

**1. IDENTIFICATION OF THE PRODUCT AND OF THE DISTRIBUTOR**

Name of the product's Security Data File  
1500000587

Identification of the product:  
C470 Super-Ego Cartridge

D.O.T SHIPMENT NAME:  
Gas (Butane) Cartridge

Identification of the distributor:  
SUPER-EGO TOOLS, S. L.U.  
Ctra. Durango – Elorrio, Km 2  
48220 Abadiano Vizcaya, Spain  
Telephone number: + 34 946 210 100  
Fax: + 34 946 210 131  
E-mail: superego@rothenberger.es  
www.super-ego.es

**2. COMPOSITION AND INFORMATION ABOUT THE COMPONENTS**

| Chemical Ingredients Name<br>Weight % | Trade Term/Synonym                   | Cas No.  | Approximate<br>Weight % |
|---------------------------------------|--------------------------------------|----------|-------------------------|
| Propane                               | n-propane, propylhydride             | 74-98-6  | 26wt%                   |
| Iso-Butane                            | 2-methylpropane,<br>trimethylmethane | 75-28-5  | 28wt%                   |
| N-Butane                              | butane, liquefied<br>petroleum gas   | 106-97-8 | 45wt%                   |
| Others                                | maximum 2%                           |          |                         |

**3. IDENTIFICATION OF THE POSSIBLE HAZARDS**

CERCLA Index (0-3) : health=1, fire=3, reactivity=0, durability=0NFPA Index (0-4) : health=1, fire=4, reactivity=0

Emergency overview

Colorless and odorless but may affect central nervous system.  
Occasionally smells like rotten garlic.  
If inhaled, it may cause anoxia symptoms.  
Flammable gas and may cause a fire.  
Need to be separated from the ignition source.  
Shall not be contacted with eye, skin, and clothes.  
Avoid gas inhalation.  
Used under proper ventilation.  
Closed well with a container's cap.  
Physical hazard : Flammable gas, and it may cause a spark and explode if exposed to heat.

Potential health effects

Inhalation:  
Short term exposure : Irritation, nausea, vomiting, difficulty in breathing, headache, drowsiness, symptoms of drunkenness, tingling, suffocation, coma.  
Long term exposure : No data on adverse effects.

Skin contact:  
Short term exposure : May cause blister, frostbite or paralysis  
Long term exposure : No data on adverse effects.

Eye contact:  
Short term exposure : May cause Frostbite or vision problem  
Long term exposure : No data

Ingestion:  
Short term exposure : May cause frostbite

Long term exposure : No data

Cancerogenic status

Industry safety and health law : Not specified  
Occupational Safety and Health Administration (OSHA) : Not specified  
National Toxicology Program (NTP) : Not specified  
International Agency For Research on Cancer (IARC) : Not specified

**4. FIRST AID**

Inhalation:  
Move from the exposed areas immediately.  
Artificial respiration if needed.  
Secure the airway, maintain blood pressure, and inhale oxygen if possible.  
Keep a patient in a warm and comfortable condition.  
Treat appropriately depending on the symptoms.  
Take a proper medical action.

Skin contact:  
Thoroughly wash off with soft detergent and much water (15-20 minutes).  
If there are symptoms such as frostbite and freezing, take the following process.  
Warm the affected part with warm water of 107F(41.7°C).  
Gently wrap the affected part in blanket.  
Take an immediate medical action.

Eye contact:  
Wash eyes immediately with much water or saline solution until no chemicals remain.  
Take an immediate medical action

Ingestion:  
Treat properly based on the symptoms.  
Take an immediate medical action.

Information on doctor:  
Antidote : No specific antidote exists (General or supportive therapy may be done based on the symptoms).

**5. MEASURES TO FIGHT AGAINST FIRES**

Explosion & fire hazard:  
May burst or explode if exposed to heat or spark.  
Heavier than the air, and there is a possibility of ignition and backfire.  
Container may explode by heat or fire.  
Mixture of gas & air may explode.  
Low electrical conduction may cause static electricity, and ignited by a spark.

Fire extinguisher:  
Powder fire extinguisher, carbondioxide (Use water or fog in case of a blaze).

