | Determination of Pure Silica   |
|                          | Magnesium Oxide                                | <b>BSEN 196-2 C13.15</b> | Determination of magnesium oxide by EDTA (alternative method)                                      |
|                          | Aluminum Oxide                                 | <b>BSEN 196-2 C13.11</b> | Determination of Aluminum oxide  |
|                          | Ferric Oxide                                   | <b>BSEN 196-2 C13.10</b> | Determination of Ferric oxide  |
|                          | Total Alkalis                                  | <b>BSEN 196-2 C17</b>    | Determination of total Alkalis (Na <sub>2</sub> O+0.658 K <sub>2</sub> O)                          |
|                          | Pozzolanicity of Pozzolanics cements           | <b>BSEN 196-5</b>        | Determination the Pozzolanicity of Pozzolanics cements   |
|                          | Ch, Co <sub>2</sub> , Alkali Content of Cement | <b>BSEN 196-21</b>       | Determination of the chloride, carbondioxide and alkali content of cement                          |
|                          | Silicon Dioxide                                | <b>BSEN 196-2</b>        | Determination of Silicon Dioxide   |
|                          | Sulphate                                       | <b>BSEN 196-2</b>        | Determination of Sulphate  |
|                          | Insoluble Residue                              | <b>BESN 196-2</b>        | Determination of Insoluble Residue in Cement   |
|                          | Tricalcium Silicate                            | <b>BESN 196-2</b>        | Determination of Tricalcium Silicate   |

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|---------------------------------|---------------------------------|------------------------------------|---|--|
| <b>Chemic</b>                   | <b>Ch.-Cement</b>               | Dicalcium Silicate                 | <b>BESN 196-2</b>   | Determination of Dicalcium Silicate          |
|                                 |                                 | Tricalcium Aluminate               | <b>BESN 196-2</b>   | Determination of Tricalcium Aluminate        |
|                                 |                                 | Tetracalcium Aluminoferrite        | <b>BESN 196-2</b>   | Determination of Tetracalcium Aluminoferrite |
|                                 |                                 | Silicon Oxide                      | <b>BESN 196-2</b>   | Determination of Silicon Oxide               |
|                                 |                                 | Potassium Oxide                    | <b>BESN 196-2</b>   | Determination of Potassium Oxide             |
|                                 |                                 | Sodium Oxide                       | <b>BESN 196-2</b>   | Determination of Sodium Oxide                |
| <b>Ch.-Water</b>                | bacteria count                  | <b>SMEWW AWWA &amp; APHA: 2005</b> | Total bacteria Count in water   |  |
|                                 | chloride content                | <b>Bs 1377:part 3:1990</b>         | Determination of Chloride Content in Ground Water                             |  |
|                                 |                                 | <b>APHA/AWWA4500 Cl B</b>          | Determination of Chloride Content in Ground Water                             |  |
|                                 | Conductivity                    | <b>APHA/AWWA 20 Ed</b>             | Conductivity Value of Water   |  |
|                                 | HCL Acid concentration          | <b>Gravimetric method</b>          | Determination of Acid concentration by titration                              |  |
|                                 | PH Value                        | <b>Bs 1377:part 3:1990</b>         | Water pH Value Test   |  |
|                                 |                                 | <b>APHA/AWWA 4500-H+B</b>          | PH Value  |  |
|                                 | Selenium                        | <b>USEPA 3005 A/6010C</b>          | Standard Test Method for the Examination of Water & Waste Water (Selenium-Se) |  |
|                                 | Specific Gravity                | <b>No Test Method</b>              | Specific Gravity of Water   |  |
|                                 | sulphate content                | <b>Bs 1377:part 3:1990</b>         | Determination of Sulfate Content in Ground Water                              |  |
|                                 |                                 | <b>APHA/AWWA 4500-SO4</b>          | sulphate content  |  |
|                                 | suspended solid                 | <b>Bs 1377:part 3:1990</b>         | Determination of Total Suspended Solid in Ground Water                        |  |
|                                 | total salts                     | <b>Bs 1377:part 3:1990</b>         | Determination of Total Dissolved Solid in Ground Water                        |  |
|                                 | Turbidity.                      | <b>SMWW-2130B</b>                  | Standard Test Method for the Examination of Water & Waste Water (Turbidity)   |  |
|                                 |                                 | <b>APHA/AWWA 2130 B</b>            | Turbidity   |  |
|                                 | Electrical Conductivity         | <b>APHA/AWWA 2510-B</b>            | Electrical Conductivity   |  |
|                                 | Total Solids                    | <b>APHA/AWWA 2540 B</b>            | Total Solids  |  |
|                                 | Total Suspended Solid           | <b>APHA/AWWA 2540 D</b>            | Total Suspended Solids  |  |
|                                 | Total Volatile Suspended Soilds | <b>APHA/AWWA 2540 D</b>            | Total Volatile Suspended Soilds   |  |
|                                 | Total Dissolved Solids          | <b>APHA/AWWA 2540 C</b>            | Total Dissolved Solids  |  |
| Total Volatile Dissolved Soilds | <b>APHA/AWWA 2540 C</b>         | Total Volatile Dissolved Soilds    |   |  |
| Seleable Solids                 | <b>APHA/AWWA A2540</b>          | Seleable Solids                    |   |  |
| Sludge Weight                   | <b>APHA, SM, 2710D, 2005</b>    | Sludge Weight                      |   |  |

