Technical Process Bulletin

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DEOXIDINE® 172A
Acid Cleaner and Rust Remover

1. Introduction:

DEOXIDINE 172A is a spray phosphoric acid detergent-type metal cleaner and surface rust remover. DEOXIDINE 172A removes rust and light deposits of mill oil and destroys corrosion stimulators. It will also condition for painting all metal surfaces except zinc, cadmium, and magnesium for which other products are recommended.

Spray application is used in lieu of dip processing whenever the production volume is too large to be economically and conveniently handled by dip.

The organic surfactants contained in DEOXIDINE 172A are classified by the manufacturer as biodegradable.

2. Operating Summary:

Chemical:	Bath Preparation per 100 gallons:
DEOXIDINE 172A	25 to 50 gal
Operation and Control:	
Free Acid	25 to 50 ml
Temperature	Ambient to 180° Fahrenheit
Time	2 to 4 minutes
Nozzle Pressure	15 to 20 psi

3. The Process:

A. Cleaning (optional)
B. Water rinsing (optional)
C. Treating with the DEOXIDINE 172A solution
D. Water rinsing
E. Post treatment
F. Drying

4. Materials:

DEOXIDINE 172A
Testing Reagents and Apparatus

5. Equipment:

The process tank, housing, pumps and piping for use with process solution be constructed of 316L or 304L stainless steel. A secondary choice is 316 or 304 stainless steel fabricated with approved welding techniques. In spray applications, nozzles should be fabricated from 316 stainless steel or suitable plastic. The heat exchanger should be of polished 316 stainless steel when using steam or hot water heat. If gas fired burner tubes are used, they should be made of schedule 80 mild steel pipe or equivalent. All process circulating pump seals, valve seats, door seals, and other elastomers which come in contact with the working process solution should be EPDM, Teflon™ or Viton™.

All chemical pump seals, valve seats and other elastomers which come in contact with the concentrated solution should be EPDM, Teflon or Viton.

Support equipment available from Henkel Surface Technologies for this process includes: chemical feed pumps, level controls, transfer pumps and bulk storage tanks.

Our sales representative should be consulted for information on Henkel Surface Technologies automatic process control equipment for this process and any additional questions. In addition, the "Henkel Surface Technologies Equipment Design Manual" may be consulted.

6. Surface Preparation:

Cleaning:
Work coated with mill oil usually requires no precleaning. However, heavy deposits of grease or drawing compounds should be removed prior to DEOXIDINE 172A treatment. A number of cleaners are available which can be used for this purpose. Our representative can recommend a suitable product.

Water Rinsing:
After conditioning, the metal must be thoroughly rinsed with water. The rinse should be overflowed continuously at a rate which will keep it clean from scum and contamination.

7. Treating with DEOXIDINE 172A:

Buildup:
Concentration: 25 to 50 gallons per 100 gallons of bath volume. Fill the tank approximately one-half full with water. Slowly and with stirring, add the required amount of DEOXIDINE 172A. Add water to the operating level and heat to the operating temperature.

NOTE: The concentration of the DEOXIDINE 172A bath may be varied in proportion to the rust and soil present. The concentration may be increased to achieve rust and soil removal within the available processing time.

Operation:
Time: usually 2 to 4 minutes.
Temperature: ambient to 180° Fahrenheit.
Application: power spray.

The bath should be operated at the lowest temperature practicable for processing the work in the allotted time. Since the strength of the DEOXIDINE bath and the operating temperature affect the cleaning time, these factors should be adjusted so that the treatment will be completed within the desired time. Once the optimum conditions of concentration, time and temperature have been established, they should be closely maintained. Temperature should be controlled within ± 5° Fahrenheit.

8. Testing and Control:
Never pipet by mouth. Use a pipet filler.

Free Acid:
Pipet a 10 ml sample of the DEOXIDINE 172A bath into a 250-ml beaker and dilute to approximately 100 ml with water. Add 6 to 10 drops of Indicator 4. Titrate slowly with Titrating Solution 142, while stirring the sample, until the color of the sample turns from pink or orange to a pure yellow.

The milliliters of Titrating Solution 142 used is the free acid value in points.

Free acid range: 25 to 50 points. Maintain the bath within ± 1 ml of the value which gives the best results.

To increase value 1 point: 1.0 gallon of DEOXIDINE 172A per 100 gallons of bath volume.

Mechanical Loss:
Processing solution lost due to carryout on the work or lost by leakage should be restored with the same proportion of chemical and water as used to prepare the original bath.

9. After Treatment:

Water Rinsing:
After the DEOXIDINE 172A treatment the work is thoroughly rinsed in cold water. The rinse should be continuously overflowed, and the flow should be regulated with the rate of production so that the main body of the rinse never becomes excessively contaminated.

Post Treatment:
The treated metal, wet from the water rinse, is treated with a dilute post treatment solution. The post treatment may be heated to facilitate drying. A number of post treatment products are available. Our representative will recommend the product best suited for the operation.

Drying:
Treated parts should be dried as soon as possible in an indirectly fired oven or by other means which will not contaminate the metal with fumes, oil, or partially burnt gases. In many cases, heavy-gauge metal will retain enough heat to dry completely and rapidly without using an oven.

Products with cavities or pockets which trap moisture should be blown dry with a jet of clean compressed air. Moisture splatters should be dried with clean cloths.

If handling of the dried, unoiled, or unpainted work is necessary, operators should wear clean cotton gloves.

10. Waste Disposal Information:

Applicable regulations covering disposal and discharge of chemicals should be consulted and followed.

Disposal information for the chemical, in the form as supplied, is given on the Material Safety Data Sheet for the chemical.

The processing bath is acidic. Neutralization of rinse water or processing solution may be required prior to discharge to the sewer. Neutralization with lime will precipitate phosphate which is contained in the solution and is recommended where removal of these components is required.

The bath and sludge which may accumulate in the bath can contain ingredients other than those present in the chemical as supplied and analysis of the solution and/or sludge may be required prior to disposal.

11. Precautionary Information:

When handling the chemical products used in this process, the first aid and handling recommendations on the Material Safety Data Sheet for each product should be read, understood and followed.

The cleaner bath is acidic and may cause burns to skin and eyes. Do not get in eyes, on skin or on clothing. Wear face shield, rubber gloves and protective clothing when handling. In case of contact, follow the recommendations on the Material Safety Data Sheet for DEOXIDINE 172A.

Testing Reagents and Apparatus
(Order only those items which are not already on hand)

Code	Quantity	Item
205402	2*	Beaker, 250-ml
205700	1	Buret Assembly, 25-ml Automatic
205004	1 pt	Indicator 4 (methyl orange)
205590	1	Indicator Dropping Bottle
205943	2*	Pipet, 10-ml Volumetric
205947	1	Pipet Filler
205980	1	Thermometer, Floating
205142	1 gal	Titrating Solution 142 (0.857N NaOH)

* Includes one more than actually required, to allow for possible breakage.

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