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Instrument Questionnaire for Dilatometer Dilatronic Series

Submitted by _____ Title _____ Dept. _____
 Organization _____ Tel. _____ Ext. _____
 Street _____ Fax _____
 City _____ E-Mail _____
 State _____ ZIP _____ Country _____

2 CHARACTERISTICS OF SPECIMEN TO BE MEASURED

Materials to be studied **2.01**

- | | |
|---|---|
| <input type="checkbox"/> Carbon, graphite | <input type="checkbox"/> Nuclear material |
| <input type="checkbox"/> Metal | <input type="checkbox"/> Refractories |
| <input type="checkbox"/> Ceramic | <input type="checkbox"/> Clay |
| <input type="checkbox"/> Glass | <input type="checkbox"/> Plastic |
| <input type="checkbox"/> Composite | |

a = CTE **2.02**

- | | |
|--|--|
| <input type="checkbox"/> $0.5 \times 10^{-6}/^{\circ}\text{C}$ | Expected Specimen
Thermal Expansion |
| <input type="checkbox"/> $2 \times 10^{-6}/^{\circ}\text{C}$ | |
| <input type="checkbox"/> $5 \times 10^{-6}/^{\circ}\text{C}$ | |
| <input type="checkbox"/> $25 \times 10^{-6}/^{\circ}\text{C}$ | |

$\Delta L/L$ **2.03**

- | | | |
|------------------------------|--------------------------------|-------------|
| <input type="checkbox"/> 10% | <input type="checkbox"/> Green | Contraction |
| <input type="checkbox"/> 30% | <input type="checkbox"/> Fired | Shrinkage |

Length Diameter Specimen Size **2.04**

- | | | |
|------------------------------------|---------------------------------------|-------------------------------|
| <input type="checkbox"/> 50mm (2") | <input type="checkbox"/> 25 mm (1") | |
| | <input type="checkbox"/> 20 mm (3/4") | |
| <input type="checkbox"/> 25mm (1") | <input type="checkbox"/> 12 mm (1/2") | Standard for single rod |
| <input type="checkbox"/> 10mm | <input type="checkbox"/> 6 mm (1/4") | Standard for differential rod |

2.1 PLANNED APPLICATIONS, PHENOMENA TO BE STUDIED

Applications

- | | |
|--|---|
| <input type="checkbox"/> Educational | <input type="checkbox"/> Matching of bimetals |
| <input type="checkbox"/> Production control (QC) | <input type="checkbox"/> Refractories |
| <input type="checkbox"/> Research | <input type="checkbox"/> Phase transformation |
| <input type="checkbox"/> Coefficient of linear thermal expansion | <input type="checkbox"/> Sintering of powder |
| <input type="checkbox"/> Metal to glass sealing | <input type="checkbox"/> Firing of ceramic |

3 DESIRED INSTRUMENT CONFIGURATION

- | | |
|--|------------|
| <input type="checkbox"/> No Space Limitations: Horizontal Base | 3.1 |
| <input type="checkbox"/> Limited Laboratory Space: Vertical Stand | 3.2 |

- | | | | | |
|--------------------------------|------------------------------|-----------------------------|--|------------|
| Overall Accuracy: | ΔL (ppm) | Pushrod force (g): | Measuring Head | 3.3 |
| <input type="checkbox"/> 1/2 % | <input type="checkbox"/> 10 | <input type="checkbox"/> 3 | Needed Accuracy
for required resolution | |
| <input type="checkbox"/> 1 % | <input type="checkbox"/> 50 | <input type="checkbox"/> 10 | | |
| <input type="checkbox"/> 2 % | <input type="checkbox"/> 100 | <input type="checkbox"/> 20 | | |
| | | <input type="checkbox"/> 50 | | |

Fused Silica **Specimen Holder** **3.4**

Sintered Alumina Prot. Tube

Graphite

Thermocouple type: K Platinel S B C
Furnace **3.5**

- | | |
|--|---------------------------------|
| <input type="checkbox"/> -170°C to 450°C | <input type="checkbox"/> 1700°C |
| <input type="checkbox"/> 1000°C | <input type="checkbox"/> 1800°C |
| <input type="checkbox"/> 1600°C | <input type="checkbox"/> 2300°C |

Temperature **programmer** **3.6**

Multi Segment computer controlled, standard

Overtemperature protection

Signal Conditioner **3.7**

Exciter demodulator, standard

PC Standard **Computer** **3.8**

- | |
|---|
| <input type="checkbox"/> Data Acquisition, 20 bit stand alone |
| <input type="checkbox"/> Data Acquisition, 16 bit plug in board |

Software **3.9**

- | |
|--|
| <input type="checkbox"/> Dilasoft for Windows 1: CTE Measurement |
| <input type="checkbox"/> Dilasoft for Windows 5: Rate Controlled sintering |

Attachments, Accessories **3.10**

- | |
|--|
| <input type="checkbox"/> Dilatometer Reference Material (NIST) |
| <input type="checkbox"/> Const. Temp. Circulator |
| <input type="checkbox"/> Vacuum pump |
| <input type="checkbox"/> Atmosphere control module |

- | | | |
|---|---------------------------------|---------------|
| <input type="checkbox"/> Air | Desired Specimen
Environment | 3.10.1 |
| <input type="checkbox"/> 10^{-4} torr High vacuum | | |
| <input type="checkbox"/> 10^{-2} torr vacuum | | |
| <input type="checkbox"/> Protective gas | | |

4. Instrument Price Range:

- | |
|------------------------------------|
| <input type="checkbox"/> \$ 6,000 |
| <input type="checkbox"/> \$ 12,000 |
| <input type="checkbox"/> \$ 25,000 |
| <input type="checkbox"/> \$ 50,000 |

Our Needs Are:

- | |
|---|
| <input type="checkbox"/> Immediate |
| <input type="checkbox"/> 1 to 3 months |
| <input type="checkbox"/> Over 3 months |
| <input type="checkbox"/> Future Reference |

Remarks:

Date