

These Testing Times

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The Product Performance Department of Glass Technology Services Ltd (GTS), the UK's leading technical glass solutions provider, has a long-standing reputation, built up over decades, in physical testing and fractography across the range of all glass applications including the flat glass sector.

There are various applications using the three main types of flat glass – annealed, laminated and heat strengthened/toughened – by our customers which have been tested for conformance to specification and if there is product failure then that's when analysis of the breakage can determine if it's due to product failure, misuse or some other unforeseen factor.

“Typically, analysis of breakages” says Matt Roberts, Principal Technologist and Product Performance Manager, “have been requested by a variety of public and private companies in the automotive, marine, insurance, building/construction and architectural sectors as well as local authorities and other public bodies, including police authorities when undertaking legal and forensic work. In addition to architectural glass, other areas include kitchen unit doors, splashbacks and counters, sinks, oven doors, shower screens, boat windshields; I could say the list is endless.

“The team has dealt with buildings ranging through houses, high-rise buildings, office blocks to penthouse apartments and high street banks; we have covered windscreens – it is very important that automotive glass has no defects for safety reasons - roof lights, swimming pool enclosures and undertaken work in respect of insurance claims. However, all analyses we carry out for our customers are treated with the utmost confidentiality so I am actually unable to specify or single out any one customer.

“Today's architects and vehicle designers are using larger surface areas of glass than ever before. Glass demand has grown – and is growing – at around 3.9% per annum globally. This is not just driven by economic growth but is tied together with safety issues, noise reduction and energy conservation.”

Where possible, use of British and International Standards, building regulations and good practice guidelines are applied. However, trends in design, aesthetics and specification have seen an emphasis on increased glass facades and roofing to maximise daylight and the introduction of the L Regulations has seen an increase in low emissivity glass. Low quality glass can lead to problems ranging from poor performance to serious personal injury.

“We have undertaken,” says Matt, “assessments of flat glass” which have been carried out where uncertainty exists with regard to product quality, where tests not only determine the strength of the glass but are tailored as much as possible to consider the issues that caused the initial concern or complaint.”

The GTS physical testing laboratory can cover strength tests, stress analysis, and has a range of equipment including optical microscopy techniques for detailed analysis and reporting. Other tests include bend testing, drop impact testing, scratch testing and

fragmentation testing, combined with services such as colour measurement, defect assessment, compositional determination and design evaluation.

Matt explains, "Our laboratory has a wide range of analytical techniques that we can use to diagnose problems. For instance, unwelcome failure due to nickel sulphide inclusion, or any other foreign material for that matter, can be confirmed using our Scanning Electron Microscope.

"It is also true to say that glass usage is increasing in our daily lives and utilised in more diverse applications; this in itself brings about ever more ways for problems to occur requiring expert opinion. We see architectural features such as glass arched roofs, stairs, canopies, kitchen worktops and splashbacks, the use of coloured glass in buildings and partition walls, and recently I saw in a television programme featuring new style interiors a whole bathroom, including the bath and toilet, made completely out of glass. There are even awards now for the most creative use of laminated glass in a building."

GTS tests hundreds of glass samples every day and in most areas of glass usage including architectural, automotive, scientific equipment, development of new products, consumer goods, product recalls and other applications. It is frequently asked to act independently to establish cause, acting as expert witnesses – and are registered with the Law Society – providing courts with impartial advice as to how and why glass has behaved in certain situations that may have led to failure, loss or injury. It has also become a regular arbiter between supplier and user.

Matt continues, "In most cases complaints are dealt with between supplier and customer, either through insurance, warranty or goodwill. But, when a recurring problem just won't go away, or significant expense is involved in replacement, it is often prudent to determine the true nature of glass failure prior to lightening the wallet. In such cases, GTS Product Performance can supply consultancy services to determine the evidence in order to resolve problems.

"Indeed, the breadth of our consultancy services across all sectors of the glass industry allows us to continually diversify, providing new and novel services as and when new enquiries arise as well as making the world a safer place."

Although UK-based, GTS has a regular global clientele of over 500 companies and annually provides over 1,000 solutions to technical problems along the whole glass supply chain. It has experts, not just in the field of product performance, but also in melting, batch chemistry, furnace operation, glass forming and production, quality and inspection and emissions and pollution control.

Besides Matt, there are five dedicated staff making up his team in Product Performance and these are backed up by the rest of the company comprising a further 22 expert technical staff and scientists specialising in all aspects of glass technology.

If you are looking for the assistance of glass experts, please contact the Product Performance Department, Glass, Technology Services, 9 Churchill Way, Chapeltown, Sheffield S35 2PY. Tel: 0114 290 1801; Fax: 0114 290 1851; E-mail: pp@glass-ts.com; Web: www.glass-ts.com