1. Product and company identification

Product's name: CHEMICAL REMOVER RQ-2
Product's internal identification code: VF1000
Company's name: rubber vulk, lda
Address: Zona Industrial, Lote 21 - 3680-133 Oliveira de Frades
Company's phone: +351 232 763 109 Fax: +351 232 763 110
E-mail: info@rubbervulk.com

2. Hazard identification:

Risk:
Toxic product; has narcotic effect.
Intense exposure can lead to unconsciousness and even coma, and cause irritation on the skin and eyes.

PRODUCT EFFECTS

Effects of Exposure:
Toxic product; has narcotic effect.
Intense exposure can lead to unconsciousness and even coma, and cause irritation on the skin and eyes.

Environmental Effects:
AIR: vapors of the product reduce the concentration of oxygen, making the environment asphyxiating and can form explosive mixtures of difficult ignition, requiring high intensity heat sources, such as welds, sparks, etc.
WATER: product of low solubility in water.
Trichloroethylene causes long-term damaging effect to the aquatic environment.
SOIL: volatile liquid, can penetrate the soil and cause possible contamination.

Physical and Chemical Hazards:
Irritation of the skin and mucus by prolonged contact;
Contamination by organic vapors.

Specific Hazards:
At high temperatures, the product releases toxic vapors.
Burning of the product releases toxic gases.

Hazard classification and labeling:

Class: 6.1
Risk no.: 60

Tóxico(T) Hazardous to the Environment

3. Composition and information on the ingredients:

Preparation: Solução para limpeza e desengraxe de metal e partes de borracha
Chemical nature: Solvente clorado

Components that contribute to the hazard:

<table>
<thead>
<tr>
<th>No.</th>
<th>Substance</th>
<th>CAS</th>
<th>Concentration %</th>
<th>Risk classification and phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>TRICHLOROETHYLENE</td>
<td>79-01-6</td>
<td>&gt;95</td>
<td>T(R45;R68;R67) - Xii(R36/38) - N(R52 53)</td>
</tr>
</tbody>
</table>
4. First-aid measures:

**FIRST-AID MEASURES**

**Inhalation**
- Dizziness, headache and fainting. Remove the victim to a ventilated location, keeping him in lying position, quiet and warm. Keep the respiratory passages free. Administer artificial respiration or oxygen if necessary. See a doctor.

**Contact with the skin**
- Irritation and burning on the contaminated site. Remove the clothes contaminated with the product. Wash with running water for 20 minutes. See a doctor if necessary.

**Contact with the eyes**
- Irritation, discomfort and pain. Wash with water for at least 20 minutes, see an ophthalmologist.

**Ingestion**
- Call/see a doctor immediately.
- Lay the victim down with the head turned to the side, keep the respiratory passages free, be careful not to inhale vomit. In case the victim is unconscious, do not give water or induce vomit.

**Major symptoms**
- Irritation on the skin, eyes and respiratory tracts, dizziness, sleepiness and loss of motor coordination, and unconsciousness.

**Actions to be avoided**
- Do not administer anything orally or induce the vomit if the victim is having a seizure or is unconscious.

**Doctor information**
- It is recommended to carefully administer gastric suction. The over-exposure to the solvent can cause higher sensitivity of the heart to adrenaline. In the case of ingestion, the supply of moist oxygen is normally necessary.

5. Firefighting measures:

**Appropriate extinguishing methods**
- Chemical Powder fire extinguisher, CO2

**Inappropriate extinguishing methods**
- Do not use jet of water directly, only spray or foam.

**Specific hazards**
- This product can burn but it is not easily ignited. Its burning can generate toxic fumes. The recipients can explode from the heat of the fire.

**Special methods**
- Firefighting with the wind always at your back.

**Firefighters protection**
- Use individual protection equipment.
- Avoid contact with the eyes and skin.
- Ensure adequate ventilation.

