

Glass production – analysis of glass, cullet and raw materials

hrl: provides expert chemical-analysis services to support glass production. The analysis services help clients to maintain critical quality control at each stage of production. Analysis can be used to determine characteristics:

- of raw materials
- as raw materials are mixed, become molten in a furnace, and glass products are formed
- as part of inspecting the final product.

hrl: provides analysis of:

- major elements including sodium and calcium oxides, silicon dioxide and boron trioxide
- minor elements including magnesium, aluminum, potassium and barium oxides along with titanium dioxide
- glass colouring agents ferric and chromium oxides
- trace elements including lead, cadmium oxide, mercury, arsenic trioxide and zirconium dioxide.

Challenges

Glass producers face several challenges in maintaining the quality that is critical to achieve efficient production and produce to specification products. Maintaining optimum production requires constant quality control of incoming material, during production, and of the final product. Specific challenges include:

- knowing the chemical composition of raw materials to be able to calculate the batch-furnace load to ensure the finished glass has the correct chemical composition
- meeting the extremely tight specifications glass production requires to ensure successful manufacturing
- controlling the chemical composition that determines the key production viscosity points
- determining that the glass produced meets, exactly, required/specified properties and qualities.

Solutions

hrl: has developed expert chemical-analysis procedures. The service provides glass producers with high quality analysis of the chemical composition of the raw materials they use, and the glass products they produce. Specific service procedures include:

- dedicated sample preparation for raw-material and glass samples



hrl: provides expert chemical analysis services to support glass production

- using a wide range of certified reference materials and internal control samples to calibrate instruments
- employing a highly specialised calibration model where the complete matrix composition is measured simultaneously
- measuring control samples with each batch of analyses; keeping control charts up-to-date
- comparing values to historic values to detect anomalies.

hrl: expert glass-analysis services are available to support producers of an extensive range of finished glass products including:

- soda-lime glass used to produce container and float glass, drinkware and glass beads for road marking

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expertise in action

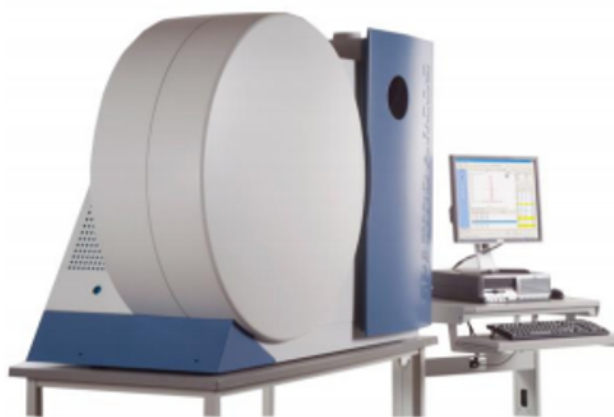
- borosilicate glass
- scientific and quartz glass
- ceramic glass
- fibreglass insulation products.

Case Study

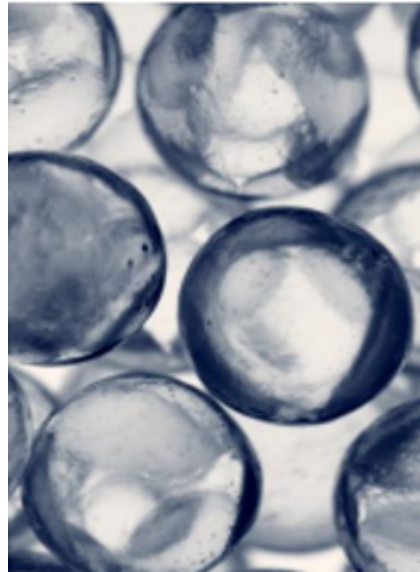
Understanding the qualities of the raw material they use is critical in enabling glass producers to run their plant efficiently, and to meet specified quality standards in the products they make. Producers also need to know that the products they make meet their client's requirements.

hrl: provides glass producers with raw material, process and product analysis services that are accurate and precise. The services draw on a wide variety of international certified reference materials, along with internal control standards, to ensure optimum analysis.

Clients benefit through access to expert material and product analysis that draws on the long-term stability of internal control samples and on replicated values – samples are prepared and tested in quadruplicate – to detect outlier values.



Photograph courtesy of SPECTRO Analytical Instruments GmbH



hrl: supports producers of an extensive range of finished glass products

CP-OES (Inductively Coupled Plasma Optical Emission Spectrometer) as used by hrl: for glass and raw material analysis

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The company's NATA Accredited Laboratories number is 561.

HRL Technology Group's ISO 9001 Quality Management is certified by BSI under certificate FS605116

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