



Over the years, Specialty Minerals Inc (SMI) has used innovation to become a raw material supplier delivering value to its customers. We have acquired the latest laboratory equipment and perfected key testing methods for our glass customers.

We are making these same services available for commercial testing, which include a broad range of glass and raw material property testing methods required by glass manufacturers.

SMI's commitment to customers and performance excellence draws from the parent company, Minerals Technologies and sister companies Minteq International & The Pyrogenics Group.

Physical Glass Properties

- Liquidus Point Determination
- High Temperature Viscosity
- Iron Redox
 - via UV-Vis Spectrometer
- Trichromatic Color Measurement
 - via UV-Vis Spectrometer
- Glass Contact Angle Measurement

Melting Studies

- Hot Stage Melt Evaluation
- 9 Point Batch Melting Study
- Cullet Generation
- VOC Burn-Off

Batch & Raw Material Characterization

- Bulk Density Measurement
- Particle Size Distribution
 - Via Ro-Tap
- Decrepitation

Chemical Analysis

- Chemistry of Major Oxides
- Thermal Property Testing
 - TGA-DTA, TGA-DSC
- Phase Identification by XRD
- Phases identification relative to temperature by Thermal-XRD
- Modified Chemical Durability

Glass Defect Analysis

- Petrographic Analysis



2009 Estimated Price List

Analysis is customized per client's request.
Please request a quotation.

Liquidus Point Determination \$475 per sample

Tested in accordance with ASTM C829 Method B, determines the minimum temperature at which glass can be held for extended periods of time to inhibit crystal formation.

High Temperature Viscosity \$1,000 per sample

Measurement of viscosity vs. temperature above the softening point via ASTM C965 (2002) Method A.

Iron Redox Measurement \$250 per sample

Measured as a ratio of ferrous to ferric iron via UV-Visible spectrometer and calculated using the Bamford-Hudson equation.

Trichromatic Color Measurement \$250 per sample

Measured via UV-Visible spectrometer and reported as either L,a,b scale, X,Y,Z scale, or x,y,z scale.

Chemistry Determination of Major Oxides \$450 per sample

Determine composition of major oxides via X-Ray Fluorescence (XRF). Major oxides include: SiO₂, Al₂O₃, Fe₂O₃, TiO₂, CaO, MgO, SrO, Na₂O, K₂O, & LOI.

Modified Chemical Durability \$325 per sample

Tested in accordance with a modified version of ASTM C1285-02 Method B to determine the relative chemical durability and resistance of elemental leaching of a glass.

Thermal Characterization per quote

TGA-DTA - Scouting Runs to 1685°C

TGA-DTA - Quantitative testing to evaluate temperature of chemical and physical changes, monitor mass losses & assist phase identification

TGA-DSC - Enthalpy to 1500°C

Phase Identification per quote

Qualitative or semi-quantitative XRF analysis

Characterization vs. temperature to 1550°C by Thermal- XRF analysis

Bulk Density Measurement \$150 per sample

Tested via ASTM E727-02 Method B

Particle Size Distribution \$100 per sample

Sieve analysis performed via Ro-Tap and Standard U.S. sieves.

Tested in accordance with ASTM C136-06 in nest of up to eight (8) sieves.

Decrepitation \$200 per sample

Test to quantify loss of material due to ejection of particles as a result of volatility. Material being tested must have known LOI.

Loss On Ignition (LOI) \$100 per sample

Standard test to determine weight loss of volatile compounds, performed at 110°C or 1,000°C.

Petrographic Analysis \$250 per hour

Provide microscopic analysis to quantify and/or qualify glass defects. Use of cross polarized light.

Hot Stage Melt Evaluation \$1,200 per sample

Perform batch melting evaluation on a microscopic scale. Pictures taken every second during the melt and rendered into a time lapse video. Melt temperatures up to 1500°C.

Batch Melting Evaluation \$4,000 per batch

Nine (9) point Air/Gas melt evaluation to establish stone and seed dissolution rates and monitor melt dynamics of a glass batch formulation. Evaluation includes remixing of batch to ensure homogeneity and petrographic analyses of all dwell samples to establish dissolution rate graphs.

Rolling Segregation Testing \$350 per sample

Material handling test used to evaluate the potential for a mixed batch to segregate due to handling. Done via Ring Separation.

Flow Rate & Hang-up Testing \$400 per sample

Evaluation of material flow properties of powdered bulk solids. Tested via Johanson Indicizer[®].

Cullet Sample Generation \$400 per sample

Production of glass sample for secondary physical property testing. A 350-gram sample produced in either a natural gas or electric melting environment.

VOC Burn-Off \$100 per sample

900°C heating cycle to remove binders from finished goods fiberglass samples.

Glass Contact Angle Measurement \$650 per sample

Test to evaluate surface tension of molten glass on a platinum surface, simulating the pulling of a fiber through a bushing.

Multiple Sample Discounts

6-10	5% Discount
11-20	10% Discount
21-40	15% Discount
3-12 month contracts	per quote

Rush Analyses (call for availability)

3-5 Day turnaround	100% Premium
24-48 hour turnaround	200% Premium

Analysis is customized per client's request and sample type. Please request a quotation



ANALYTICAL SERVICES

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