1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: Shaped Charges, Division 1.4
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

1.2 Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Application of the substance / the mixture Explosive product.

1.3 Details of the supplier of the Safety Data Sheet
Manufacturer/Supplier:
Owen Oil Tools LP
12001 County Road 1000
P.O. Box 765
Godley, TX 76044 USA
Phone: (817) 551-0660

1.4 Emergency telephone number:
ChemTel Inc.
(800)255-3924, +1 (813)248-0585

2 Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008

exploding bomb

Expl. 1.4 H204 Fire or projection hazard.

skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 4 H312 Harmful in contact with skin.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

T; Toxic
R25: Toxic if swallowed.

Xn; Harmful
R21: Harmful in contact with skin.

R5: Heating may cause an explosion.

Information concerning particular hazards for human and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

(Contd. on page 2)
Trade name: Shaped Charges, Division 1.4
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

Classification system:
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.
The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008
The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS01 GHS06

Signal word Danger

Hazard-determining components of labelling:
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
perhydro-1,3,5-trinitro-1,3,5-triazine
2,2',4,4',6,6'-hexanitrostilbene

Hazard statements
H204 Fire or projection hazard.
H301 Toxic if swallowed.
H312 Harmful in contact with skin.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P250 Do not subject to grinding/shock/friction.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P371+P380+P375 In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
P401 Store in accordance with local/regional/national/international regulations.

Hazard description:

WHMIS-symbols:
D1A - Very toxic material causing immediate and serious toxic effects
F - Dangerously reactive material

NFPA ratings (scale 0 - 4)
Health = 3
Fire = 3
Reactivity = 3
Trade name: Shaped Charges, Division 1.4
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

HMIS_ratings (scale 0 - 4)

- **Health = 3**
- **Fire = 3**
- **Reactivity = 3**

**HMIS Long Term Health Hazard Substances**
None of the ingredients is listed.

2.3 Other hazards
- **Results of PBT and vPvB assessment**
  - PBT: Not applicable.
  - vPvB: Not applicable.
- **Explosive Product Notice**
  PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

3 Composition/information on ingredients

<table>
<thead>
<tr>
<th>CAS: 121-82-4</th>
<th>perhydro-1,3,5-trinitro-1,3,5-triazine</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 204-500-1</td>
<td>T R25, E R2</td>
</tr>
<tr>
<td></td>
<td>Expl. 1,1, H201</td>
</tr>
<tr>
<td></td>
<td>Acute Tox. 3, H301</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 2691-41-0</th>
<th>octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 220-260-0</td>
<td>T R24, Xn R22, E R2</td>
</tr>
<tr>
<td></td>
<td>Expl. 1,1, H201</td>
</tr>
<tr>
<td></td>
<td>Acute Tox. 3, H301; Acute Tox. 3, H311</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 20062-22-0</th>
<th>2,2,'4,4,6,6'-hexanitrostilbene</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 243-494-5</td>
<td>T R25, E R2</td>
</tr>
<tr>
<td></td>
<td>Expl. 1,1, H201</td>
</tr>
<tr>
<td></td>
<td>Acute Tox. 3, H301</td>
</tr>
</tbody>
</table>
Trade name: Shaped Charges, Division 1.4
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

<table>
<thead>
<tr>
<th>CAS: 38082-89-2</th>
<th>2,6-bis(picrylamino)-3,5-dinitropyridine (PYX)</th>
<th>NA%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7439-89-6</td>
<td>iron substance with a Community workplace exposure limit</td>
<td>NA%</td>
</tr>
<tr>
<td>EINECS: 231-096-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS: 7429-90-5</td>
<td>aluminium powder (pyrophoric)</td>
<td>NA%</td>
</tr>
<tr>
<td>EINECS: 231-072-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index number: 013-001-00-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS: 8002-74-2</td>
<td>Paraffin waxes and Hydrocarbon waxes</td>
<td>NA%</td>
</tr>
<tr>
<td>EINECS: 232-315-6</td>
<td>substance with a Community workplace exposure limit</td>
<td></td>
</tr>
<tr>
<td>CAS: 7440-50-8</td>
<td>copper</td>
<td>NA%</td>
</tr>
<tr>
<td>EINECS: 231-159-6</td>
<td>substance with a Community workplace exposure limit</td>
<td></td>
</tr>
<tr>
<td>CAS: 7440-44-0</td>
<td>carbon</td>
<td>NA%</td>
</tr>
<tr>
<td>EINECS: 231-153-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Additional information: For the wording of the listed risk phrases refer to section 16.

