



AEROSPACE MATERIAL SPECIFICATION

AMS2753™**REV. D**

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Superseding AMS2753C

Liquid Salt Bath Ferritic Nitrocarburizing Non-Cyanide Bath

RATIONALE

AMS2753D stabilizes this document because this document contains mature technology that is not expected to change and thus no further revisions are anticipated.

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1. SCOPE

1.1 Purpose

This specification covers the requirements for an epsilon-iron nitride case on ferrous parts produced by immersion in a low-temperature, agitated, fused salt bath.

1.2 Application

Nitrocarburized surfaces have been used typically for increasing the resistance to wear and fatigue on ferrous alloys including carbon steels, low-alloy steels, tool steels, and corrosion-resistant steels, cast irons, and ferrous powder metal products, but usage is not limited to such applications.

1.2.1 This process is not recommended for use on parts that have been plated with silver, copper, zinc, or cadmium or on parts having copper alloy inserts.

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 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2759	Heat Treatment of Steel Parts, General Requirements
ARP1820	Chord Method of Evaluating Surface Microstructural Characteristics
SAE J423	Methods of Measuring Case Depth
SAE J864	Surface Hardness Testing with Files

2.2 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 D 1193	Reagent Water
ASTM E 140	Hardness Conversion Tables for Metals (Relationship Between Brinell Hardness, Vickers Hardness, Rockwell Hardness, Rockwell Superficial Hardness, and Knoop Hardness)
ASTM E 384	Microhardness of Materials
ASTM E 407	Microetching Metals and Alloys

2.3 ASM Publications

Available from ASM World Headquarters, 9639 Kinsman Road, Materials Park, OH 44073, Tel: 440-338-5151, www.asminternational.org.

ASM Handbook, Metallography and Microstructure, 9th Edition

3. TECHNICAL REQUIREMENTS

3.1 Processing Equipment

3.1.1 Nitrocarburizing salts shall consist primarily of a mixture of alkali metal cyanates and carbonates.

3.1.2 Salt Bath

The cyanate content of the bath shall be controlled within the range 34 to 38% by weight, determined as cyanate ion.

3.1.3 Parts shall be processed in a salt bath retort-type furnace.

3.1.4 Furnace pyrometry shall conform to AMS2750 furnace class 3, instrumentation type D, as a minimum.

3.1.5 Thermocouples

When load thermocouples are required, they shall be sheath protected to prevent deterioration due to immersion in nitrocarburizing salts.