



AEROSPACE MATERIAL SPECIFICATION	AMS2485™	REV. L
	Issued	1948-05
	Revised	2016-02
Superseding AMS2485K		
Coating, Black Oxide		

RATIONALE

AMS2485L results from a five year review and update of this specification.

NOTICE

ORDERING INFORMATION: The following information shall be provided to the plating processor by the purchaser.

Purchase order shall specify not less than the following:

- AMS2485L
- Basis metal to be treated
- Tensile strength or hardness of the basis metal
- Pretreatment stress relief to be performed by processor (time and temperature) if different from 3.1.2
- Special features, geometry, or processing present on parts that requires special attention by the processor
- Optional: Periodic testing frequency (4.2.2) and sample quantity (4.3.2)
- Quantity of pieces to be coated

1. SCOPE

1.1 Purpose

This specification covers the requirements for black oxide coatings on parts.

1.2 Application

This coating has been used typically to improve the anti-chafing and anti-friction properties of carbon and low-alloy steel parts, particularly for sliding or bearing surfaces, by providing a finish coating that retains an oil film, but usage is not limited to such applications.

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<http://www.sae.org/technical/standards/AMS2485L>**

1.3 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM G46 Examination and Evaluation of Pitting Corrosion

3. TECHNICAL REQUIREMENTS

3.1 Preparation

3.1.1 The coating shall be applied to part surfaces free from water-breaks. The cleaning procedure shall not produce pitting or intergranular attack of the basis metal and shall preserve dimensional requirements

3.1.2 Steel parts having a hardness of 36 HRC and higher and that are machined, ground, cold worked or straightened shall be cleaned to remove surface contamination and thermally stress relieved before coating. Temperatures to which parts are heated shall be such that maximum stress relief is obtained while still maintaining hardness of parts within drawing limits. Unless otherwise specified, the following treatment temperatures and times shall be used:

3.1.2.1 For parts, excluding nitrided parts, having a hardness of 55 HRC and above, including carburized and induction hardened parts, stress relieve at $275\text{ }^{\circ}\text{F} \pm 25\text{ }^{\circ}\text{F}$ ($135\text{ }^{\circ}\text{C} \pm 14\text{ }^{\circ}\text{C}$) for a minimum of 4 hours.

3.1.2.2 For parts having a hardness less than 55 HRC, stress relieve at $375\text{ }^{\circ}\text{F} \pm 25\text{ }^{\circ}\text{F}$ ($191\text{ }^{\circ}\text{C} \pm 14\text{ }^{\circ}\text{C}$) for a minimum of 4 hours. Nitrided parts fall into this category. Higher temperatures shall be used only when specified or approved by the cognizant engineering organization.

3.2 Procedure

3.2.1 The cleaned parts, while still wet, shall be immersed in one or more boiling aqueous alkali oxidizing baths for times and at temperatures which will produce coatings meeting the requirements of 3.3 and 3.4 (see 8.3).

3.2.2 Coated parts shall be washed thoroughly in running water to remove all traces of processing solution and salts. Parts shall not be allowed to dry during the entire sequence of operations until completion of this rinse.

3.2.3 Parts shall be thoroughly dried unless a water-displacing oil is used in 3.2.4, in which case complete drying may be omitted.

3.2.4 Parts shall be dipped in a suitable corrosion-preventative oil.