

Cee-Bee® J-3

Cee-Bee® J-3 is a mildly acidic liquid scale remover for use in hot section, multi-step turbine engine overhaul cleaning processes. Cee-Bee® J-3 is normally used together with Super Bee™ 300LF/G or Cee-Bee® A-7X7, Cee-Bee® J-84AL, Cee-Bee® J-88L and Cee-Bee® C-623 as part of various multi-step overhaul cleaning processes.

Conforms To

- AMS & ARP
 - AMS 1382A
 - ARP 1755B
- CFM 56
 - CP 2669
- General Electric
 - C04-239
- IAE
 - OMat 01-426
- Pratt & Whitney
 - SPMC 8
- Rolls Royce
 - OMat 1/152A
- SNECMA
 - DMP 12-056
 - DMP 13-250
 - DMR 70-620

Benefits

- Rapid and effective scale removal.
- Excellent sequestering agent.
- Non-toxic vapors.
- Safe on high chromium steels, nickel and cobalt and their alloys.
- Surfactants biodegradable.
- Concentrated liquid used at only 15-20% by volume.

Properties

- Liquid

Notes Prior to Handling

Before using your Cee-Bee® products, all safety and operating instructions should be read and understood. If you have any questions, please contact your Cee-Bee® representative before proceeding.

Use Procedure

Tank Recommendation

- Use 316 stainless steel tanks and heaters with this product.
- Use mechanical agitation.

Tank Charge Instructions

- Prepare a 15-20% v/v solution.
- Add to the water slowly and carefully with continuous agitation.
- Adjust pH to 3.0 - 3.5 with nitric acid.

Tank Operation

Cee-Bee J-3 Descaler bath is usually used in conjunction with an alkaline rust and scale remover, such as Cee-Bee[®] J84AL, and Cee-Bee[®] J-88L Alkaline Permanganate Scale Conditioner as follows:

1. Degrease parts in Cee-Bee[®] A-7X7 or Super Bee[™] 300 LF.
2. Process parts in an alkaline rust remover, Cee-Bee[®] J84AL, bath for 15 to 30 minutes.
3. Dip rinse in an air-agitated, overflowing clear water bath.
4. Immerse parts in the Cee-Bee[®] J-3 Bath for 15 to 30 min. at 175-185°F (79-85°C).
5. Dip rinse in an air-agitated, overflowing clear water bath.
6. Immerse parts in a Cee-Bee[®] J-88L bath for 15 to 30 min. at 185-200°F (85-95°C).
7. Dip rinse in an air-agitated, overflowing clear water bath.
8. Immerse parts in the Cee-Bee[®] J-3 Bath for 15 to 30 min. at 175-185°F (79-85°C).
9. Dip rinse in an air-agitated, overflowing clear water bath.
10. Force dry with hot air or apply a rust inhibitor, such as Cee-Bee[®] Nortex 3025 to protect parts from flash rusting.

Note:

- After removing the parts from each process tank and before the dip rinse, allow the excess solution to drain back into the tank. Then rinse the parts with a light mist of water over the tank. This procedure will help reduce drag out loss.

Solution Control

- Maintain pH of Cee-Bee[®] J-3 solution between 3.0 - 3.5 using Technical Grade Nitric Acid. Follow all safety precautions when handling Nitric Acid.
- Daily additions of water are required to make up for evaporation loss. Sample solutions to be analyzed should be taken from the center of a heated, agitated bath at full operating level. Periodic additions of undiluted Cee-Bee[®] J-3 are required to replace drag out loss using the following procedure.

Cee-Bee[®] J-3 Bath Analysis

Reagents

- Ammonium oxalate (3.0% solution)
 - Dissolve approx. 30 g of calcium-free ammonium oxalate in one (1) liter of water.
- Calcium chloride (standard solution)
 - Dissolve 50.05 g of primary std, calcium carbonate in 300 ml of distilled water by slowly adding 140 ml of conc. hydrochloric acid to completely dissolve the carbonate. Heat to boiling to remove carbon dioxide and completely dissolve the sample. Cool to room temperature, then neutralize excess acid with ammonium hydroxide until slightly alkaline to litmus. Dilute the solution to exactly one (1) liter. This solution is 0.5 N in calcium.
 - **Optional:** The normality of the calcium chloride solution can be tested following the procedure in the appendix.
- Ammonium hydroxide, concentrated reagent

Equipment

- Distilled or Deionized Water
- Beakers – 150ml, 250ml, or 600ml
- High Intensity Lamp
- Coarse Filter Paper
- 10ml Graduated Pipet
- pH Meter
- 5 ml Pipet

Solution Control (Continued)

Testing Procedure

1. Pipette the Cee-Bee[®] J-3 sample into a clean beaker. See chart below for amounts to pipette and beaker size to use. Typically, the cleaner the bath, the more sample you should use. The smaller the sample size, the greater the margin is for error. A good compromise (to avoid using so much concentrated ammonium hydroxide) is 50 ml or 25 ml.

Sample Size	Beaker	Ammonium Oxalate Addition	Factor
100 ml	600 ml	10.0 ml	0.65
50 ml	250 ml	5.0 ml	1.30
25 ml	150 ml	2.5 ml	2.60
20 ml	100 ml	2.0 ml	3.25

Cee-Bee[®] J-3 Sample Size Matrix

2. Add 3.0% ammonium oxalate solution per the chart above. This is a critical step. Use a pipette to measure the amount to add. Over addition will lead to false low results.
3. Back-light the sample using a high-intensity light. Using a pH meter, add ammonium hydroxide to raise the pH of the solution to at least 11.5 and until the solution becomes translucent.
4. Using the pH probe as a visual reference, titrate the sample to the first permanent turbidity (turbidity must remain at least 30 seconds) with the standard calcium chloride using the graduated pipette.
 - a. **Note:** To avoid overshooting the endpoint, wait five minutes between 1 ml additions of calcium chloride and check for permanent turbidity.

Calculation

$$\text{ml Calcium Chloride solution} \times \text{Factor} = \% \text{ Cee-Bee J-3}^{\text{®}} \text{ (v/v)}$$

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