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PRODUCT INFORMATION

Safe-Vue™ Colored Smoke Candles
#70-03x, #70-06x, #70-12x and #70-20x

E. Vernon Hill, Inc. provides this information sheet to our customers as a guideline for the use and handling of *Safe-Vue™* Colored Smoke Candles. Be sure to also read and understand the separate Material Safety Data Sheet (MSDS) before using or handling these products.

• Product Applications

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Safe-Vue Colored Smoke Candles come standard in fuse-lit and pull-tab models and in three different burn durations. All models are available in six rich colors. Electric starters (squib) with 12 inch leads are available by special order.

These candles are intended for air movement testing and leak detection. The high volume and high persistence of the smoke generated makes these candles suitable for leak testing in air ducts and sewer lines.

• What Is Smoke?

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A normal smoke consists of airborne material which reflects light instead of allowing it to pass through. *Safe-Vue* colored smoke candles use a fuel-oxidizer compound to throw vaporized material into the air which condenses to form the "smoke." The airborne dye in this material reflects light of a certain wavelength, giving the smoke it's color.

Since airborne material of any kind can be irritating, we cannot claim that these candles are nontoxic. However, the dye used in these candles is a Drug & Cosmetic (D&C) approved dye. As such, it is not "poisonous" or "toxic" by any usual definition. Remember that ***all smoke is an irritant.***

• Dye Staining

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The dyes used in *Safe-Vue* Colored Smoke Candles can cause staining or marking. Be careful when placing any items near a burning candle. The dye initially escapes from the candle in very high densities. Anything within a few inches of a burning candle will be stained with the dye.

Beyond a few inches from the candle, however, the smoke will leave no visible residue as long as the smoke is allowed to expand normally and adequate ventilation is provided. If the smoke is constrained in

a small space such as a drum or pipe, dye densities may remain high. Dye staining may occur in this situation. Some smoke material can remain after a test. Smoke infiltration can be kept to a minimum by ventilating the testing area well.

• Usage Guidelines

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Safe-Vue Colored Smoke Candles are available in two basic varieties: standard, fuse-lit candles (item numbers 70-03x, 70-06x and 70-12x); and High-Volume Pull-Tab candles (item numbers 70-20x).

To use the standard fuse-lit candles, light the fuse and immediately place the candle on the ground or in a suitable container such as an empty coffee can. The candle becomes hot when lit. ***Never hold a burning candle in your hand.***

For the #70-03x and #70-06x candles, the smoke will issue from the top of the candle at the fuse for the full duration of the candle. For the #70-12x candles, the smoke will issue from the top of the candle for the first 60 seconds and from the side of the candle for the next 60 seconds.

To use the #70-20x, High-Volume Pull-Tab candles, first remove the red paper cap with the "Remove Before Ignition" sticker. Then remove the second "Remove Before Ignition" sticker below the red cap. This will uncover a small hole at the top of the candle.

Next to the second sticker is a small handle. Hold this handle firmly between two fingers. Point the candle away from your face and pull firmly and evenly on the handle directly away from the candle. The candle will then ignite.

Smoke will issue from the hole next to the handle. Immediately place the burning candle on the ground or in a suitable container.

Safe-Vue Colored Smoke Candles will occasionally "pop" while burning. Variations in environmental conditions can cause a buildup of gasses inside the candle faster than can be expelled through the venting holes. These gasses expel an ash-plug and can cause one of the plastic end-caps to separate from the candle. Be sure to evaluate your use of these candles for this possibility.

• Product Safety « « «

Always use these candles in a well ventilated area. Avoid breathing the smoke. Remain at a safe distance from all burning candles.

All smoke candles become hot when lit. Never hold a burning candle in your hand.

Acute inhalation exposure can cause irritation of the respiratory tract and mucous membranes. If overexposure to the smoke occurs, get medical attention. See the Material Safety Data Sheet (MSDS.)

Not to be taken internally. Keep out of the reach of children.

• Storage « « «

Safe-Vue Colored Smoke Candles are sensitive to atmospheric moisture. Store unused candles in a cool, totally dry environment.

These products should be accessible only to those who are familiar with their proper use and who are familiar with all safety material. It is recommended that the products be stored in a locked cabinet or other secure place.

• Fire « « «

Safe-Vue Colored Smoke Candles are not explosive and pose no known unusual fire hazard. The smoke generated is not explosive.

When ignited, these candles become hot. Do not place a lit candle in any place where fire is a danger.

To extinguish a lit candle, use water or CO₂. Use self-contained breathing apparatus and full protective clothing when fighting a fire involving these candles.

• Shipping « « «

Safe-Vue Colored Smoke Candles ship as a restricted material under UN #0197 "Signals, Smoke," hazard class 1.4G. Contact your shipping provider for more information.

TECHNICAL INFORMATION

Product Formula

KClO₃ - C₆ H₁₀ O₅ - Na HCO₃ - Vat Dye

Smoke Volume Duration

| | | |
|---------------|----------------|-------------|
| Item #70-030: | 4,000 cu. ft. | 30 Seconds |
| Item #70-060: | 8,000 cu. ft. | 60 Seconds |
| Item #70-120: | 16,000 cu. ft. | 120 Seconds |
| Item #70-200: | 40,000 cu. ft. | 60 Seconds |

Note: since smoke density will vary with environmental conditions, these volumes are only approximate. Burn durations are also approximate and may vary by ±10%.

Physical Data / Reactivity Data

See Material Safety Data Sheet (MSDS)

Particle Size

The "smoke" generated by these candles is a condensation of vaporized material. As such, a particle size measurement is not applicable.

Electric Starters

All *Safe-Vue* Colored Smoke Candles can be fitted on a custom basis with electrically started ignition systems with the following nominal properties:

Bridge Wire Resistance: 1.6 ohms

"No Fire" Current: 0.20 amps

"All Fire" Current: 0.37 amps

After ignition of the candle, the two igniter leads may be electrically either connected or disconnected.

• Product Disposal « « «

After a candle has been used, ventilate testing area well. Use local exhaust to keep exposure to a minimum. The duration of smoke and length of exposure can be reduced by using in a well ventilated area.

Thoroughly submerge used or unused candles in water before disposal. Dispose of candles in a manner that complies with local, state and federal regulations.

This MSDS is provided as a guideline for the use of our products only. E. Vernon Hill, Inc. disclaims responsibility for damage or injury resulting from the improper use of these products.

We believe all information given is accurate. It is offered in good faith, but without guarantee. Since conditions of product use are beyond our control, all risks of use are assumed by the user.

Users are responsible for verifying this data under their own operating conditions to determine whether the product is suitable for their particular purposes.

Nothing herein shall be construed as a recommendation for uses which infringe valid patents or as extending a license under valid patents.