

Theta Industries, Inc.

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Test Questionnaire Thermal Expansion

To be filled out by customer and submitted together with each specimen.

1.

Date _____
Submitted by _____ Title _____
Organization _____ Dept. _____
Street _____ Tel. _____ Ext. _____
City/Province _____ Fax: _____
State _____ Zip _____ Country _____

2. Specimen:

| | |
|--|---|
| <p>2.01 <i>Specimen name:</i></p> <p>2.02 CTE a cm/cm/°C <input type="checkbox"/> 0.5 X 10⁻⁶/°C <i>Expected Specimen</i> <input type="checkbox"/> 2 X 10⁻⁶/°C <i>Thermal Expansion</i> <input type="checkbox"/> 5 x 10⁻⁶/°C <input type="checkbox"/> 25 x 10⁻⁶/°C</p> <p>2.03 D L/L <i>Expected Specimen Shrinkage</i> <input type="checkbox"/> 10% <input type="checkbox"/> 30% other: _____</p> <p>Currie point: _____ Expected Glass Transition: _____ <i>Phase change</i> other: _____ associated with expansion</p> | <p>2.05 Specimen Material/Composition: <input type="checkbox"/> Green <input type="checkbox"/> Fired</p> <p>2.06 Characteristics: Softening point: <input type="checkbox"/> °C <input type="checkbox"/> °F Melting point: <input type="checkbox"/> °C <input type="checkbox"/> °F</p> <p>2.07 Thermal change: <input type="checkbox"/> reversible <input type="checkbox"/> irreversible preferably 3 samples (if irreversible send preferably 3 samples)</p> <p>2.08 Reaction with <input type="checkbox"/> Al₂O₃ <input type="checkbox"/> SiO₂ <input type="checkbox"/> Aggressive material</p> <p>2.09 Thermal mechanical history:</p> |
|--|---|

| | |
|---|--|
| <p>2.04 Length Diameter</p> <p><input type="checkbox"/> 50mm (2") <input type="checkbox"/> 25 mm (1") Standard <input type="checkbox"/> 20 mm (3/4") <i>Specimen</i> <input type="checkbox"/> 25mm (1") <input type="checkbox"/> 12 mm (1/2") <i>Size</i> <input type="checkbox"/> 10mm <input type="checkbox"/> 6mm (1/4")</p> | <p>2.04.1 preferred size: 25 mm(1") long, 6 mm (1/4")Ø Other dimensions on request</p> |
|---|--|

3. Required test conditions: (Experiment parameter)

3.1 Required accuracy: High accuracy 1/2% 1% acc. Standard 2% economy testing
3.2 Sensor/Pushrod force: 3g 5 g 10g 20g 50g 100g
3.3 Maximum temperature: 1000°C 1600°C -170°C to 600°C 1700°C 1800°C 2300 above 2300
3.4 Heating rate: 1°C/min 2°C/min 5°C/min 10°C/min Other
3.5 Hold point: up to 8 Heating curve only Heating & cooling curve
3.6 Specimen environment: air gas purging cc/min Ar, He, H₂, N₂ vacuum 10⁻³ torr
 other

4. Wanted results:

| | |
|--|--|
| <input type="checkbox"/> Temperature profile of experiment (Temperature vs time) | <input type="checkbox"/> Percent Error Deviation vs Temperature (use for calibration) |
| <input type="checkbox"/> Absolute Differential Expansion vs Temperature | <input type="checkbox"/> Specimen Expansion vs Time |
| <input type="checkbox"/> Specimen Expansion vs Temperature | <input type="checkbox"/> data printout |
| <input type="checkbox"/> Mean Alpha (CTE) vs Temperature | <input type="checkbox"/> Kiln firing curve |
| <input type="checkbox"/> Instantaneous Alpha vs Temperature | <input type="checkbox"/> diskette with data |
| <input type="checkbox"/> Instantaneous Alpha, Cooling vs Temperature | |