

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

LABEL IDENTIFIER: Quick Starting Training Canister made after 11/1/2005

PRODUCT IDENTIFIER: P/N 453972 Kit, Training Canister, for Chemox Oxygen Breathing Apparatus
P/N 454013 Kit, Training Canister, for Navy Oxygen Breathing Apparatus
P/N 454014 Training Canister, Quick Starting, for Chemox Oxygen Breathing Apparatus
P/N 454015 Training Canister, Quick Starting, for Navy Oxygen Breathing Apparatus

COMPANY IDENTIFICATION: MINE SAFETY APPLIANCES
1100 Cranberry Woods Drive
Cranberry Township, PA 16066
CUSTOMER SERVICE: 1-800-MSA-2222 (8:30 a.m. – 5:00 p.m., USA local time)
EMERGENCY: 1-800-255-3924 (CHEM-TEL, INC.)

2. Composition/Information on Ingredients

After 11/1/2005:

	%	Synonym(s)
CANISTER: 1000 grams CarboLime		
Calcium hydroxide (1305-62-0)	>75%	Ca(OH) ₂
Sodium hydroxide (1310-73-2)	3	NaOH
CANDLE: 50 grams		
Sodium Chlorate (7775-09-9)	<90	NaClO ₃
Barium Peroxide (1304-29-6)	<10	BaO ₂
Potassium Perchlorate (7778-74-7)	<0.1	KClO ₄

Note: P/N 454013 and 453972 kits contains one training canister and forty candles.
P/N 454014 and 454015 contain one training canister and no candles.

OSHA REGULATORY STATUS: Hazardous by definition of Hazard Communication Standard, 29 CFR 1910.1200.

3. Hazards Identification

EMERGENCY OVERVIEW: Do not attempt to open canister or candle assemblies as both contain hazardous chemicals. In addition, the candle assembly contains a primer and flashpowder which can cause serious injury if exposed. Do not attempt to activate a candle assembly unless the candle assembly is properly installed in the canister in accordance with instructions as serious injury can occur. Oxygen generated by this apparatus is accompanied by evolution of heat. Consult instructions before attempting to use the apparatus.

PHYSICAL HAZARD: Canister Contents: Not a physical hazard per 29 CFR 1910.1200 definition. Candle Contents: Oxidizer; candle primer assembly is supplemented with flashpowder (KClO₄).

HEALTH HAZARDS: Canister Contents: Corrosive, irritant, toxic for NaOH, LD50 rat is 500 mg/kg; for Ca(OH)₂, LD50 rat is 7340 mg/kg. Candle contents: Irritant. Toxic by ingestion, could cause chlorate poisoning.

4. First Aid Measures

EMERGENCY AND FIRST AID PROCEDURES: Exposure to chemical solids contained in canister or candle is not anticipated under intended conditions of use and overexposure is highly unlikely.

CHEMICAL CAUSES SEVERE ALKALI AND THERMAL BURNS! SEND TO A PHYSICIAN IN ALL CASES.

EYES: Immediately flush eyes with plenty of water for 15 minutes, holding eyes open.

SKIN: Immediately shake any material from skin, remove contaminated clothing, then flush skin with copious amounts of water for at least 15 minutes. Discard contaminated clothing and shoes.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

INGESTION: Do not induce vomiting. Give demulcent such as milk, olive oil, or margarine in small amounts up to 2 or 3 ounces. Never give anything by mouth to an unconscious person.

GET MEDICAL ATTENTION IMMEDIATELY IN ALL CASES.

5. Fire Fighting Measures

FLASH POINT: Not Flammable LEL N/A UEL N/A

EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

PROTECTIONS OF FIRE FIGHTERS: Use standard fire fighting equipment including self-contained pressure demand breathing apparatus with full facepiece, impervious covering and boots.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Candle containers may rupture in fire. Liberated oxygen may intensify fire. Water may leach alkaline materials from canister producing a caustic run-off solution. Avoid skin contact with run-off water.

6. Accidental Release Measures

PROCEDURES FOR SPILL OR LEAK CLEANUP: A broken and fragmented candle should be cleaned up on a dry basis. Wear a NIOSH approved dust respirator and rubber gloves. Avoid dusting conditions. Place pieces and sweepings in a marked disposal container. Concrete or metal floors can then be flushed with water. Do not wet wood floors. After clean up, wash exposed body surfaces with soap and water. Launder clothing before reuse.