4 First aid measures

4.1 Description of first aid measures

- **General information:** Take affected persons out into the fresh air.
- **After inhalation:**
  Respiration of particulates is unlikely during normal usage.
  Supply fresh air; consult doctor in case of complaints.
- **After skin contact:**
  Immediately wash with water and soap and rinse thoroughly.
  If skin irritation continues, consult a doctor.
- **After eye contact:**
  Remove contact lenses if worn.
  Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:**
  Rinse out mouth and then drink plenty of water.
  Do not induce vomiting; call for medical help immediately.

4.2 Most important symptoms and effects, both acute and delayed

- Blast injury if mishandled.
- Dizziness
- Nausea in case of ingestion.
- Gastric or intestinal disorders when ingested.
- Methaemoglobinaemia
- Cyanosis
- Unconsciousness

**Hazards**

- Danger of blast or crush-type injuries.
- Danger of disturbed cardiac rhythm.
- Danger of convolution.

(Contd. on page 5)
5 Firefighting measures

- **5.1 Extinguishing media**
  - **Suitable extinguishing agents:**
    Flood area with water. If no water is available, carbon dioxide, dry chemical or earth may be used. If the fire reaches the cargo, withdraw and let fire burn.
  - **For safety reasons unsuitable extinguishing agents:** None.
- **5.2 Special hazards arising from the substance or mixture**
  Formation of toxic gases is possible during heating or in case of fire.
- **5.3 Advice for firefighters**
  - **Protective equipment:**
    Wear self-contained respiratory protective device.
    Wear fully protective suit.
  - **Additional information**
    Cool endangered receptacles with water spray.
    In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
    Eliminate all ignition sources if safe to do so.

6 Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
  Use respiratory protective device against the effects of fumes/dust/aerosol.
  Keep away from ignition sources.
  Remove persons from danger area.
  Ensure adequate ventilation
  Protect from heat.
  Isolate area and prevent access.
  Wear protective equipment. Keep unprotected persons away.
- **6.2 Environmental precautions:** Do not allow to enter sewers/surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
  Pick up mechanically.
  Send for recovery or disposal in suitable receptacles.
  Dispose contaminated material as waste according to item 13.
Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Printing date 21.03.2014
Revision: 19.03.2014

Trade name: Shaped Charges, Division 1.4
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

7.1 Precautions for safe handling
Keep away from heat and direct sunlight.
Handle with care. Avoid jolting, friction and impact.
Information about fire - and explosion protection:
Protect from heat.
Prevent impact and friction.
Keep ignition sources away - Do not smoke.
Use explosion-proof apparatus / fittings and spark-proof tools.
Use only in explosion protected area.
Emergency cooling must be available in case of nearby fire.

7.2 Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles:
Store in a cool location.
Avoid storage near extreme heat, ignition sources or open flame.
Information about storage in one common storage facility:
Store away from oxidizing agents.
Store away from foodstuffs.
Further information about storage conditions:
Store in cool, dry conditions in well sealed receptacles.
Protect from heat and direct sunlight.

7.3 Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical facilities: No further data; see item 7.

