



LIQUIDUS TEMPERATURE

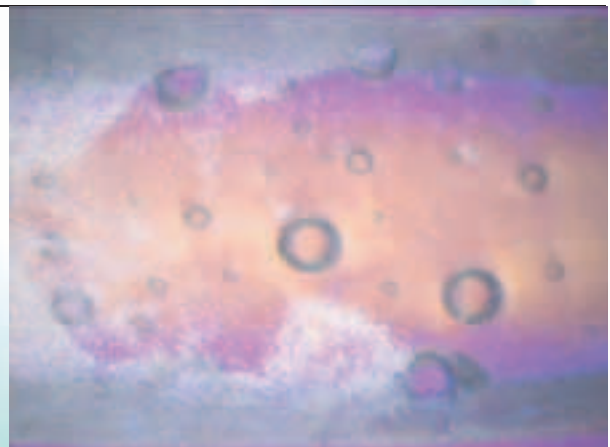
Glass Technology Services Ltd. is an independent laboratory providing a comprehensive range of services related to glass manufacture and use. Our services are backed by experienced, multi-disciplinary staff specialising in all aspects of glass technology.

The liquidus temperature of glass is the temperature above which no crystals can exist. Prolonged heat treatment of most glasses can lead to crystallisation if the temperature is not controlled properly. In glass manufacture this can be disastrous, so knowledge of the liquidus temperature is vital.

This test is carried out using a temperature gradient furnace. The glass is placed in a platinum or ceramic boat within the gradient furnace and held for the required time. Test times are tailored to suit the sample, and can vary between several hours and several days depending upon customer requirements. The temperature profile through the furnace is monitored, so that once the boat is removed and the glass is allowed to cool, the temperature profile across the sample is known. Observation of the sample by polarised-light optical microscopy, as shown in the picture, allows determination of the liquidus temperature of the glass and identification of the primary crystalline phase if required.

LIQUIDUS TEMPERATURE MEASUREMENT CAN GIVE ME:

- Liquidus Temperature
- Primary Phase Identification
- Rapid turnaround service available
- GTS also run a training course specifically for liquidus temperature determination



Measurements of liquidus temperature have regularly been made for many of our customers. These may be problems related to crystals forming during changes in production, or in the fibreglass industry, where the drawing process is interrupted by fibre breakage caused by devitrification in the glass. In one specific case, a customer needed to investigate the effects of changes to their glass batch composition on melting and processing behaviour before implementing these changes in full-scale production. Liquidus Temperature measurements were very useful as they identified significant changes in the liquidus temperature of the new glass when compared with the old glass, which directly impacted upon manufacturing conditions. GTS assisted the customer in reformulating their glass as a result of obtaining this invaluable information on the liquidus temperature.

RELATED SERVICES:

- Dilatometry - For thermal expansion, glass transition values
- Differential Thermal Analysis (DTA) - For batch reactions, phase changes, glass transition values
- Littleton Softening Point - For ASTM standard method C338 and equivalents
- High Temperature Viscosity - For measurement of the viscosity-temperature curve
- High Temperature Electrical Measurements – For high temperature resistivity

If you would like to know more about these, our other services, or any other aspect of glass technology please contact us.

Glass Technology Services,
9 Churchill Way,
Chapelton,
Sheffield, S35 2PY

Tel: +44 (0)114 290 1801
Fax: +44 (0)114 290 1851
Email: info@glass-ts.com
www.glass-ts.com