



AEROSPACE RECOMMENDED PRACTICE	ARP4249™	REV. A
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Bearing Corrosion Test Method		

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1. SCOPE:

1.1 This SAE Aerospace Recommended Practice (ARP) is intended to evaluate corrosion inhibiting properties of synthetic gas turbine lubricants and gearbox oils.

1.1.1 This ARP is a modified form of a method developed in the United Kingdom as DERD Test Method/1, Method No. 18, Issue 1 of January 1984. (Reference 2.1.)

1.2 Field of Application:

1.2.1 Primarily to evaluate corrosion inhibiting properties of aircraft engines, gearboxes and propulsion system lubricants.

2. REFERENCES:

2.1 DERD Test Methods/1, Method No. 18, Issue 1 of January 1984

3. TEST REQUIREMENTS:

3.1 Apparatus:

3.1.1 Test Specimens:

3.1.1.1 Bearing Balls: 12.7 mm (0.5 in) diameter

3.1.1.2 Material: Steel SKF Grade 1-Swedish Made (Order No. RB-12.7/111/E212)

3.1.1.3 Finish: Lime polished

3.1.1.4 Suggested Supplier: Naval Air Warfare Center, Aircraft Division, Code PE33, Box 7176, Trenton, NJ 08628

3.1.2 Specimen Support Tray:

- 3.1.2.1 A lucite tray is drilled to provide countersunk ball bearing seats and to permit oil drainage from the seats. The tray is fitted with legs to provide a standard elevation of the test specimens in the humidity chamber and utilizes a drip tray to prevent oil inhibition of the water vapor source. The dimensions of the tray are given in Figure 1.

3.1.3 Humidity Chamber:

- 3.1.3.1 A glass tank with general dimensions of 305 mm (12 in) x 152 mm (6 in) x 229 mm (9 in) fitted with a ground glass lid and a high ledge to provide support for the glass rods which hold the drip control paper. Figure 2.

(The Universal TLC Chromatank produced by Shandon Southern Ltd. in the United Kingdom or equivalent is acceptable.) A tank with the same general dimensions without a ledge for the rods and drip control paper can be considered an alternate replacement.

- 3.1.3.2 The glass lid will have a drilled hole of such size to facilitate the introduction of a long probe-type thermocouple. The access hole should be located where it would allow the thermocouple to be centrally located within the chamber.

3.1.4 Test Specimen Handling Device:

- 3.1.4.1 A locally manufactured tool used for transferring test specimens from the test oils to the specimen tray. A wire loop fashioned of a diameter slightly less than 12.7 mm (0.50 in) with a suitable handle works well.

3.1.5 Drip Control Paper:

- 3.1.5.1 Whatman Number 1 filter paper cut to loosely fit the top dimensions of the humidity chamber. The need for this paper is optional and is to be determined by the type humidity chamber being used.

3.1.6 Glass Rods:

- 3.1.6.1 Rod length and diameter should be determined by the specific humidity chamber that is to be used.

3.1.7 Oven:

- 3.1.7.1 An oven capable of elevating the internal air temperature, of all humidity chambers in use, to 40 °C (104 °F) from 5 °C (41 °F) within 1 h, 40 °C ± 1 °C (104 °F ± 2 °F).