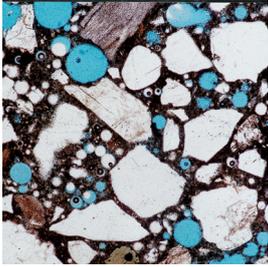


Application Note

Concrete Thin Section Production



1. Introduction

Thin sections of concrete are prepared for a number of different tests, such as porosity determination, inclusion analysis and mineral composition. However, preparing high quality thin sections of concrete can present a significant challenge to even the most experienced petrographer. The

combination of soft cement matrix and hard aggregate is difficult to work with; many of the cement phases are water sensitive, preventing the use of aqueous abrasive carrier fluids; thin sections must be produced at the 20 micron thickness level if fine grained cement is to be studied; and large area thin sections are generally more useful and representative of the true morphology of the sample under investigation.

2. Processing

The **Logitech concrete thin section preparation system** provides full solutions to these problems and offers unrivalled performance to the thin section preparation laboratory.

A. Impregnation

The sample to be sectioned must first be impregnated with epoxy resin using the **IU30 Vacuum Impregnation Unit**.

In porosity testing, fluorescent or blue dye can be added to the resin to aid pore definition. The dyed resin fills all the pores and makes them easily distinguishable from the surrounding material.



Logitech IU30 Impregnation Unit

B. Bonding

After lapping to generate a flat surface, some surface impregnation may be required prior to bonding the sample(s) with epoxy resin to a glass slide.

This operation is normally conducted with a **BJ Bonding Jig** at room temperature to avoid any excess heat generation and sample distortion.



Logitech BJ12 Bonding Jig

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C. Trimming

Following bonding, excess sample material is trimmed off using the **GTS1 Thin Section Cut-off and Trim Saw**, leaving approximately 500 microns sample thickness on the glass slide.



Logitech GTS1 Saw

D. Lapping

The sample is lapped to its final thickness on an **LP50 or LP50auto machine**, and is mounted on a **PLJ Precision Lapping Jig**.



Logitech LP50 Lapping & Polishing System

These jigs provide automatic sample thickness control and automatic thickness uniformity, and can accommodate samples up to 150mm x 100mm. Sample thicknesses to 20 microns, with uniformity within 2 microns, can be automatically achieved.

3. System Benefits

High volume sample throughput combines with low volume abrasive consumption to give low operating costs.

Operator time is saved with a Logitech system, leading to increased efficiency. Minimal operator supervision is required as unique Logitech features such as automatic thickness control and automatic lapping plate flatness allow the operator to leave the unit unattended.

Logitech can also virtually eliminate any requirement for hand finishing samples, as each sample is finished to the required quality prior to leaving the lapping/polishing plate, helping to ensure that samples are reproduced exactly as desired - time after time.