Investigation into the heat resistance of cured epoxy resin samples *Preliminary Report*

Testing Qualifications:
Testing was conducted by an independent, Carl Gibson Msc, with a degree in Biochemistry and over 10 years in research and development experience. The independent tester has a personal interest in resin products and is experienced using resin and experienced in its varied applications and uses.

Introduction
Cured Resin products exhibit resistance to heat to specific temperatures depending on their properties and physical characteristics. The heat resistant properties of cured resin are a characteristic which is useful for its wide range of applications such as for use with coasters, surface coatings and candle holders. Ascertaining where the physical characteristics of the cured resin fail against their desired application is required to demonstrate suitability.

This preliminary study was conducted to show the heat resistance of 3 presently manufactured resin products.

Sample Specifications:
Samples were received from the Vuba manufacturing facility. 3 samples were provided:

Cascade: 250ml hardener, 500ml resin.
Lake: 300ml hardener, 300ml resin.
Coaty: 250ml hardener, 500ml resin.

These were to be cast to the following requirements:

Cascade a square 10cm by 10cm at 10mm depth
Lake a 20mm depth sample produced
Coaty a square 10cm by 10cm at 3mm depth.

The products were casted to the intended usage depth of the products.

Curing Methodology:
Each of the above samples was mixed in a 2:1 parts weight per weight mixture. Following mixing the uncured resin was poured into moulds.
The moulds were cured for 48 hours in a constant temperature of 20°C before being demoulded.
Demoulded samples were stored at the same temperature for a further 24 hours prior to testing

Test Methodology:
Each sample was placed onto a wood surface which was flat and at room temperature.
A thin steel plate is used as the contact material.
A set of larger weighted steel plates were used on top of the contact material.
A temperature probe was used to measure temperature of the plates
An oven was used to heat the plates to the required temperatures.

Step 1 Thin steel and thick steel plates were placed into a heated oven
Step 2 The plates were allowed time to reach the desired temperature before testing
Step 3 The thin plate with 2 thick steel plates was temperature tested
Step 4 The plates were placed on the cured resin sample
Step 5 60 seconds were allowed for full contact
Step 6 The plates were removed to allow assessment of the sample performance
Step 7 Results were recorded

Results

Cascade was tested up to a temperature of 100°C where it exhibited no signs of physical distortion, bending, discolouration, marking or cracking. Above 100°C signs of physical distortion were noted, specifically that the sample could bend and flex.
Lake was tested up to a temperature of 100°C where it exhibited no signs of physical distortion, bending, discolouration, marking or cracking. No further testing was carried out above that of 100°C.
Coaty was tested up to a temperature of 100°C where it exhibited no signs of physical distortion, bending, discolouration, marking or cracking. Above 100°C signs of physical distortion were noted, specifically that the sample could bend and flex.

Conclusions

All 3 samples exhibit heat resistance suitable for their intended purpose up to 100°C. Above this temperature the physical aspects of the cured resin show signs of physical distortion.

Further Testing:

Following this testing the same samples will be re-tested in triplicate to provide assurance of sample to sample variability. In addition there may be other samples with additives submitted for testing to ascertain the effects on the heat resistant characteristics.

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