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:
121-82-4 perhydro-1,3,5-trinitro-1,3,5-triazine

| REL (USA) | Short-term value: 3 mg/m³ |
| Skin |
| TLV (USA) | Long-term value: 0,5 mg/m³ |
| Skin |

(Contd. on page 7)
## Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

**Printing date 21.03.2014**

**Revision: 19.03.2014**

### Trade name: Shaped Charges, Division 1.4
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

| EL (Canada) | Long-term value: 0.5 mg/m³ | Skin |
| EV (Canada) | Long-term value: 0.5 mg/m³ | Skin |

#### 7439-89-6 iron

| EV (Canada) | Long-term value: 1* 5** mg/m³ | as iron;*salts, water-soluble;**welding fume |

#### 7429-90-5 aluminium powder (pyrophoric)

| PEL (USA) | Long-term value: 15*; 15** mg/m³ | *Total dust; **Respirable fraction |
| REL (USA) | Long-term value: 10* 5** mg/m³ | *Total dust **Respirable fraction |
| TLV (USA) | Long-term value: 1* mg/m³ | as Al; *as respirable fraction |
| EL (Canada) | Long-term value: 1.0 mg/m³ | metal and insoluble compounds, respirable |
| EV (Canada) | Long-term value: 5 mg/m³ | aluminium-containing (as aluminium) |

#### 8002-74-2 Paraffin waxes and Hydrocarbon waxes

| REL (USA) | Long-term value: 2 mg/m³ |
| TLV (USA) | Long-term value: 2 mg/m³ |
| EL (Canada) | Long-term value: 2 mg/m³ |
| EV (Canada) | Long-term value: 2 mg/m³ | fume |

#### 7440-50-8 copper

| PEL (USA) | Long-term value: 1* 0.1** mg/m³ | as Cu *dusts and mists **fume |
| REL (USA) | Long-term value: 1* 0.1** mg/m³ | as Cu *dusts and mists **fume |
| TLV (USA) | Long-term value: 1* 0.2** mg/m³ | *dusts and mists; **fume; as Cu |
| EL (Canada) | Long-term value: 1* 0.2** mg/m³ | *dusts and mists; **fume |
| EV (Canada) | Long-term value: 0.2* 1** mg/m³ | as copper, *fume;**dust and mists |

- **Additional information:** The lists valid during the making were used as basis.

- **8.2 Exposure controls**

- **Personal protective equipment:**

- **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

The usual precautionary measures are to be adhered to when handling chemicals.

Do not inhale dust / smoke / mist.

(Contd. on page 8)
Trade name: Shaped Charges, Division 1.4  
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

**Respiratory protection:**
Not required under normal conditions of use. Use suitable respiratory protective device when high concentrations are present. For spills, respiratory protection may be advisable.

**Protection of hands:**

Protective gloves

Wear protective gloves to handle contents of damaged or leaking units. The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

**Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:**

Safety glasses

**Body protection:** Protective work clothing

**Limitation and supervision of exposure into the environment**
No further relevant information available.

**Risk management measures**
See Section 7 for additional information. Organizational measures should be in place for all activities involving this product.

---

9 Physical and chemical properties

**9.1 Information on basic physical and chemical properties**

**General Information**

**Appearance:**
- **Form:** Solid material
- **Colour:** Grey
- **Odour:** Mild

(Contd. of page 7)
10 Stability and reactivity

10.1 Reactivity
10.2 Chemical stability
10.3 Possibility of hazardous reactions

(Contd. on page 10)
11 Toxicological information

11.1 Information on toxicological effects
- Acute toxicity:
- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: Slight irritant effect on eyes.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
  - Toxic
  - Harmful
  - Repeated dose toxicity: May cause damage to organs through prolonged or repeated exposure.

12 Ecological information

12.1 Toxicity
- Aquatic toxicity: The product contains materials that are harmful to the environment.
- 12.2 Persistence and degradability No further relevant information available.
- 12.3 Bioaccumulative potential No further relevant information available.
- 12.4 Mobility in soil No further relevant information available.
- Additional ecological information:
  - General notes:
The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary
  - Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
  - Do not allow product to reach ground water, water course or sewage system, even in small quantities.
  - Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.
  - 12.5 Results of PBT and vPvB assessment
  - PBT: Not applicable.

