Product Bulletin

Product Name: Deruster 11 J
Product Code: 2542001
Revision Date: January 9, 2024

Deruster 11 J

Deruster 11 J is a powdered, cyanide-free, highly alkaline water-soluble product used to remove rust, heat scale, weld scale, smuts, certain fabrication oils, and to strip paint from ferrous metals. Deruster 11 J has been formulated to perform such operations on irons, steel, and Stainless Steel alloys. Deruster 11 J may be used in an immersion operation with reverse or periodic reverse (P.R.) current to hasten rust and scale removal in a rack or barrel operation. Deruster 11 J should not be used on aluminum, brass, zinc die casting or lead alloys.

Note: Smut removal from ferrous metals cannot be achieved in an immersion operation this may only be accomplished in anodic or P.R. electro-cleaning.

Features & Benefits

High activity	Fast action; Higher productivity
Contains wetting agents	Facilitates chemical action; Shorter time cycles
Non-cyanide formula	Easy wastewater treatment; Total cost reduction

Typical Applications

- For use where parts with rust undergo further processing
- Black oxide shops
- Reprocessing of steel parts

Operating Conditions

Although Deruster 11 J has been formulated to remove rust, scale, and smut without the addition of cyanide, there are certain heat scales which will require the addition of 4 to 16 oz/gal (30 to 120 g/L) of sodium cyanide to a Deruster 11 J solution to achieve the proper scale removal.

Tank Make-Up Procedure

Considerable heat is generated when Deruster 11 J is dissolved in water. A new solution should be prepared by filling the tank half full of warm water, approx. 100°F (37°C), and slowly adding Deruster 11 J while continuously stirring. After the Deruster 11 J has been dissolved, add the remainder of the cold water. Heat or cool to desired operating temperature before use.

Note: When adding Deruster 11 J to an operating solution, add slowly to avoid solution eruption.

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Operating Instructions when used with Current

Concentration	0.75 – 3 lb/Gal 90 – 360 g/L
Temperature	130°F – 210°F 54°C – 98°C
Voltage	6 – 12 volts Note:12 volts for barrel operation
Current density	30 – 100 Amps/ft^2 3.0 – 10.0 Amps/dm^2
Type of current	DC with a reversing switch or periodic reversal (P.R.) equipment. A 10 second direct and 10 second reverse cycle is satisfactory for most work.
Electrodes	Graphite type AGX (national carbon) are preferred, alternate-Stainless Steel type 316
Anode to Cathode ratio	1:1
Tank	Steel, rubber lined steel preferred
Heating and cooling	Stainless Steel type 316, bent pipe
Barrels	Lucite, Templon, or Polypropylene
Tumbling barrels	Steel, Koroseal, rubber or Neoprene lined
Racks	Steel or Stainless Steel, Titanium or Steel tips plastisol coated
Time	1 – 10 minutes
Ventilation	Desirable for hot solutions

Note: 1. When cyanide has been added to the Deruster 11 J solution, do not exceed 150°F (65°C).
2. Boiling point of a 2 to 3 lb/Gal (240 to 360 g/L) solution is higher than 212°F (100°C).

To keep voltage requirement at a minimum, firmly connect graphite electrodes to the electrode bars. A Steel strap should be bolted to the electrodes, and the straps bolted to the electrode bars. Cooling is required only when the heat generated by electrical current causes the temperature to rise above the recommended limit. Generally, cooling is required when the current requirement exceeds about 4 amperes per gallon.

Scale and rust may generally be removed when the work is anodic (reverse current). However, if this is not achieved, P.R. electro cleaning will be required. The P.R. cycle: 10 seconds cathodic, 10 seconds anodic. Exact time cycle should be established by trials.

Operating Instructions when used Without Current

Concentration	1.0 – 3.5 lb/Gal 120 – 420 g/L
Temperature	180°F (82°C) to boiling
Time	Dependent upon rust and scale build up
Tank	Steel, rubber lined steel
Heating Coils	Steel, stainless steel (type 316 preferred)
Racks	Steel or stainless steel

Generally, the speed of rust or oxide removal is increased with higher temperatures and greater concentrations. In cases of difficult scale removal, the addition of 8 oz/gal of sodium cyanide is recommended. This increases the efficiency of scale removal. However, if sodium cyanide is added, lower the operating temperature below 150°F (65°C) max.

