GAF bottom ash

# COMMERCIAL TESTING & ENGINEERING CO.

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May 30, 2002

TENNESSEE VALLEY AUTHORITY
1101 Market Street PSC 1A
Chattanooga TN 37402
RENEE B. MERRELL

SAMPLE No.: 257747
SAMPLE TYPE: BOTTOM ASH
REMARKS: BOT

Date Received March 5, 2002
Analysis report no. 72-470144

| PROXIMATE ANALYSIS | As Received | Dry Basis |
|---|---|---|
| % Moisture | 0.23 | xxxxxx |
| % Ash | 98.00 | 98.23 |
| % Volatile | < 0.01 | < 0.01 |
| % Fixed Carbon | 1.76 | 1.76 |
| | 100.00 | 100.00 |
| Btu/lb | 765 | 767 |
| % Sulfur | 0.26 | 0.26 |
| MAF Btu/lb | 43333 | |

| ULTIMATE ANALYSIS | As Received | Dry Basis |
|---|---|---|
| % Moisture | 0.23 | xxxxxx |
| % Carbon | 1.19 | 1.19 |
| % Hydrogen | 0.05 | 0.05 |
| % Nitrogen | 0.29 | 0.29 |
| % Sulfur | 0.26 | 0.26 |
| % Ash | 98.00 | 98.23 |
| % Oxygen | xxxxxx | xxxxxx |
| | 100.00 | 100.00 |

| ANALYSIS OF ASH | % Weight Ignited Basis |
|---|---|
| Silica, $SiO_2$ | 50.24 |
| Alumina, $Al_2O_3$ | 19.80 |
| Titania, $TiO_2$ | 0.92 |
| Ferric Oxide, $Fe_2O_3$ | 16.36 |
| Lime, CaO | 7.83 |
| Magnesia, MgO | 1.67 |
| Potassium Oxide, $K_2O$ | 1.37 |
| Sodium Oxide, $Na_2O$ | 0.50 |
| Sulfur Trioxide, $SO_3$ | 0.35 |
| Phosphorous Pentoxide, $P_2O_5$ | 0.50 |
| Strontium Oxide, SrO | 0.11 |
| Barium Oxide, BaO | 0.29 |
| Manganese Oxide, $Mn_3O_4$ | 0.06 |
| Undetermined | 0.00 |
| Alks. as $Na_2O$, Dry Coal Basis | 1.38 |
| Base:Acid Ratio | 0.39 |
| T250 Temperature | 2422 |

| | |
|---|---|
| Silica Value | 66.02 |
| Type of Ash | BITUMINOUS |
| Fouling Index | 0.20 |
| Slagging Index | 0.10 |
| % MAF Fixed Carbon | 99.44 |
| % MAF Volatile | 0.56 |
| lb $SO_2$/mm Btu | 6.80 |
| lb Sulfur/mm Btu | 3.40 |
| % Air Dry Loss | 0.00 |
| As Received Net Sample Wt. | 159.20 g |

NQA ISO9002 REGISTERED COMPANY
Certificate No. 7061/1

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Denver Laboratory

MEMBER ACIL

F-465

Original Watermarked For Your Protection

TERMS AND CONDITIONS ON REVERSE