(Contd. on page 11)
Trade name: Shaped Charges, Division 1.4  
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

- vPvB: Not applicable.  
- 12.6 Other adverse effects No further relevant information available.

### 13 Disposal considerations

- **13.1 Waste treatment methods**  
- **Recommendation**
  Must not be disposed together with household garbage. Do not allow product to reach sewage system.
  Must be specially treated adhering to official regulations.
  Damaged materials pose a danger to anyone in the immediate area; consult experts for disposal of damaged products.
  The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
  - **Uncleaned packaging:**
    - **Recommendation:** Disposal must be made according to official regulations.
    - **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

### 14 Transport information

- **14.1 UN-Number**
  - DOT, ADR, IMDG, IATA: UN0440

- **14.2 UN proper shipping name**
  - DOT, IMDG, IATA: Charges, shaped, without detonator
  - ADR: 0440 CHARGES, SHAPED, without detonator

- **14.3 Transport hazard class(es)**
  - DOT, ADR, IMDG

  ![14](image)

  - **Class:** 1.4D
  - **Label:** 1.4D

- **IATA**

  ![14](image)

  - **Class:** 1.4D
  - **Label:** Explosive 1.4
  - **14.4 Packing group**
    - DOT, ADR, IMDG, IATA: II
  - **14.5 Environmental hazards:**
    - Marine pollutant: No

(Contd. on page 12)
Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Trade name: Shaped Charges, Division 1.4
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

- 14.6 Special precautions for user Not applicable.
- EMS Number: F-A, S-Q
- 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.
- Transport/Additional information:
  - ADR
  - Limited quantities (LQ) 0
  - Transport category 2
  - Tunnel restriction code E
  - DOT
  - Remarks: US DOT PHMSA EXPLOSIVES EX-2003040091 (Encapsulated Perforator)
               US DOT PHMSA EXPLOSIVES EX-2013080920 (Jet Cutter Family)
               US DOT PHMSA EXPLOSIVES EX-1994050290 (Open-faced Perforator Family)
               US DOT PHMSA EXPLOSIVES EX-1992030012 (Tubing Cutter Family)
  - UN "Model Regulation": UN0440, CHARGES, SHAPED, without detonator, 1.4D, II

15 Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- United States (USA)
- SARA
  - Section 355 (extremely hazardous substances):
    None of the ingredients is listed.
  - Section 313 (Specific toxic chemical listings):
    7429-90-5 aluminium powder (pyrophoric)
    7440-50-8 copper
  - TSCA (Toxic Substances Control Act):
    All ingredients are listed.
  - Proposition 65 (California):
    - Chemicals known to cause cancer:
      None of the ingredients is listed.
    - Chemicals known to cause reproductive toxicity for females:
      None of the ingredients is listed.
    - Chemicals known to cause reproductive toxicity for males:
      None of the ingredients is listed.

(Contd. on page 13)
### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

#### Relevant phrases

- H201  Explosive; mass explosion hazard.
- H250  Catches fire spontaneously if exposed to air.
- H261  In contact with water releases flammable gases.
- H301  Toxic if swallowed.
- H311  Toxic in contact with skin.
- H319  Causes serious eye irritation.
Trade name: Shaped Charges, Division 1.4  
(Encapsulated Perforators, Jet Cutters, Open-Faced Perforators, or Tubing Cutters)

H335  May cause respiratory irritation.
R15  Contact with water liberates extremely flammable gases.
R17  Spontaneously flammable in air.
R2  Risk of explosion by shock, friction, fire or other sources of ignition.
R22  Harmful if swallowed.
R24  Toxic in contact with skin.
R25  Toxic if swallowed.
R36/37 Irritating to eyes and respiratory system.

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
Expl. 1.1: Explosives, Division 1.1
Expl. 1.4: Explosives, Division 1.4
Pyr. Sol. 1: Pyrophoric Solids, Hazard Category 1
Water-react. 2: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 2

Acute Tox. 3: Acute toxicity, Hazard Category 3
Acute Tox. 4: Acute toxicity, Hazard Category 4
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3