7. Handling and Storage

HYGIENIC PRACTICES: N/A

STORAGE: Store in a cool dry area protected from crushing or impact forces. Store separate from incompatible materials such as organic chemicals, acids, or combustibles.

8. Exposure Controls/Personal Protection

EXPOSURE LIMITS:

	<u>TWA</u>
CANISTER: (1000 grams CarboLime)	
Calcium Hydroxide (1305-62-0)	5 mg/M ³
Sodium Hydroxide (1310-73-2)	2 mg/M ³ STEL
CANDLE: (50 grams)	
Sodium Chlorate (7775-09-9)	Not Listed
Barium Peroxide (1304-29-6)	0.5 mg/M ³ *
Potassium Perchlorate (7778-74-7)	Not Listed
	*Ba Soluble Compounds

PERSONAL PROTECTIVE EQUIPMENT: Not applicable

ENGINEERING CONTROLS: Not applicable

WORK PRACTICES: Follow detailed instructions supplied with apparatus.

9. Physical and Chemical Properties

FORMULA: Apparatus contains CarboLime [Ca(OH)₂, NaOH], NaClO₃, BaO₂, plus flashpowder (KClO₄) with a primer assembly.

APPEARANCE AND ODOR:	Canister: White to pink granules.	Candle: Light grey solid mass
BOILING POINT:	N/A	
SPECIFIC GRAVITY (H ₂ O = 1):	Approx. 2.2	
VAPOR PRESSURE:	N/A	
PERCENT VOLATILE BY VOLUME:	N/A	
VAPOR DENSITY (AIR=1):	N/A	
SOLUBILITY IN WATER:	Canister Contents: Partial	Candle Contents: Partial

10. Stability and Reactivity

CONDITIONS OR MATERIALS TO AVOID: Avoid contact with acids, organic chemicals and combustibles.

11. Toxicological Information

SIGNS AND SYMPTOMS OF EXPOSURE:

Canister Contents: Eyes - Irritation Skin - Irritation Nose - Mucous membrane irritation, sneezing, coughing
Ingestion - Abdominal pain, muscular spasm, corrosion of mucous membranes

Candle Contents: Toxic, Irritant NaClO₃ probable human lethal dose 50-500 mg/kg, between 1 teaspoon and 1 ounce for 70 kg (150 pound) person. BaO₂ LD50 SCU mouse 50mg/kg

MSDS053

Quick Starting Training Canister Made After 11/1/2005

Candle Contents: Skin - Irritation if not promptly removed Ingestion - Nausea, vomiting, abdominal pain, blueness, diarrhea, difficult breathing

PRIMARY ROUTES OF ENTRY:

Canister Contents - Ingestion, skin, eyes

Candle Contents - Ingestion, skin

TARGET ORGANS:

Canister Contents - Eyes, skin, gastrointestinal tract, blood

Candle Contents - Skin, blood, kidneys

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: No Information

EXPOSURE LIMITS: See TWAs (in Section 8)

CARCINOGENICITY DATA: Not listed in Registry of Toxic Effects of Chemical Substances (RTECS)

MUTATION DATA: See RTECS data for sodium chlorate

CANISTER OR CANDLE CONTENTS:

Skin - Wash exposed area with soap and water immediately. Get medical attention if irritation occurs. Remove exposed clothing and wash before reuse.

Eyes - Immediately flush eyes with water for at least 15 minutes holding eyes open. GET MEDICAL ATTENTION IMMEDIATELY.

12. Ecological Information

Sodium chlorate was reported to be "practically nontoxic" in tested species. 48 hour LC50 Daphnia: >1,000 mg/l; 96 hour EC50 Freshwater Algae (static) 133 mg/l; 96 hour LC50 Mysid Shrimp (flow-through): >1,000 mg/l; 96 hour LC50 Bluegill (flow-through): >1,000 mg/l; 96 hour LC50 Rainbow Trout (flow-through): >1,000 mg/l; 96 hour LC50 sheepshead minnow (flow-through): >1,000 mg/l; 96 hour LC50 oyster shell deposition (flow-through): >1,000 mg/l

The single dose oral LD50 of sodium chlorate in mallard ducks was greater than 2510 mg/kg. The five day dietary LC50 to mallard ducks and northern bobwhite quail were both greater than 5620 ppm. A single spraying of the equivalent of 348 pounds per acre of sodium chlorate produced a significant impairment of growth, seed germination and seedling emergence in 10 non-target plant species

13. Disposal Information

Chemox training units consist of a canister containing a carbon dioxide scrubbing chemical (CarboLime) and a replaceable, oxygen-generating candle. The canister is designed to be reused with up to 40 oxygen candles. Hence, the disposal of three items must be addressed; the used (ignited) oxygen candles, unused and misfired oxygen candles, and the baralyme-filled canister. Each will be discussed separately.

