

INTENDED USE

Formaldetox is used to destroy the hazardous component of 10% formalin (3.7% formaldehyde) in unbuffered formalin, neutral buffered formalin, unbuffered zinc formalin and buffered zinc formalin (ANATECH's Z-Fix). Formaldetox will also detoxify the still bottom residue remaining after distillation. Formaldetox cannot be used with alcoholic formalin.

PRODUCT SUMMARY

Formaldetox oxidizes formaldehyde to formic acid and immediately neutralizes it to sodium formate. Byproducts of the reaction are sodium carbonate, sodium bicarbonate, carbon dioxide, and water. Methanol (present as a stabilizer in most formalin solutions) is also oxidized to sodium formate. Phosphate buffer salts will remain unchanged. The pH of the detoxified solution will range from 7.5 – 9.2.

Zinc compounds may interact with Formaldetox, making it less efficient, and should be removed prior to detoxification. The extent of interaction varies with the type of zinc salt in the formulation. Zinc salts left in the solution will be precipitated as oxides, hydroxides, and carbonates.

Warm water is added to the waste formalin in a 1:1 ratio to control the rate of reaction. The reaction is exothermic, so the solution will warm to 55 – 70°C, depending on the starting temperature. Formaldetox is effervescent and requires no mixing when in solution.

INGREDIENTS

Inorganic peroxide compound

WARNINGS

Formaldetox is an oxidizer. It is not likely to pose a hazard under intended conditions of use. Slight inhalation and skin irritant. Severe eye irritant. Byproducts of the detoxified reaction are also irritants.

STORAGE

Store at room temperature. Keep dry.

DIRECTIONS FOR USE

Optimal results can only be obtained when detoxification is performed according to these directions. To guarantee safety and efficacy, the reaction must be carried out in the special Reaction Drum (ANATECH Catalog #203).

Failure to follow warnings constitutes misuse of the product.

- DO NOT use Formaldetox as a detoxification agent for any chemical other than formaldehyde.
- DO NOT detoxify waste containing more than 10% formalin (3.7% formaldehyde).
- DO NOT detoxify more than 1.5 gallons of waste at a time.
- DO NOT use hot (> 30°C) water; the solution will get too hot and the reaction will proceed too fast.
- Do not use cold (< 20°C) water; the reaction will be incomplete.

- DO NOT use more than two containers of Formaldetox at a time.
- DO NOT mix or shake the solution.
- DO NOT use a spigot or any other cap to close the opening in the drum. The small colored plug in the top of the drum is a safety device designed to pop out if too much pressure builds up.
- Always use the vapor scrubber when conducting the reaction process. Gases (mostly carbon dioxide) are given off during the reaction, and must be allowed to escape.

The directions are designed to create a carefully controlled reaction. Misuse of the product will increase the rate of heat production and could cause the solution to boil. The heat could cause thermal burns to anyone touching the drum. If foam-over occurs, see special instructions on page 2 "To prevent foaming with excessively dirty formalin or still bottom residue".

General instructions

1. Wear splashproof safety goggles (not glasses), gloves, and an impervious apron during all steps (i.e., removing zinc, filling Reaction Drum, and disposal).
2. Remove zinc if present. If the solution does not contain zinc, proceed to step 3.
 - a. Dissolve 25 grams monobasic sodium phosphate, monohydrate in 500 ml warm, deionized or distilled water.
 - i. Do not use dibasic or tribasic sodium phosphate because the precipitate will be difficult to filter.
 - ii. This amount of monobasic sodium phosphate is suitable for ANATECH's zinc products; other brands may require additional phosphate to precipitate the zinc.
 - b. Add the sodium phosphate solution to 1.5 gallons of waste zinc formalin.
 - c. Allow the mixture to react for an hour.
 - d. Filter the solution through a conical #6 Melitta coffee filter (or equivalent), directly into the Reaction Drum. Laboratory filter paper (Whatman) can be used but will be slow. Perform the filtering operation under a fume hood.
 - e. Rinse the precipitate with a small amount of tap water to wash the formaldehyde from the filter.
 - f. Discard the filter paper with precipitate in the general trash. The precipitate consists of oxides, hydroxides and phosphates of zinc and are considered non-hazardous.
 - g. Proceed to Step 4 with zinc-free waste formalin in the Reaction Drum.

3. Fill the Reaction Drum to the 1.5 gallon mark with waste formalin.
4. Fill to the 3.0 gallon mark with lukewarm tap water (20 – 30°C).
5. Add two containers of Formaldetox. Do not stir or shake the mixture; the granules will dissolve slowly with effervescence.
6. Cap the Reaction Drum with the vapor scrubber and place inside a fume hood. Do not use the spigot or any other cap to close the opening in the drum.
7. Allow the reaction to proceed for at least 8 hours.
8. Discard the solution down the drain if given approval by appropriate officials. If the solution must be trickled into the drain, replace the vapor scrubber with a self-venting spigot (ANATECH Catalog #013). The white fluffy precipitate is undissolved sodium carbonate and may be poured down the drain without filtering.

Special instructions to prevent foaming with excessively dirty formalin or still bottom residue.

Bloody or dirty-yellow waste formalin, which is heavily contaminated with dissolved tissue proteins, is likely to foam excessively. The proteins trap tiny carbon dioxide bubbles that are generated by the reaction, producing foam that may not be contained by the drum. Still bottoms from formalin recycling stills will also be rich in dissolved proteins. If foaming-over occurs into the vapor scrubber, the charcoal must be replaced. See directions below “Care of the Vapor Scrubber”.

To prevent foaming during the detoxification process, follow these special directions:

1. Add 0.75 gallons of waste formalin to the Reaction Drum.
2. Add lukewarm water to the 3.0 gallon mark.
3. Add one container of Formaldetox to the solution.
4. Allow the reaction to proceed as usual.

Care of the vapor scrubber

The scrubber contains a column of activated charcoal. When formaldehyde odors become noticeable or the charcoal becomes contaminated with foam, replace the charcoal.

- Carefully unscrew the cylindrical portion of the scrubber, holding the threads of the unit in the palm of your hand.
- Remove the screen column and discard the charcoal.
- Fill the screen column with 8-20 mesh activated charcoal, such as Sigma-Aldrich Catalog #C2889.
- When reassembling the unit, be sure the rubber gasket on the upper piece is in place and screw the top of the scrubber into place.
- Place the used charcoal in a plastic bag and discard it in an appropriate manner.

DISPOSAL

- Dissolve Formaldetox granules that become wet, or need to be discarded, in tap water.
- Allow solution to sit for 24 hours, and then pour down the drain. At that point it will contain only sodium carbonate, sodium bicarbonate and sodium sulfate.
- Treat spills in the same manner. The white residue left when splashes dry is sodium carbonate, sodium bicarbonate and sodium sulfate, and is harmless.

MSDS

MSDS available online at www.anatechltusa.com.

ORDERING INFORMATION FOR FORMALDETOX

<u>Cat#</u>	<u>Packaging</u>
202	18 jars/case
203	Reaction Drum