

DER-COAT MACRO 50

Der-Coat Macro 50 is a zinc phosphate material designed to deposit an exceptionally heavy, dense and macrocrystalline coating on steel surfaces by immersion. **Der-Coat Macro 50** provides a high degree of corrosion resistance in conjunction with supplementary finishes such as oils, waxes, paints and other organic and inorganic coatings. The heavy weight coatings (2000 to 3000 mg./sq. ft.) provide an exceptionally adsorptive medium for subsequent coatings. **Der-Coat Macro 50** meets all government (such as MIL-P-16232C) and automotive specifications for a macrocrystalline zinc phosphate coating. **Der-Coat Macro 50** has a high tolerance for iron and produces a soft sludge for easy maintenance. **Der-Coat Macro 50** causes no hydrogen embrittlement eliminating costly rejects and substandard product.

Der-Coat Macro 50 is an easy to control product utilizing just two titrations to keep the product in optimum operating condition. Total acid and iron are the only parameters that should be checked on a routine basis. While free acid does have an influence on the quality of the coating, it is a parameter, which does not normally have to be checked.

TYPICAL PROPERTIES

Physical form and color	Viscous green liquid
Specific Gravity/Wt. Per gallon	1.68° gms./ml.: 13.80 pounds/gallon
Conversion % by vol. Per ml. 0.1N NaOH	1% equals 10 to 12 ML. Of 0.1 NaOH

Der-Coat Macro 50 is easily controlled by "chasing" the points of ferrous iron with points of total acid. The iron and total acid are titrated and then the total acid is brought into range is listed in the table below.

IRON POINTS BY TITRATION	TOTAL ACID POINTS BY TITRATION
0-1	22-27
1-2	27-30
2-3	30-33
3-4	33-36
4-5	36-39
5-6	39-42
6-7	42-45
7-8	45-48
8-9	48-51
9-10	51-54
10-11	54-57
11-12	57-60

TYPICAL OPERATING CONDITIONS

Concentration at Make Up	2-4 % by volume
Immersion Time	8-15 minutes
Temperature °F/°C	140°-190°F/65°-90°C
Total Acid Points (0.1NaOH)	30-60 MLS
Free Acid Points (0.1 NaOH)	2-5 MLS.
Iron Points (0.2 KMnO4)	See above Table
Coating Weights Produced	2500-4000 Milligrams/Sq. Ft.

CONTROL TITRATIONS

TOTAL ACID

1. Pipette 10 ml of phosphating solution into a flask or beaker
2. Add 3-4 drops phenolphthalein indicator (solution is clear)
3. Titrate the clear solution with 0.1 NaOH to a pink endpoint
4. Record the milliliters, as points of total acid.

IRON TITRATION

1. Pipette 10 ml of phosphating solution into a flask or beaker
2. Add 1-2 mls. of 1:1 H₂SO₄/H₃PO₄ indicator mix to above solution
3. Titrate this solution with 0.2 N KmnO₄ (Potassium Permanganate) to a pink endpoint
4. Record the milliliters, as points of total acid.

Refer to table of total acid Vs iron and make the appropriate addition of Free Acid Points **Der-Coat Macro 50** to increase the total acid to match the iron points to table.

FREE ACID

1. Pipette a 10 ml sample of phosphating solution into a beaker or flask
2. Add 3-4 drops of Bromophenol Blue indicator
3. Titrate the yellow solution to a blue endpoint using 0.1 N NaOH
4. Record the milliliters of titrant as points of Free Acid.

OPERATING NOTES

The normal coating produced by **Der-Coat Macro 50** is light to dark gray. Color can be influenced by surface preparation and pickling conditions.

Der-Coat Macro 50 should be analyzed on a regular basis to produce the most consistent results.

Material Safety Data Sheet

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1. CHEMICAL PRODUCT NAME AND COMPANY IDENTIFICATION:

PRODUCT NAME: Der-Coat Macro 50
SYNONYMS: None
CHEMICAL FAMILY: Not applicable
MOLECULAR FORMULA: Not applicable
MOLECULAR WEIGHT: Not applicable

Emergency Phone: For emergency involving spill, leak, fire, exposure, or accident call CHEMTREC: 1-800-424-9300.

2. COMPOSITION / INFORMATION ON INGREDIENTS

OSHA REGULATED COMPONENTS

COMPONENT	CAS NO	X%	OSHA/PEL	ACGIH TLV
Phosphoric Acid	7664-38-2	35%	1 mg/m ³	1 mg/m ³
Zinc compounds	Not applicable	15%	Not applicable	Not applicable
Nitrate compounds	Not applicable	20%	Not applicable	Not applicable

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: Clear green liquid
Odor: Mildly acidic
Statement of Hazard: Corrosive

POTENTIAL HEALTH EFFECTS

EFFECTS OF OVEREXPOSURE: This material is corrosive. Contact with skin or eyes will cause severe burning and ulceration. It is a poisonous material if ingested.