Used Oxygen Candles

After the candle has been used in the training canister, it should be allowed to cool before handling. Heat protective gloves are recommended to ensure against accidentally touching a hot candle. The cold used candles

MSDS053 Quick Starting Training Canister Made After 11/1/2005

can be stored until disposal. Store used candles where they do not contact water or any type of solvents to prevent leaching or corrosion of the candle materials.

Also, the spent candles should not be roughly handled or crushed. In the unlikely event material does escape from the candle housing, this material should be collected and disposed of along with the spent candles. Take precautions so as not to inhale or ingest the material during collection. Thorough washing of hands and other areas contacting dust must be carried out after collection.

Dispose of spent candles and any material from the candles as hazardous waste according to local, state, and federal regulations. Each candle contains about two grams of barium as various salts.

Unused Candles

Unused candles should be used before disposal. Then dispose of the candle as described above for used oxygen candles.

Misfired Candles

If the primer is not red and the whole candle assembly darkened, the candle has been used and should be disposed as described in the previous paragraph for used oxygen candles. In rare instances, a candle will not ignite after the primer is fired. In this case, the primer will be indented, but the primer color may or may not be red, and the candle housing will not be darkened due to the heat evolved when the candle burns. In this case, the candle cannot be used before disposal. As a result, the candle will still contain approximately 25 grams sodium chlorate and may contain less than 1 gram flash powder, in addition to 2 grams of barium. If stored before disposal, misfired unused candles should be stored away from any combustible materials. However, the container must not be airtight, so that if the candle were accidentally ignited, the evolved oxygen gas would not generate pressure.

The misfired unused candle must be disposed according to local, state, and federal regulations as a hazardous waste.

Training Canisters

If stored before disposal, the red training canister should have any unused candles removed. The yellow storage cap or a used candle should be placed into the candle recess and secured with the firing mechanism.

The canister can be stored in normal storage areas. Do not allow the canisters to be roughly handled or crushed or immersed in water. If CarboLime escapes from a broken canister, the material should be collected and disposed with precautions taken to prevent inhalation or ingestion of the material. Avoid excess contact with CarboLime, as it is caustic in nature. Thoroughly wash contaminated areas of the skin immediately with water. Dispose of the canister and any spilled contents as hazardous waste according to local, state, and federal regulations.

14. Transport Information

P/N 454014 and 454015 are not regulated as U.S. Department of Transportation (DOT) hazardous materials but should be shipped with due care.

P/N 453972 and 454013 are regulated as U.S. DOT hazardous materials:

Proper Shipping Name:	Oxygen generator, chemical
Hazard Class or Division:	5.1
Identification Number:	UN3356
Packaging Group:	II

PN 453972 and 454013 have each been classified and approved for shipment by U.S. DOT in accordance with Classification Document DOT EX-9709047 and Approval CA-1997090009. Shipper should carefully review these documents which are available from the Office of Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, 400 7th Street, SW, Washington, DC 20590-0001. Tel: 1-800-467-4922. Web site: www.hazmat.dot.gov. Copies of these documents are also available at www.msanet.com/prism.

15. Regulatory Information

SARA 313 Information: The candle mixture contains 1-5% weight percent of barium peroxide, a barium compound, CAS Number: 1304-29-6, a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

Pennsylvania: The candles contain sodium chlorate and barium peroxide which are subject to the Pennsylvania Worker and Community Right-To-Know Act.

California: The sodium chlorate component sometimes contains trace amounts of chromium (up to 25 parts per million). The following warning is provided to comply with California law. Warning! This product contains a chemical known to the State of California to cause cancer.

16. Other Information

WARNING: This is a hazardous chemical product. By following the directions and warnings provided with this product, the hazards associated with the use of this product can be greatly reduced but never entirely eliminated. Mine Safety Appliances Company makes no warranties, expressed or implied, with respect to this product and EXPRESSLY DISCLAIMS THE WARRANTY OF MERCHANTABILITY AND ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. Users assume all risks in handling, using, or storing this product.