



SURFACE VEHICLE STANDARD

J2302™

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Thermal Effectiveness of Sleeve/Tubing/Tape Insulation

RATIONALE

This standard was revised to clarify and/or remove some sections that were not clear or not needed anymore.

1. SCOPE

This procedure measures the resistance to radiant heat flow of insulating materials in sleeve, tubing, or tape (collectively referred to as “sleeve”) form. The sleeve’s effectiveness (S_E) is determined by measuring the difference in surface temperature of a flat black, single-diameter ceramic cylinder with and without the standard diameter sleeve at the specified temperature, position, and distance from the radiant heat source.

1.1 Safety

This method may involve hazardous materials, operations, and equipment. This SAE Standard does not address the safety problems associated with its use. It is the responsibility of the user of this document to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1.2 Limitations

Sleeve size is limited to 30 cm $\pm$ 2 cm long. The test distance is the shortest measured span from the surface of the radiant heat source to the surface of the ceramic cylinder. Unless otherwise specified, the standard distance is 25 mm $\pm$ 2 mm with the cylinder position parallel to and directly above the heat source. This procedure is performed under static (passive) air flow with no vibration.

1.3 This test method is based on SI units.

1.4 Notes to Users

Comparisons of performance made with this procedure need to be performed using samples of the same diameter.

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Documents



Standard, visit Sharing Hub

2. REFERENCES

2.1 Applicable Documents

The following publication forms a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 NIST Publications

Available from NIST, 100 Bureau Drive, Stop 1070, Gaithersburg, MD 20899-1070, Tel: 301-975-6478, www.nist.gov.

NIST (NBS) Circular 590 Methods of Testing Thermocouples and Thermocouple Materials

3. SUMMARY

This method describes the procedure and equipment for measuring the thermal effectiveness of sleeves. A base line is established first by exposing a 16 mm OD, flat black ceramic cylinder to the specified radiant heat source. Normally, the ceramic cylinder is parallel to and directly above the heat source at the specified distance. During the test, both facing surface temperatures of the radiant heat source and cylinder are recorded. After establishing the base line surface temperature, the ceramic cylinder is sleeved with the protective material and tested again. The surface temperatures of the heat source, sleeve, and cylinder are recorded. In both test sequences, measuring the radiant source temperature and sleeve surface temperatures ensures consistent and fair measure of the sleeve's effectiveness. A significant variation in these values requires a repetition of the test sequence.

4. SIGNIFICANCE AND USE

- 4.1 Data obtained by this method are applicable to the material under conditions of this test and are not necessarily the same as those obtained in end use applications. The information permits comparison, selection, or qualification of commercially available sleeves where a level of proficiency is desired beyond short time quality control tests.
- 4.2 The test setup shown below (see Figure 1) is the standard position of the ceramic cylinder parallel to and directly above the heat source at the standard distance of 25 mm.

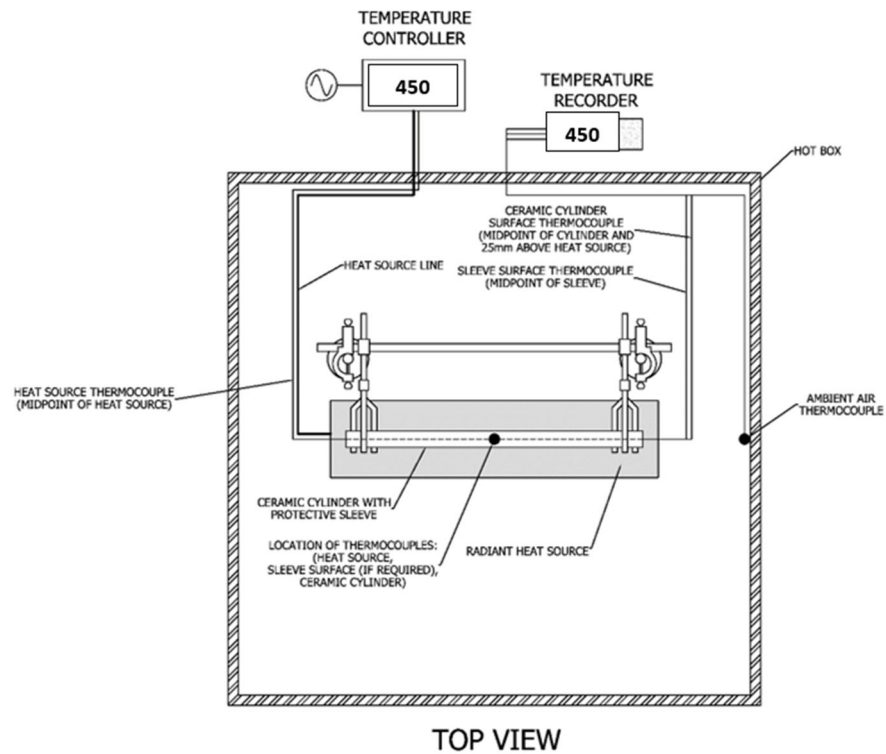
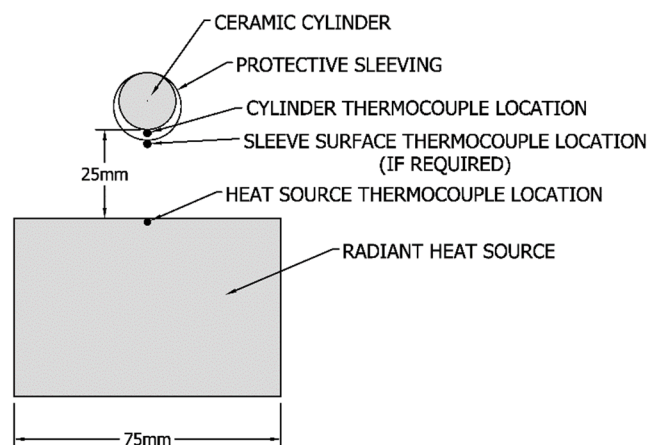


Figure 1A - Test setup - top view



END VIEW

NOTE: RADIANT HEAT SOURCE CAN BE ANY SHAPE AND IS NOT LIMITED TO A SQUARE OR RECTANGULAR DESIGN

Figure 1B - Test setup - end view

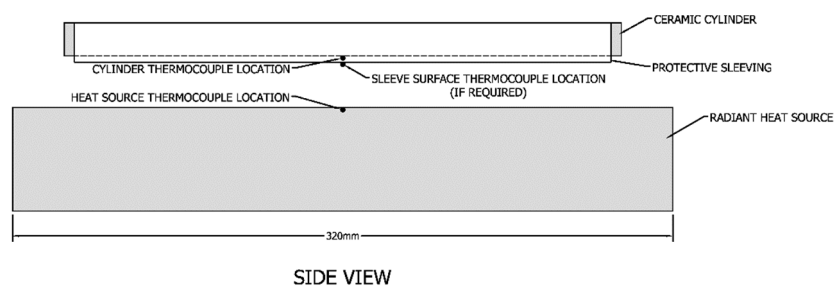


Figure 1C - Test setup - side view