| Chemical | Ch.-Water |                           |  |   |
|----------|-----------|---------------------------|--|---|
|          |           | Sludge Volume             | <b>APHA, SM, 2710D, 2005</b>                               | Sludge Volume   |
|          |           | Sludge Volume Index       | <b>APHA, SM, 2710D, 2005</b>                               | Sludge Volume Index                                     |
|          |           | Biochemical Oxygen Demand | <b>APHA/AWWA 21st Ed<br/>2005 Test-5210B &amp; 4500-OC</b> | Biochemical Oxygen Demand (BOD)                         |
|          |           | Chemical Oxygen Demand    | <b>APHA/AWWA 21st Ed<br/>2005 Test-5220 D</b>              | Chemical Oxygen Demand (COD)                            |
|          |           | Nitrogen                  | <b>APHA/AWWA 4500N</b>                                     | Total Kejedahl Nitrogen                                 |
|          |           |                           | <b>APHA/AWWA 4500 N<br/>Org</b>                            | Total Organic Nitrogen                                  |
|          |           |                           | <b>APHA/AWWA 21st Ed<br/>2005</b>                          | Ammonia Nitrogen  |
|          |           | Nitrate Nitrogen          | <b>APHA/AWWA 21st Ed<br/>2005, Test 4500-NO2D</b>          | Nitrate Nitrogen  |
|          |           | Oil & Grease              | <b>APHA/AWWA 5520 D</b>                                    | Oil & Grease  |
|          |           | Total Chlorine            | <b>APHA/AWWA 4500-CI G</b>                                 | Total Chlorine  |
|          |           | Residual Chlorine         | <b>APHA/AWWA 4500-CI I<br/>HACH Photometer</b>             | Residual Chlorine<br>Determination of Residual Chlorine |
|          |           | Chlorine                  | <b>APHA/AWWA 4500-CI B</b>                                 | Chlorine  |
|          |           | Phosphorous               | <b>APHA/AWWA 4500-P<br/>D&amp;C</b>                        | Phosphorous   |
|          |           | Phenol Conterations       | <b>APHA/AWWA 5530 B&amp;C</b>                              | Phenol Conterations                                     |
|          |           | Cyanide                   | <b>APHA/AWWA 4500-<br/>CNC&amp;E</b>                       | Cyanide   |
|          |           | Sulphide Content          | <b>APHA/AWWA 4500-S2 E<br/>or F</b>                        | Sulphide Content  |
|          |           | Fluoride                  | <b>APHA/AWWA 4500F</b>                                     | Fluoride  |
|          |           | Total Hardness            | <b>APHA/AWWA 2340-C</b>                                    | Total Hardness  |
|          |           | Magnesium Concentration   | <b>APHA/AWWA 3500-Mg<br/>B</b>                             | Magnesium Concentration by Calculation                  |
|          |           | Calcium                   | <b>APHA/AWWA 3500-Ca<br/>B<br/>APHA 3120/ICP</b>           | Calcium<br>Determination of Calcium                     |