Extinguishing a fire:  
If not dangerous, remove from a fire area.  
After putting out a fire, sprinkle a cooling water in the side of the container which is exposed by heat.  
Escape from the end of tank.  
Use a fire hose or monitor nozzle if a blaze occurs in the stored area, and leave it burned if difficult.  
Immediately remove if the size of blaze grows bigger or the tank is discolored by heat.  
Leave it burned and isolate by more than 1 mile if we cannot stop the spills from gas tank, and tank lorry.  
Extinguish it if the gas spills can be stopped.  
Use much water in a form of fog from a long distance.  
Don't inhale the smoke from the burning materials with one's back against the wind.  
Keep away outside a 5-mile radius (1/3 mile) if fire is out of control or the container is exposed to a flame.



Harmful combustion product:

Pyrolysis product may include a harmful carbon oxidized substance.

**6. MEASURES WHICH MUST BE TAKEN IN THE EVENT OF ACCIDENTAL SPILLAGE OR DISPERSION**

Occupational leakage:

- Avoid heat, flame, spark and other source of ignition.
- Do not touch a spilled material.
- Do it if you can stop a spilled material with safety.
- Sprinkle water in order to reduce vapor.
- Isolate the area until the gas disperses.
- Prohibit smoke, flame or fire at the dangerous area.
- No entry to unauthorized persons, and isolate the dangerous and restricted area.
- Ventilate the closed place before entering.

**7. HANDLING AND STORAGE**

Store and handle in accordance with the regulations of a central government and local autonomous entity.

Store based on 29CFR 1910.106.

Ground(Earth) connection:

- Store the materials with low electric conductivity in the container which meets ground connection standards according to NFPA77-1983.
- Recommend a practical training against static electricity.
- Please isolate and store the materials separated from other materials which shall not be put together at the same time.

**8. CONTROL OF EXPOSURE / INDIVIDUAL PROTECTION**

Exposure standard (TWA). Industry safety & health law

Propane:

- 1000ppm(1800 mg/m<sup>3</sup>) OSHA TWA 2500ppm ACGIH TWA
- 1000ppm(1800 mg/m<sup>3</sup>) NIOSH recommendation TWA 10hours
- 1800 mg/m<sup>3</sup> (1000 ml/m<sup>3</sup>) DFG MAK (Peak limit assortment grade -, deviation factor 2)

N-butane:

- TWA : 800ppm, 1900 mg/m<sup>3</sup>STEL : - 800ppm(1900 mg/m<sup>3</sup>)
- OSHA TWA (JUN. 30,1993, Invalid by 58 FR 35338) 800ppm
- ACGIH TWA 800ppm(1900 mg/m<sup>3</sup>) NIOSH recommendation
- TWA 10hours 2400 mg/m<sup>3</sup> (1000 ml/m<sup>3</sup>) DFG MAK (Peak limit assortment grade - II, deviation factor 4)

ISO-Butane:

- 800ppm(1900 mg/m<sup>3</sup>) ACGIH TWA 800ppm(1900 mg/m<sup>3</sup>)
- NIOSH recommendation TWA 10hours 2400 mg/m<sup>3</sup> (1000 ml/m<sup>3</sup>) DFG MAK (Peak limit assortment grade - II, deviation factor 4)

LPG : Liquefied Petroleum Gas:

- 1000ppm(1800 mg/m<sup>3</sup>) OSHA TWA 1000ppm ACGIH TWA
- 1000ppm(1800 mg/m<sup>3</sup>) NIOSH recommendation TWA 10hours

Ventilation

- Set up a partial ventilation or general diluted ventilation equipment.
- Install explosion-screening facilities for the relevant ventilation equipment if there is a possibility of explosion for the material.

Eye protection

- For the gas, eye protection not required, but recommended.
- For the liquid, spray or dust protective goggles are needed to avoid a direct contact with foreign materials.
- Contact lense shall not be used.

Emergency eye washing

Employer shall install a washing equipment and shower stall near the work place because possibly employee's eye can be exposed to foreign materials.

Protection clothes

For gas, protective clothing is not necessary  
In case of possible contact with liquid, employee must wear proper protection clothes and equipment in order to prevent a skin fromfreezing.

Protection gloves

Wear insulated gloves and gloves against the cold.

Respirator

Below respirator and maximum use concentration is recommended by NIOSH guide or allowance standard report about chemical hazard established by America Health and Human Services Department.  
Specifically-selected respirator shall be based on pollutant density in a work place, and does not exceed the operation limit of respirator, and finally approved by NIOSH and NSHA at the same time.

