

Laser[®] China Concentrate

Laser China Concentrate is an additive package to be used when shipping costs and/or import tariffs would prevent the use of Laser ACB 50. The Laser China Concentrate is designed to be used together with commercial grade hydrogen peroxide (50% active) to create Laser ACB 50.

Laser China Concentrate will be added to the working bath at a ratio of 10 to 1.5 (Hydrogen Peroxide 50% to Laser China Concentrate) by volume. The amount of Hydrogen Peroxide (50% active) required, will be equal to the amount of Laser ACB 50 that would typically be used for the desired results.

Features & Benefits

Highly concentrated	Lower shipping cost, smaller storage footprint
Not D.O.T. regulated	Lower shipping cost
Outstanding stabilization	Longer bath life, lower overall cost

Operating Conditions

<u>Range</u>	<u>Optimum</u>	
1. Hydrogen Peroxide (50%)	4% – 6%	5% (vol)
2. Laser China Concentrate	0.6% – 0.9%	0.75% (vol)
3. Sulfuric Acid	4% – 8%	6% (vol)
4. Temperature	100°F – 120°F (37.8°C – 48.9°C)	110°F (43.3°C)
5. Immersion time	1 – 4 minutes	

Typical Operating Process

1. 20% sulfuric acid, 120°F, 5 minutes.
2. Cold water rinse, 1 minute.
3. Laser China Concentrate (make-up above).
4. Cold water rinse, 1 minute.
5. 10% Laser Brilliant Dip, ambient, 4 minutes, room temperature.
6. Cold water rinse, 1 minute.
7. 25% Laser LL, ambient, 5 minutes, room temperature.
8. Cold water rinse, 1 minute.
9. 0.5% Laser guard II, 100° – 150°F, 5 minutes.
10. Heated dry.

Titration Method

Hydrogen Peroxide (50%) Concentration

1. Pipette 2 mL of the cooled **Laser** bath into 250 mL Erlenmeyer flask.
2. Add approximately 50 mL of water. Swirl to mix.
3. Add 10 mL 50% sulfuric acid solution and mix.
4. Titrate with 0.1N Potassium Permanganate to a lasting pink endpoint.
5. Record mL used.

Calculation

$$\text{Concentration (50\% H}_2\text{O}_2) = \text{mL 0.1N KMNO}_4 \times 0.143$$

Note: For bath concentrations greater than 8%, use the following dilution procedure:

- i. Pipette 10 mL of the cooled **Laser** bath into 100 mL volumetric flask and dilute to the mark with water.
- ii. Pipette 10 mL of this solution into the 250 mL Erlenmeyer flask and proceed to step #2 above.

*Use 0.286 for the factor to determine the bath concentration of the diluted solution:

$$\text{Concentration (50\% H}_2\text{O}_2) = \text{mL 0.1N KMNO}_4 \times 0.286$$

Sulfuric Acid Concentration

1. Pipette 1 mL of bath solution into 250 mL Erlenmeyer flask.
2. Add 3 drops of Methyl Orange indicator.
3. Titrate with 1.0N Sodium Hydroxide solution until a yellow-green color is observed.
4. Record mL used.

Calculation

$$\text{Concentration (H}_2\text{SO}_4) = \text{mL 1.0N NaOH} \times 2.8$$

Waste Disposal

Spent solutions contain Hydrogen Peroxide and sulfuric acid (although to varying degrees). They will contain dissolved metals - copper, zinc, lead, etc. They **do not** contain chelators.

Hydrogen Peroxide solutions can be treated with other waste streams or they can be segregated, and batch treated independently. If a clarifier is used in the separation of solids and liquids, the batch method is preferred. Small gas bubbles produced by peroxide destruction can lift previously precipitated sludge and cause "floaters". If membrane filters, cartridge filters, sand filters, filter presses, etc., are used, then everything can be mixed.

Hydrogen Peroxide is generally unstable on the alkaline side. Since Laser solutions are acidic, they require adjustment with caustic, caustic potash, lime, soda ash, etc. When the pH rises above 8.0, an effervescence will occur. This will vary with the concentration of peroxide. Certain dissolved metals like iron, lead, copper - will accelerate this.



This breakdown should be allowed to run to completion - as evidenced by the absence of gassing. If the dwell time is very short, sodium bisulfite can be used to expedite the process.

When the pH was raised, the various metals will precipitate in their hydroxide forms. If the Laser solution is mixed with chelate-containing wastes, some can remain in solution. Care should be taken to prevent this.

After metal precipitation and peroxide breakdown are complete, the waste stream can be handled in the normal fashion. The addition of coagulants and flocculants can proceed as normal.

Caution

DO NOT STORE USED LASER SOLUTIONS IN SEALED DRUMS. DISCHARGE USED LASER SOLUTIONS TO WASTE TREATMENT SYSTEMS EQUIPPED TO HANDLE THEM.

Hydrogen Peroxide mixtures should be stored in vented containers in a dry location, out of sun and away from heat. Empty containers should be diluted with large quantities of water and discarded. A spill or leak should be quickly flushed away by flooding with water.

Avoid contamination from any source, including metals, dust and especially organic materials. Avoid contact with combustible materials. Do not get in eyes - wear goggles. Avoid contact with skin - wear neoprene, butyl rubber or vinyl gloves. Wash thoroughly after handling. Do not breathe mists or vapors; adequate ventilation should be provided.

In case of contact with skin immediately flush with water for at least 15 minutes while quickly removing contaminated clothing and shoes. For eyes immediately flush with water for at least 15 minutes and call a physician.

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Product Bulletin

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For more information on this process,
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