Operating Conditions

Concentration	2 lb/Gal (240 g/L)
Temperature	Ambient – 130°F (54°C)
Immersion Time	The time required to clean anode will depend on the amount of scale present. Normally at room temperature, the anodes should be immersed in the cleaning solution 20 – 30 minutes to loosen the scale sufficiently that it can be brushed off easily. Raising the temperature of the solution to as high as 130°F will increase the rate of cleaning so that the scale can be removed in 5 – 10 minutes. The anodes can be left in the cleaner overnight, without danger of attack to the anode.
Equipment (Tank & Heating Coils)	Steel, rubber lined steel, stainless steel (type 316 preferred), or in most instances, an unlined 55-Gallon steel drum would be satisfactory. Note: In an immersion treatment,

	no electrical equipment is required.

Solution Life

This solution normally has a long life but will vary with each installation depending on usage and the thickness of anode scale. Maintenance additions should be made as required to rebuild the bath. If, after extended use, the cleaning action slows down, a portion of the solution should be discarded and rebuilt according to the make-up proportions.

Procedure for Removing Scale from Anodes

1. Remove the anode from the chromium plating tank.
2. Rinse the anode thoroughly with water.
3. Immerse anode in the Deruster 11 J solution for enough time to loosen scale.
4. Remove anode from Deruster 11 J solution and scrub off loosened scale.
5. Rinse thoroughly with water.
6. Return anode to chromium plating tank.

Titration Method

I. Procedure for Deruster 11 J NOT containing cyanide

1. Pipette a 5 mL sample into a 250 mL Erlenmeyer flask and dilute with 50 mL of water.
2. Add 4 drops of Phenolphthalein indicator and mix.
3. Titrate with 0.5 N Hydrochloric Acid until the color changes from red to colorless.
4. Record mL Hydrochloric Acid used.

Calculation

Factor (oz/Gal) 0.75
Factor (g/L) 5.60
Concentration = mL 0.5 N HCl x Factor

II. Procedure for Deruster 11 J containing cyanide

1. Pipette a 5 mL sample into a 250 mL Erlenmeyer flask and dilute with 50 mL of water.
2. Add 10 drops of LaMotte Sulfo Orange indicator and mix.
3. Titrate with 0.5 N Hydrochloric Acid until color changes from orange to yellow.
4. Record mL 0.5 N Hydrochloric Acid used.

Calculation

Factor (oz/Gal) 0.75
Factor (g/L) 5.60
Concentration = mL 0.5 N HCl x Factor

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Test Kit Method

III. Procedure for Deruster 11 J solution NOT containing cyanide

1. Fill test bottle 1/3 with water.
2. Add 1/2 mL of Deruster 11 J solution.
3. Add 3 to 4 drops of Methyl Orange indicator.
4. Add 0.72 N Hydrochloric Acid test solution drop wise until solution color changes.

Calculation

Factor (oz/Gal)	*0.32*
Factor (g/L)	*4.70*

Concentration = Drops 0.72 N HCl x Factor

Waste Disposal

Discharge to a disposal system. In order to be completely informed on the latest regulations for your area, please contact the local authorities.

If sodium cyanide has been added to the Deruster 11 J solution, observe the following disposal procedures:

Calculate the total pounds of sodium cyanide in the solution. If the amount is not known, it must be determined by analysis.

For each pound of sodium cyanide, add 8 lb of commercial calcium hypochlorite. The hypochlorite must be dissolved in water and added to the cold (room temperature) Deruster 11 J solution slowly and with good agitation because considerable heat may be generated.

After the hypochlorite has reacted completely, follow the above procedure for neutralization.

Caution

Deruster 11 J is highly alkaline. Avoid contact with skin and eyes. Wear protective clothing, goggles and rubber gloves. Flush exposed areas immediately with clean, cold water. In case of injury, contact a doctor immediately. Consult SDS for details.

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