LPG (Liquified Petroleum Gas)

- 10,000ppm : Air-supply respirator, self-support respirator
- 19,000ppm : Respirator operated by continuous flow form

Whole self-support respirator

Whole air-supply respirator

Whole air-supply respirator operated continuously by oil pressure

- Shelter : Shelter-type self-support respirator
- If there is a urgent danger to life or health,

Operated by inhalation & ventilation resistance or positive pressurization as all of the self-support respirators.  
Inhalation & ventilation resistance supportively equipped with self-support respirator operated by inhalation & ventilation resistance or positive pressurization.  
Whole air-supply respirator operated by positive pressurization.

**9. PHYSICAL-CHEMICAL PROPERTIES**

N-butane

|                                 |                                  |
|---------------------------------|----------------------------------|
| Physical condition*1:           | liquid & vapor                   |
| Color                           | colorless                        |
| Smell*2                         | odorless                         |
| Time to smell                   | no way to know                   |
| pH                              | not applicable                   |
| Melting point                   | -138.3°C                         |
| Boiling point                   | -0.5°C                           |
| Flashing point                  | -73.3°C                          |
| Evaporation rate                | 100%                             |
| Flammability                    | no way to know                   |
| Explosion limit concentration   | Upper 8.4 vol%<br>Lower 1.9 vol% |
| Vapor pressure                  | 0.214MPa @21.1°C                 |
| Vapor density                   | 2.1(air=1)                       |
| Specific gravity                | 0.549(H2O=1)@20°C                |
| Solubility                      | 3.25ml/100ml(20°C, water)        |
| Partition factorN-octanol/water | 2.89 as log POW                  |
| Ignition point                  | 287°C                            |
| Decomposition temperature       | no way to know                   |

ISO-Butane

|                       |                |
|-----------------------|----------------|
| Physical condition*1: | liquid & vapor |
| Color                 | colorless      |
| Smell*2               | odorless       |
| Time to smell         | no way to know |
| pH                    | not applicable |
| Melting point         | -160°C         |
| Boiling point         | -11.5°C        |
| Flashing point        | -88°C          |
| Evaporation rate      | 100%           |

|                                 |                                  |
|---------------------------------|----------------------------------|
| Flammability                    | no way to know                   |
| Explosion limit concentration   | Upper 8.4 vol%<br>Lower 1.8 vol% |
| Vapor pressure                  | 0.304MPa @20°C                   |
| Vapor density                   | 2.595(air=1)                     |
| Specific gravity                | 0.549(H2O=1)@20°C                |
| Solubility                      | no way to know                   |
| Partition factorN-octanol/water | 2.89 as log POW                  |
| Ignition point                  | 460°C                            |
| Decomposition temperature       | no way to know                   |
| <b>Propane</b>                  |                                  |
| Physical condition*1:           | liquid & vapor                   |
| Color                           | colorless                        |
| Smell*2                         | odorless                         |
| Time to smell                   | no way to know                   |
| pH                              | not applicable                   |
| Melting point                   | -187.7°C                         |
| Boiling point                   | -42.1°C                          |
| Flashing point                  | -104.4°C                         |
| Evaporation rate                | 100%                             |
| Flammability                    | no way to know                   |
| Explosion limit concentration   | Upper 9.5 vol%<br>Lower 2.2 vol% |
| Vapor pressure                  | 0.75MPa @20°C                    |
| Vapor density                   | 1.55 (air=1)                     |
| Specific gravity                | 0.501(H2O=1)@20°C                |
| Solubility                      | 0.007 g/100ml(20°C, water)       |
| Partition factorN-octanol/water | 2.36 as log POW                  |
| Ignition point                  | 466.1°C                          |
| Decomposition temperature       | no way to know                   |

\* Component has no smell, but a little odorant is added

## 10. STABILITY AND REACTIVITY

Reactivity:  
Stable at a normal temperature and pressure.

Condition to be avoided:  
Avoid a contact with heat, flame, spark and other sources of ignition  
Vapor has a explosiveness  
Do not contact with a skin  
May cause frostbite  
Because of a pressure, containers may be burst if exposed to heat, and thus could move to a long distance

Material to be avoided:  
Strong oxidizer : Hazard of fire, explosion.  
Nitric acid, chlorine dioxide : Material to be avoided  
Carbonyl nickel & acid : Explode at 20~40°C.

Dangerous decomposition product:  
Pyrolysis product may contain poisonous carbon oxidized substance.

Polymerization reaction:  
No data at a normal temperature and pressure.