4. FIRST AID MEASURES

In case of skin contact, wash contaminated areas with soap and water. Wash contaminated clothing before wearing.

In case of eye contact, immediately irrigate with plenty of water for at least 15 minutes.

In case of ingestion, give magnesia or white suspension in water followed by emetic.

Seek medical attention immediately.

In case of inhalation, remove to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

5. FIRE FIGHTING MEASURES

Flash Point:	Not applicable
Flammable Limits (% by volume)	Not applicable
Autoignition Temp:	Not available
Decomposition Temp:	Not available

EXTINGUISHING MEDIA AND FIRE FIGHTING INSTRUCTIONS

This product is non-flammable. Cool fire exposed containers with water spray. Exercise caution as steam explosion may occur. Should container rupture, water runoff contains acidic material and should be contained according to the directions under spill containment. Always wear protective equipment and clothing when extinguishing fire. Self-contained breathing apparatus is highly recommended. Avoid toxic fumes that arise upon decomposition due to extreme temperature of fire. Contact with some bases may generate heat of neutralization.

6. ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Wear respirator, contain spill, and cover with alkaline base such as lime or soda ash. Absorb neutralized liquid with absorbent and dispose of according to local, state and federal ordinances.

7. HANDLING AND STORAGE

Always store in a cool dry place. Keep container closed. Protect container from physical damage. Store away from incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls are not usually necessary if good hygiene practices are followed. Wash face and hands thoroughly with soap and water before eating, drinking or smoking. Rubber, neoprene, or chemically resistant polymer gloves are suitable. A face shield or chemical goggles should be worn. Protective clothing such as a rubber apron is highly recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear green liquid
Odor:	Mildly acidic
Boiling Point:	212°F
Melting Point:	Not applicable
Vapor Pressure:	Not established
Specific Gravity:	1.68
Vapor Density:	Not established
% Volatile (By WT):	Not established
pH:	<3.0
Saturation in air (% by vol.):	Not established
Evaporation Rate:	Not established
Solubility in water:	Complete
Volatile Organic content:	Not established

10. STABILITY AND REACTIVITY

Stability:	Stable
Conditions to avoid:	None known
Polymerization:	Will not occur
Conditions to avoid:	None known
Incompatible materials:	Organics, combustibles, and any cyanide bearing materials.
Hazardous decomposition products:	Oxides of Carbon and nitrogen

11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3: Hazards identification.

Toxicological information on the OSHA regulated components of this product is as follows:

This product contains Phosphoric Acid CAS# 7664-38-2.

California Proposition 65 Warning (applicable in California Only). This product contains no components known to the State of California to cause cancer.

12. ECOLOGICAL INFORMATION

Consult your local, state, and federal government before placing this or any chemical into a sewer line.

13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the Derby product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA "listed hazardous waste" or has any of the four RCRA "hazardous waste characteristics." Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA "listed hazardous waste."

Information contained in Section 15 of this MSDS is not intended to indicate if the product is a "listed hazardous waste." RCRA has four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity and Toxicity. To determine Ignitability, see Section 5 of this MSD (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT Corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. Derby Chemical encourages the recycle, recovery, and reuse of materials, where permitted, as an alternate to disposal as a waste. Derby Chemical recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. Derby Chemical has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

**14. TRANSPORT INFORMATION
D.O.T. SHIPPING INFORMATION**

Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S.

Hazard Class: 8
Packing Group: II
UN Number: UN 3264
IMDG Page: Not applicable
D.O.T. Hazardous Substances: Phosphoric Acid
Transport Label Required: None
Additional Transport Information: None

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**CHEMTREC
1-800-424-9300**

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**15. REGULATORY INFORMATION:
INVENTORY INFORMATION**

US TSCA: All components of this product are either listed or excluded from the TSCA Inventory in compliance with the Toxic Substances Control Act, 14 U.S.C. 2601 et. Seq.

OTHER ENVIRONMENTAL INFORMATION: The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12 (b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc). See Section 13 for information on waste classification and waste disposal of this product.

<u>COMPONENT</u>	<u>CAS NO.</u>	<u>%</u>
Phosphoric Acid	7664-38-2	35%

PRODUCT CLASSIFICATION UNDER SECTION 311 OF SARA:

This product poses an immediate (acute) health hazard. It may be classified as a corrosive as defined in 29 CFR 1910.1200. This product poses a delayed (chronic) health hazard.

16. OTHER INFORMATION

NFPA HAZARD RATING (National Fire Protection Association)

	Fire 0	
Health 3		1 Reactivity
	Corrosive Special	

HMIS HAZARD RATING

Health	3
Flammability	0
Reactivity	1
Personal Protection	E

PERSONAL PROTECTION:

See Section 8 of this MSDS

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