

Chromic Acid, Waste Volume Reduction Memo

NEWCOMER SUPPLY PRODUCTS CONTAINING CHROMIC ACID:

Chromic Acid 10%, Aqueous	Part 1034
Chromic Acid 5%, Aqueous	Part 10341
Fungus, Grocott Methenamine Silver (GMS) Stain Kit (Soln A)	Part 9121

APPLICATION:

Chromic Acid, also known as Chromium Trioxide, Hexavalent Chromium, Chromium (VI), Cr (VI) and Chromium 6, is used in special stain procedures and is a strong oxidizer. Chromic Acid is typically made by adding concentrated sulfuric acid to an aqueous solution of a dichromate salt.

The chromic acid waste volume reduction and disposal process initially reduces Chromium (VI) to non-oxidizing and stable Chromium (III) or Cr (III) compound with the use of sodium thiosulfate in an acid (sulfuric) environment. The reduced Cr (III) solution is further neutralized with Sodium Thiosulfate.

For information on neutralizing a Chromic Acid spill, refer to Part ABAH-32, Acid Handler Spill Powder.

Chromic Acid is considered a toxic health hazard and all personal protection precautions should be implemented when handling. Safety risks associated with Chromic Acid are outlined in the product SDS and should be evaluated by the user.

WASTE VOLUME REDUCTION PROCEDURE:

1. Do not dispose of Chromic Acid down the drain or sanitary sewer.
2. Collect Chromic Acid waste solutions in an appropriately labeled leak-proof container.
 - a. Do not use metal containers.
 - b. Do not use containers with a metal cap or lid.
3. Under a fume hood, dilute 100 ml waste Chromic Acid by slowly adding the acid to an equal amount of water.
 - a. Use a beaker at least 5 times the volume of chromic acid waste to be treated.
 - b. Place beaker, with stir bar on a magnetic stir plate.
 - c. Work in small batches to properly neutralize.
 - d. If waste chromic acid is already diluted by half or more, further dilution can be skipped.
4. Test pH of diluted solution:
 - a. If pH is greater than 1.0, gradually add Sulfuric Acid or Calcium Carbonate until a pH of 1.0 is obtained.
 - b. If pH is less than 1.0, gradually add small amounts of Sodium Carbonate until a pH of 1.0 is obtained.
5. Add approximately 14 gm Sodium Thiosulfate; mix and combine well until the solution turns cloudy and blue
 - a. If necessary, add additional Sodium Thiosulfate until the color change is noted.
6. Slowly add 15 gm Sodium Carbonate to neutralize the solution.
 - a. Once solution is neutral, stir for an additional 15 minutes.
7. Allow mixture to sit overnight; filter off the precipitate.
8. Dispose of resultant trivalent Chromium Hydroxide precipitate in a manner to comply with local, state and federal regulations.

PROCEDURE NOTE:

1. Waste volume reduction procedure should be conducted under a fume hood with the use of personal protection equipment.
2. Smaller or larger volumes of Chromic Acid can be reduced and neutralized for disposal. Adjust reagents accordingly.

REFERENCES:

1. <https://www.aeonlaboratories.com/protocols/Chromic%20acid%20disposal.odt>
2. Dapson, Janet Crookham, and Richard Dapson. *Hazardous Materials in the Histopathology Laboratory: Regulations, Risks, Handling, and Disposal*. 4th ed. Battle Creek, MI: Anatech, 2005. 241.