

SEE HIGHLIGHTED SECTIONS IN PARTICULAR**1.) What type of procedures can Gebauer's Ethyl Chloride products be used for as a topical anesthetic refrigerant spray?**

Ethyl Chloride can be used as a pre-injection topical anesthetic before an injection such as: IM (intramuscular) or subcutaneous injection, immunizations, I.V. starts, venipuncture, or lidocaine injection. It is also indicated for use before minor surgical procedures such as I & D of small abscesses, boils or paronychia.

Ethyl Chloride spray is used as a counterirritant spray to treat myofascial pain, trigger point release and restricted motion in conjunction with the Spray and Stretch Technique. It is also indicated for contusions and minor sports injuries like sprains or muscle spasms. Ethyl Chloride is easier than applying an ice pack to an injured area because it is immediately available, there is no mess like an ice pack, and the cooling effect is immediate.

2.) How does Ethyl Chloride work? What is its mechanism of action?

Ethyl Chloride is a topical aerosol anesthetic skin refrigerant. When topically applied to the skin, Ethyl Chloride creates an instantaneous cooling effect on the surface of the site by immediate evaporation of the product. The coldness created by the spray interrupts the body's ability to experience pain.

This happens because the coldness decreases the nerve conduction velocity of the C fibers and A-delta fibers that make up the peripheral nervous system. This interrupts the nociceptive (stimuli to the brain giving rise to sensations of pain) inputs to the spinal cord. This process temporarily numbs that area. The fast evaporation rate is created by ethyl chloride and its unique delivery system.

3.) How cold is Ethyl Chloride spray?

The temperature of the product will vary due to the delivery system (fine stream, medium stream or mist spray) and the distance from which the product is sprayed (see Question 5). Since Gebauer's skin refrigerants work by evaporation, the faster a product evaporates from the surface of the skin, the colder the cooling effect will be. Stream sprays dispense a larger volume of product at a specific pinpoint site, so it takes longer for the product to evaporate. The stream products range from around -4°C at 2 inches to -8°C at 7 inches. The fine stream spray can be used from 18 inches and reaches a temperature of approximately -20°C. Although the stream spray produces an effective cooling of the skin, it is not as cold as the mist but the cooling effect lasts longer than the mist due to the lowered evaporation rate of the chemical from the point of contact.

The mist spray reaches a temperature of approximately -15°C at 3 inches. Mist streams produce very fine droplets of product that are dispersed over a larger area than the stream sprays and evaporate very quickly. Therefore, the mist spray is "colder". The temperature data was collected from testing performed on validated laboratory equipment.

4.) How long do I spray Ethyl Chloride on the procedure site?

Spray Ethyl Chloride to the site for 4 to 10 seconds from the can or 3 to 7 seconds from the bottle. Both the can and bottle should be sprayed from a distance of 3 to 9 inches until the skin begins to blanch. The length of time will depend on the skin's sensitivity to cold plus a number of variables such as differences in blood flow, sensory perception, weight, fat content, metabolism etc. The practitioner needs to be observant while spraying. When the skin begins to turn white, the numbing has taken effect and it is time to stop spraying. Do not frost the skin.

5.) How do I know the site is numb?

When the skin blanches or begins to turn white in the center of the spraying area, the skin is sufficiently cold to numb the area.

6.) How long does Ethyl Chloride's anesthetic effect last?

The anesthetic effect of Ethyl Chloride lasts up to 60 seconds. Ethyl Chloride may be reapplied if the procedure is not completed in 60 seconds on intact skin only.

7.) When does Ethyl Chloride get applied?

Applying Ethyl Chloride should be the last thing done before doing the procedure. Follow protocol when cleaning the area with an antiseptic, have all equipment ready for the procedure and then apply the Ethyl Chloride immediately before doing the procedure.

8.) Is Ethyl Chloride sterile?

Ethyl Chloride does not claim to be sterile but the product has passed the Microbial Limit Test in accordance with the USP. These tests are designed to demonstrate that a substance is free from Staphylococcus aureus (staph), Escherichia coli (E-coli), Pseudomonas aeruginosa and Salmonella species.

9.) How are Ethyl Chloride fine stream, medium stream and mist spray different from each other? Which should I use?

The type of Ethyl Chloride spray that is used in a procedure directly effects the cooling sensation produced. Gebauer's Ethyl Chloride Mist is most effective for general cooling of the skin where precise contact is not indicated, since the mist spray covers a circular area approximately one inch in diameter. The mist spray is dispersed in fine droplets, which causes an increased evaporation rate and more intense cooling effect (See Question 3). Ethyl Chloride Mist Spray is recommended for pre-injection anesthesia.

Gebauer's Ethyl Chloride Medium and Fine Stream Sprays are most effective for cooling the skin at a specific pinpoint site. The medium stream allows a larger volume of product to be applied from the site than the fine stream. For this reason the medium stream is preferred for pre-injection anesthesia and the fine stream is preferred for use in conjunction with the Spray and Stretch technique and myofascial pain treatment. When used for pre-injection anesthesia, the stream spray puddles and may drip from the injection site. The overflow of product evaporates quickly and is of no consequence to the numbing process.

10.) Is Ethyl Chloride flammable?