|                         |                                |   |                             |
|-------------------------|--------------------------------|---|-----------------------------|
| <b>Chemic Ch.-Water</b> | Total Alkalinity               | <b>APHA/AWWA 2320-B</b>   | Total Alkalinity            |
|                         | Phonolphthalein Alkalinity     | <b>APHA/AWWA 2320-B</b>   | Phonolphthalein Alkalinity  |
|                         | Residul Pesticides             | <b>EPA 608<br/>APHA/AWWA 6200</b>   | Residul Pesticides          |
|                         | Organic Hydrocarbons           | <b>volaille Organic<br/>Compounds</b>   | Organic Hydrocarbons        |
|                         | Total Organic Carbons          | <b>APHA/AWWA 5310-B or<br/>C</b>  | Total Organic Carbon (TOC)  |
|                         | Total Silicates                | <b>APHA/AWWA 4500-<br/>SiO2-C</b>   | Total Silicates             |
|                         | Silicon, Aluminium             | <b>APHA/AWWA/3111 D,<br/>Direct Nitrous Oxide-<br/>Acetlene flames<br/>method (AAS)</b>   | Silicon, Aluminium          |
|                         | Heavy Metals<br>Concentrations | <b>APHA/SM/3120 B Heavy<br/>Metal Analysis by ICP<br/>APHA/SM/3110 B Heavy<br/>metal analysis by<br/>Atomic absorption<br/>Spectrometry</b> | Heavy Metals Concentrations |
|                         | Total Coliforms                | <b>APHA/AWWA 9222B &amp;<br/>9222D</b>  | Total Coliforms             |
|                         | Fecal Coliform                 | <b>APHA/AWWA 9222D</b>  | Fecal Coliform              |
|                         | E-Coli                         | <b>APHA/AWWA 9223 B&amp;G</b>   | E-Coli                      |
|                         | Nematodes                      | <b>WHO, Lab manual of<br/>parasitological and<br/>Bacteriological<br/>techniques, 1996</b>  | Nematodes (Helminth) Eggs   |
|                         | Microscopic Examination        | -   | Microscopic Examination     |
|                         | Sampling                       | <b>APHA/AWWA</b>  | Sampling                    |
|                         | Total Iron                     | <b>APHA 3120/ICP</b>  | Determination of Total Iron |
| Magnesium               | <b>APHA 3120/ICP</b>           | Determination of Magnesium  |                             |
| Sodium                  | <b>APHA 3120/ICP</b>           | Determination of Sodium   |                             |
| Nitrate                 | <b>HACH 8171</b>               | Determination of Nitrate  |                             |
| Total Bacteria Count    | <b>APHA 9215B</b>              | Determination of Total Bacteria Count   |                             |

**Chemic** **Ch.-Water** Enterocoocci  
Nitrite  
Floride  
Color  
**Ch.-Asphalt** PH Value

**APHA 9230C**  
**APHA/AWWA 21 Ed**  
**APHA/AWWA 21 Ed**  
**APHA/AWWA 21 Ed**  
**BS 2000 -488:2009**

Determination of Enterocoocci  
Determination of Nitrite  
Determination of Floride  
Determination of Color  
Determination of pH Value of bitumenious emulsions