## 11. TOXICOLOGICAL INFORMATION

Toxicological data:  
Propane :  
LA50 : 6960 mg/kg, inhalation – rat/so  
Butane:  
LC50 : 57pph/15min , inhalation – rat  
N-Butane:  
LC50 : 658 mg/m<sup>3</sup>/45min , inhalation - rat  
LC50 : 680 mg/m<sup>3</sup>/2hours , inhalation – mouse

Carcinogenicity:  
Industry safety & health law : No data

Acute toxicity level:  
No toxicity by inhalation (little toxicity by ingestion)

Effect on target organs:  
Simple asphyxiant, and central nervous system suppressant

Additional data:  
Stimulant like epinephrine may cause ventricular fibrillation

### Effect on health

Inhalation : Asphyxiant/anesthetic  
Acute exposure:  
It may cause headache, dullness, difficulty in breathing, drowsiness, and losing consciousness.  
If exposed under 1% concentration for 10 minutes, it may cause drowsiness or dizziness.  
High concentration may cause suffocation, difficulty in breathing, nausea, vomiting, coma, spasm, and paralysis.  
19,000ppm concentration may cause immediate danger to life or health.  
Chronic exposure : No data.

Skin contact:  
Acute exposure : Contact with liquid may cause frostbite, ache, and water blister.  
Chronic exposure : May cause symptoms the same as acute exposure.

Eye contact:  
Acute exposure : Contact with liquid may cause frostbite, ache, and eyesight loss.  
Chronic exposure : May cause symptoms the same as acute exposure.

Ingestion:  
Acute exposure : Gas ingestion is not likely to occur, but if you swallow the liquid, it may cause frostbite on the lips, mouth, and membrane.  
Chronic exposure : No data.

## 12. ECOLOGICAL INFORMATION

Environmental effect index (0~4) : No data  
Acute water system toxicity : No data  
Resolvability : No data  
BCF : No data  
Log water/octanium distribution index : No data

## 13. CONSIDERATIONS REGARDING ITS ELIMINATION

Comply with a central government and local autonomous entity regulations.  
Disposal shall be executed by a standard of 40CFR 262 applied for hazardous waste generator.  
EPA hazardous waste No. D001.

## 14. INFORMATION REGARDING TRANSPORT

Land transport ADR/RID and GGVS/GGVE (cross-border / domestic):

ADR/RID-GGVS/E Class: 2 5F Gases  
Kemler Code: -  
UN Number: 2037  
Packaging group: -  
Hazard label: 2.1  
Description of goods: 2037 SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES)  
Transport category: 2  
Tunnel restriction code: D  
Remarks: When transported as limited quantity according to 3.4 ADR:  
Bulk identification (package identification): UN 2037 (rhombus)  
Entry in the transportation document: Transportation according to chapter 3.4 ADR

Maritime transport IMDG/GGVSee:



SAFETY DATA SHEET

Version: 01  
Revision: 2013/02/26

IMDG/GGVSee Class: 2.1  
UN Number: 2037  
Label: 2.1  
Packaging group: -  
EMS number: F-D, S-U  
Marine pollutant: no  
Proper shipping: SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 2.1  
UN Number: 2037  
Label: 2.1  
Packaging group: -  
Proper shipping name: SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES)

15. INFORMATION REGARDING THE REGULATION

Korea:  
Industry safety & health law : Allowable concentration  
Control law of hazardous chemical materials : -  
Fire Services Act : -

USA:  
TSCA : Stipulated  
CERCLA clauses103(40CFR 302.4) : Not stipulated  
SARA clauses 302(40CFR 355.30) : Not stipulated  
SARA clauses 304(40CFR 355.400) : Not stipulated  
SARA clauses 313(40CFR 372.62) : Not stipulated  
OSHA process safety management (29CFR 1910.119) : Not stipulated

California clause 65 (drinking water disposal regulation) : Not stipulated

SARA harmfulness category : SARA WP311/312clause (40CFR 370.21)

Acute harmfulness : Exist  
Chronic harmfulness : Not exist  
Fire hazard : Exist  
Reaction hazard : Not exist  
Sudden eruption hazard : Exist

16. ADDITIONAL INFORMATION

Precautions in handling and storage

Do not expose to heat and store at below 40°C in an airy place.  
Please pay attention in order to avoid a cut on the finger by groove.  
In case the product drops on the ground, be careful about deformation of nozzle and gas leakage.  
After use, please separate the product in order to avoid an explosion by radiant heat.  
Keep out of reach of children.  
Do not put such things as iron plate, stone plate, aluminum foil, which have much radiant heat, above the product covers.  
Use in an airy place since a use in the airtight place may cause explosion and suffocation.  
Do not spray or inhale to human body and avoid an impact on the product.

\* Please read and follow the directions on the product label.