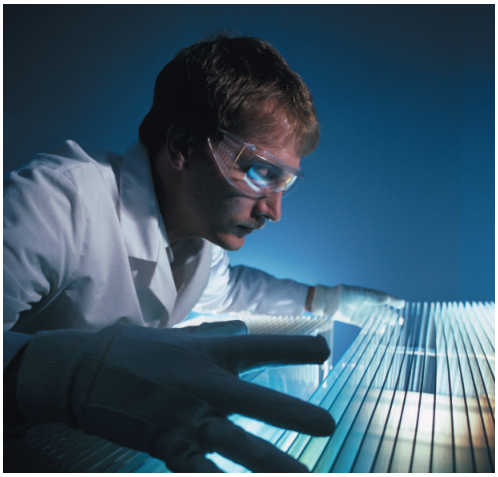
G.James is glass

Future Materials
Technology for Competitive Advantage



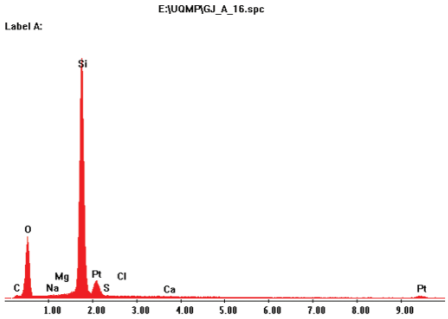
G.James Glass manufactures tinted, laminated, double glazed and other specialized glasses for the building industry.

The raw material or "feedstock" for these specialized glasses is raw glass, which G.James Glass sources from other glass manufacturers. Prior to creating the specialised effects this glass must be toughened, which is done by placing the glass in a furnace for heat treatment.

Inside the furnace, the glass panels are rolled backwards and forwards on extremely even, 3 metre long rollers at temperatures of 700 °C. The problem started when unusual stains started appearing on the surface of the heat treated glass.

The contaminant could have originated from a number of sources: furnace refractory; ceramic roller breakdown; feed stock impurity or breakdown; or heating element failure. Any of which would be catastrophic from a production and financial standpoint.

Overcoming contamination and production delays.



Electron Dispersion Spectroscopy (EDS)

A focused beam of electrons is rastered across a sample surface and synchronized with the raster of a cathode ray tube. The secondary electrons or back scattered electrons produced are detected and used to modulate the brightness of the CRT. The stored signal is then a detailed map of the sample surface, generating an SEM image.

Since the electron beam also generates the mission of x-rays characteristic of the elements present, energy dispersive analysis of the x-rays provides a means of elemental identification. Elemental analysis using energy-dispersive spectroscopy (EDS) (also called EDX, or EDXA, \for energy-dispersive x-ray analysis) has been shown to be useful in the characterization of materials by providing qualitative data on their elemental composition, with the potential to also attain quantitative data.

If the rollers were the source of the contamination, replacement would require an expensive multi week shut down, resulting in at least a cost throughout the company in the order of $100Ks per day.

Initially, Future Materials' University of Queensland Facility used a scanning electron microscope, which was able to demonstrate that there was contaminant on a roller. This indicated that something was there, however it could not confirm the source of the contamination as being the rollers themselves.

Then, using an even more sophisticated analysis with Electron Dispersion Spectroscopy (EDS), it was identified that the contaminant on the rollers was not refractory or metal based. Further investigation indicated that the contaminant was linked to the breakdown of feed stock into particulates within the furnace. Without such instrumentation, identifying the cause of the contamination would have been difficult and time consuming due to the physical similarities and appearances of the potential contaminant sources.

The identification of degraded glass as the contaminant, lead G.James to establish an improved maintenance protocol for the routine cleaning of fracture glass from its furnaces. Upon implanting this protocol there have been NO incidences of contaminated related product quality issues.

Many of G.James glass products rely on the toughening process in their production. Thus it was vital to G.James for the furnace to be operational again. A loss in production would quickly relate to a loss in market share and customer confidence in G.James, and its products.

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