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Product Bulletin

Product Name: Laser FE Export Concentrate
Product Code: 2343008
Revision Date: November 21, 2025

Laser® FE Export Concentrate

Laser FE Export Concentrate is a special blend to be used only in situations where shipping costs and import tariffs would prevent the use of the standard Laser FE formulation. The Laser FE Export Concentrate is used to prepare Laser FE, which is then used by the customer in a manner prescribed in the Hubbard-Hall Inc. Product Bulletin.

Features & Benefits

Highly concentrated	Small inventory footprint
Stable	Long shelf life, less waste

Operating Conditions

Preparation for mixing

Materials needed:

- Water
- Hydrogen peroxide, 50%
- Laser FE Export Concentrate

Equipment

All mixing tanks, agitation props, transfer pumps and lines, valves, drums or any equipment that meets these products, must be made of plastic or plastic-coated metal. Polypropylene, Polyethylene, and Teflon are all acceptable plastics for use. Please contact Hubbard-Hall Inc. for recommendations before using other plastics than the ones listed above. Laser FE Export Concentrate and Laser FE must not meet any metals.

Mixing instructions

Order of Addition	Chemical	% by Volume
1	Water	11.47%
2	Laser Export Concentrate	5.63%
3	Hydrogen Peroxide, 50%	60.03%
4	Laser FE Export Concentrate	22.87%

Additions must be made slowly and while the agitation prop is on. Mix the batch well and analyze.

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Control Methods

Test	Specification
Specific Gravity @ 77°F	1.147 +/- 0.01
Peroxide Concentration	31.0% minimum
Total Acidity	1.39 +/- 0.05N

Reagents and equipment

1. Sulfuric acid, 50% by volume
2. 0.1N Potassium Permanganate
3. Standard laboratory equipment
4. 1.0 N Sodium Hydroxide
5. Methyl Red indicator

Test procedures 1.
Specific gravity

a. Pre-weigh or tare a 250 mL plastic volumetric flask. Adjust temperature and fill the flask to the line with material. Reweigh.
b. Difference in weight = specific gravity
250 ml

2. Peroxide
   a. Weigh 1.0-1.2 grams sample on analytical balance, into a 100 mL volumetric flask.
   b. Add DI water to mark and mix well.
   c. Pipette a 10.0 mL aliquot into a 250 mL Erlenmeyer flask containing about 75 mL of DI water.
   d. Acidify with about 10 mL of 50% Sulfuric Acid solution.
   e. Titrate with 0.1 N Potassium Permanganate solution to faint pink end point.
   f. % H2o2 = mL of titrant x 1.701
      weight of sample

3. Total acidity
   a. Pipet 5.0 mL sample into a 250 mL Erlenmeyer flask and add 50 mL of DI water.
   b. Add 5-10 drops of Methyl Red indicator and titrate with 1.0 N Sodium Hydroxide to a yellow endpoint.
   c. (mL of 1.0N NaOH) (1.0N) = total acidity
      5.0 mL

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Caution

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

Once approved, the Laser FE product must be drummed in the appropriate containers (polypropylene, polyethylene - NO steel). These should be new, not reconditioned. *VENTED BUNG CAPS MUST BE USED ON ALL LASER PRODUCTS.* Care should be taken to store in a cool place. Store on plastic pallets or concrete floor (Not Wood). Do not expose drum to direct sunlight.

Appropriate safety and warning labels must be attached. Although required standards may vary, the following is an acceptable example:

"Laser FE contains Hydrogen Peroxide. Hydrogen Peroxide is strongly oxidative and acts caustically on the eyes and skin. = Spontaneous ignitions are possible if the liquid is soaked up by an inflammable material. Protect eyes and skin."

WARRANTY: HUBBARD-HALL INC. IS NOT RESPONSIBLE FOR THE MISUSE, MISAPPLICATION, OR MISHANDLING OF THIS PRODUCT. SEE THE TERMS AND CONDITIONS OF SALE ON OUR WEBSITE FOR ADDITIONAL TERMS AND CONDITIONS CONCERNING OUR PRODUCTS, INCLUDING BUT NOT LIMITED TO, LIMITATIONS AND DISCLAIMERS OF WARRANTIES AND LIABILITIES.