



SARA SAE ENGINEERING SPECIFICATION	
Section: SES 26 – 773	
Issue: "A"	Rev No.: "0"
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**MATERIAL SPECIFICATION FOR AEROCOTE<sup>®</sup> 4 MANGANESE  
PHOSPHATE APPLIED BY IMMERSION**

Rev	Reason of Change	Date	Made By	Reviewed By	Approved By	Status
0		06-08-2014	Pankaj Kumar	K. Sunil	K.C.Raturi	RELEASED

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## **MATERIAL SPECIFICATION FOR AEROCOTE 4 MANGANESE PHOSPHATE APPLIED BY IMMERSION**

### **1.0 SCOPE**

1.1 - Aerocote<sup>®</sup> 4 is a manganese phosphating compound. It produces fine, dense, crystalline coatings on ferrous metals. Aerocote 4 reduces wear and facilitates break- in of bearing surfaces. Aerocote 4 can be applied to virtually any ferrous metal component (sub sea parts, tubular goods, threaded components, valves, fasteners, connectors, etc). Coating Weight is 2000 to 3500 mg/ft<sup>2</sup> (21.5 to 37.7 g/m<sup>2</sup>). Depending on the composition and hardness of the material being treated and on concentration, time and temperature of application. Aerocote 4 is especially where it is desirable to reduce friction. Galling and scoring on ferrous components.

1.2- This material specification is intended to aid the purchasing department in procuring and the vendor in supplying a material which meets the needs of its intended use, and the quality control department in the inspection and release of incoming material.

### **2.0 PHYSICAL & CHEMICAL PROPERTIES**

1,- Chemical Composition	: manganese, nickel, phosphate, nitrate
2,- Physical form	: liquid
3,- Phosphorous- free	: no
4,- NPE surfactant-free	: yes
5,- Odour	: no
6,- pH	: <2.5
7,- Freezing point	: -6.7°C (19.9°F)
8,- Boiling point/ boiling range	: 100°C
9,- Vapor pressure	: Note: no data available
10,- Bulk density	: 9.72 lbs. / gal
11,- Water solubility	: Note: completely soluble
12,- Partition co-efficient:	:
n- octanol / water	Note: no data available
13,- Relative density	: 1.165
14,- Evaporation rate	: 1
	Note: Water = 1



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### **3.0 APPLICATION PROCEDURE**

- 3.1.- Use Aerocote 4 at 12 percent by volume. Apply via immersion.
- 3.2.- Recommended Operating Temperature: 200 – 210°F (93 – 99°C).  
Recommended Application Time: 8- 12 minute dip. Dry before oiling.

### **4.0 SOLUTION CONTROL**

Aerocote 4 is controlled by total acid using Gardotest Procedure 129.  
Sample Volume 2 ml.

### **5.0 HAZARDOUS COMPONENTS INFORMATION**

Component	CAS -NO.	Weight percent
Phosphoric acid	7664-38-2	1.00 – 5.00
Nickel nitrate	13138-45-2	1.00 – 5.00
Manganese dehydrogenate phosphate	18718-07-5	10.00 – 30.00

Unidentified ingredients are considered not hazardous under Federal Hazard Communication Standard (29CFR 1910. 1200)

### **6.0 HYZARDS IDENTIFICATION**

#### **6.1 EMERGENCY OVERVIEW**

Form	: Liquid
Color	: Green
Odour	: None
Hazard Summary	: Harmful by swallowed. Harmful by inhalation. Causes severe burns, may cause cancer.

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Route(s) of Entry :	Inhalation	Skin	Ingestion
	Yes	Yes	Yes

### Carcinogenicity:

NTP	Nickel nitrate	This substance is listed by NTP as a carcinogen.
IARC	Nickel nitrate	This substance is listed by IARC as a carcinogen.
OSHA	No substance in this product is regulated by OSHA as a carcinogen.	

## **7.0 STORAGE AND HANDLING PRECAUTION**

Dry indoor storage at temperature between 40°F and 100°F (4.4°C and 37.8°C) is recommended, away from any incompatible materials.

### **7.1 STORAGE**

Requirements for storage areas and containers closed	: Store indoors in a cool, well – ventilated place keep containers dry and tightly to avoid moisture absorption and contamination.
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### **7.2 HANDLING**

Handling	: Use only with adequate ventilation. Add this product to surface of solution slowly to avoid spattering. Do not add large amounts of product to solution at any one time.
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## **8.0 DOCUMENTATION REQUIRED**

Each shipment shall be accompanied by material certifications for each lot of material, certifications must be positively relatable to the lot of material represented.

## **9.0 APPROVED SOURCE**

Product name	: AEROCOTE 4
MSDS Number	: REL_76017
Company Name & address	: Chemetall US, Inc. 675 Central Avenue New Providence, NJ 07974
Telephone	: +18005264473
Telefax	: +19084644658
Emergency telephone no.	: CHEMTREC – 800-424-9300