Yes, Ethyl Chloride is flammable and should not be used with electrical cautery equipment.

11.) Can Ethyl Chloride be used in a pediatric population?

Ethyl Chloride has a general approval and can be used on children as well as adults. Clinical trials have been run on children as young as 3 years old.

It is important to note that when using Ethyl Chloride on an infant or child, the practitioner needs to be very observant as to when the skin blanches and not over spray. A child's skin may be more sensitive to the cold temperature than an adult's. The cold spray may also startle the child and it is good practice to warn them that the product is cold prior to spraying although this may be difficult at a young age.

12.) Can Ethyl Chloride be used for circumcision?

No. There are no clinical trials to test the efficacy of using Ethyl Chloride for circumcision. Ethyl Chloride also has not been approved for use on genital mucous membranes.

13.) What is the active ingredient in Gebauer's Ethyl Chloride?

The active ingredient is the chemical ethyl chloride.

14.) What is the propellant in Ethyl Chloride?

Ethyl Chloride acts as its own propellant.

15.) How long is the expiration date of Ethyl Chloride?

The Ethyl Chloride bottle has a 3-year expiration date and the Ethyl Chloride can has a 2-year expiration date.

16.) Can I use Ethyl Chloride with ultra sound or electrical cautery equipment?

Electrical cautery equipment should never be used with or around Gebauer's Ethyl Chloride since it is flammable.

It is not recommended using ultra sound equipment around the Gebauer's Ethyl Chloride bottle since the vibration could cause the bottle to shatter. Use the Gebauer's Ethyl Chloride can with ultra sound equipment since there is no hazard of the can breaking due to vibration.

17.) How many applications are in one bottle or can?

When using Ethyl Chloride for pre-injection anesthesia or to control pain associated with minor surgery, there are approximately 40 to 50 5-second spray applications per bottle or can.

When being used for myofascial pain, the Spray and Stretch Technique, muscle spasm or minor sports injury, it is hard to predict how many applications are in one container, since each application for these types of procedures will use a different quantity of spray, depending on how long the area is sprayed and how large the affected area is.

18.) How cold is Ethyl Chloride compared to Gebauer's other refrigerant sprays?

Gebauer's Ethyl Chloride, Pain Ease, and Spray and Stretch have equivalent cooling profiles. Gebauer's Fluro-Ethyl is the coldest of Gebauer's skin refrigerants.

19.) What is Ethyl Chloride's toxicity?

When used as directed, in a well ventilated setting, Ethyl Chloride is well below an exposure level that would cause concern of toxicity.

There is published toxicity data on Ethyl Chloride but this data is associated with highly concentrated exposure to Ethyl Chloride for long periods of time. This is not appropriate for the intended use of the Gebauer's Ethyl Chloride products. The correct use of the product results in much less than these published toxicity levels for exposure and inhalation. Exposure is further limited by the nature of the use of Gebauer's product as a vapocoolant. Since the product is applied in short topical sprays in a well-ventilated environment, it quickly evaporates with little to no absorption into the skin.

20.) What is the difference between the bottle and the can?

There is very little difference between the bottle and the can. It usually is the customer's personal preference, which he chooses to use. The volume of product is the same in both the can and bottle, 3.5 fluid ounces (103.5 ml).

The bottle is an unconventional spray application, which needs to be turned upside down with the lever depressed all the way to the bottle to apply. If not done properly the product will drip and does not come out in a solid stream. The can is a conventional, upright aerosol can and the spray is applied in the usual manner of an aerosol. The bottle offers the customer fine stream spray and medium stream spray. The can offers the customer medium stream spray and mist spray.

21.) What happens when an Ethyl Chloride bottle is dropped?

When an Ethyl Chloride bottle is dropped the bottle may break. If it breaks it is fully encased in the plastic coating, which captures the broken glass. The liquid will evaporate quickly or can be wiped up with paper towels. The room should be well ventilated for a period of time to rid the room of any odor or vapors from the product.

22.) Does Ethyl Chloride have an odor?

Yes, Ethyl Chloride has a slight odor. The room that it is being used in should be well ventilated.

23.) Does Ethyl Chloride need to be stored in a fireproof cabinet?

Even though Ethyl Chloride is flammable, it does not need to be stored in a fireproof cabinet. However, each hospital and office may have its own protocol to where flammable items need to be stored. It is up to the individual institution to decide where to keep Ethyl Chloride.

24.) How do I dispose of expired EC?

Ethyl Chloride needs to be disposed of in accordance with your facility's hazardous waste program.

25.) Why is the bottle more expensive than the can?

The bottle packaging is more costly than the can. The bottles have nozzles and valves that are assembled individually by hand, therefore making them more expensive. The plastic coating on the bottle adds to the additional expense of the bottle over the can.

26.) Why is there not a fine stream in the can?

One of the primary clinical uses for Ethyl Chloride in a can is as a pre-injection anesthetic topical refrigerant spray. The medium stream spray and mist spray are the recommended sprays for this indication. The fine stream spray has historically been used for the Spray and Stretch Technique using the bottle.

27.) Does Ethyl Chloride need to be refrigerated?

No, Ethyl Chloride does not need and should not be refrigerated.

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