6. Control measures for spill / leakage:

**PERSONAL PRECAUTIONS**

**Removal of the sources of ignition**
- Remove all sources of ignition, do not smoke at the site.

**Dust control**
- Not applicable

**Prevention of inhalation or contact with the skin, mucus or eyes.**
- Use individual protection equipment.
- Avoid contact with the eyes and skin.
- Ensure adequate ventilation.

**Environmental precautions**
- Contain the leakage to avoid contamination of the soil and water. The trichloroethylene is heavier than water and has very low solubility. Avoid cloistering the place and if possible keep the place ventilated. It can contaminate water, causing long-term damaging effect to the aquatic environment.

**Removal and cleaning methods**
- In the case of spills, use absorbing materials and take the material to an appropriate location, leaving the solvent to dry.

**Recovery**
- After the contamination, the product can no longer be used.

**Disposal**
- Burn in an appropriate incinerator.
- Any disposal method should obey the legislation and the local regulations.
- Do not dispose into the sewer, ground or any water body or source.
7. Handling and storage:

**HANDLING**

| Appropriate technical measures | Provide exhaust ventilation where the processes so require. The product should be handled, obeying the standards and procedures of industrial hygiene and occupational safety, according to the current legislation. |
| Exposure prevention | Handle according to the established safety standards. Use the indicated individual protection equipment (IPE). Keep the packs always well closed. |
| Fire or explosion prevention | Trichloroethylene can form an explosive mixture with air, therefore adopt all the protection measures for fire prevention. No welding activity or cutting of any pack should be performed where the solvent is likely present due to the risk of explosion. Due to the volatility of the tri chloride, the cans can explode due to the heat of the fire. |
| Safe handling precautions | Avoid dropping the packs during the loading and offloading operation. In the case of drums of the product, they should be stored over wood platforms, away from the sun and rain and away from flames, fire, sparks and sources of heat. The packs should never be thrown over tires |

**STORAGE**

| Appropriate technical measures | Store away from food products, oxidants and strong bases (e.g.: Sodium/Potassium hydroxide). Trichloroethylene reacts violently with active metals (sodium, beryllium, lithium). |

**STORAGE CONDITIONS**

| Appropriate | Covered, ventilated and dry areas (temperature of ± 25°C). |
| To be avoided | Proximity with sources of heat and ignition, locations without ventilation and incompatible materials. |
| Risk signal | The location should have signals indicating the flammability of the product and the safety standards of the place. Classification according to Standard 704 of NFPA - National Fire Protection Agency.* |
| **PRODUCT:** |  |
| Toxic (T) | Class 6 |
| HEALTH | 2 |
| FLAMMABILITY | 1 |
| REACTIVITY | 0 |
| SPECIAL | - |
| *According to the FISPQ [Chemical Product Safety Information Record] of the solvent supplier |
| Incompatible products | Active metals, strong bases, strong oxidants and metal powders. |

**SAFE PACKAGING MATERIALS**

| Recommended | Original pack (flanders cans and gallons) |
| Inappropriate | Any other type of packing that is not the original packing of the product |

8. Exposure control and individual protection:

Engineering control measures: Appropriate ventilation of the place.

**SPECIFIC CONTROL PARAMETERS**

| Limits of occupational exposure: | BRAZIL - LT/ NR15 | USA - ACGIH |
| LT-MP | VM | ppm | ppm |
| LT-VM | N.E. | STEL / TLV | ppm |
| TRICHLOROETHYLENE | 78 | TWA / TLV | ppm |
### CHEMICAL REMOVER RQ-2

**8. Exposure control and individual protection: Continued**

<table>
<thead>
<tr>
<th>TRICHLOROETHYLENE</th>
<th>50</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA: Time weighted average</td>
<td>LT-MP: Weighted average tolerance limit</td>
<td></td>
</tr>
<tr>
<td>TLV: Threshold Limit Value</td>
<td>LT-VM: Maximum Value Tolerance Limit</td>
<td></td>
</tr>
<tr>
<td>STEL: Limite de Exposição de curta</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TRICHLOROETHYLENE**

**CEILING CONCENTRATION (TLV-C):**

<table>
<thead>
<tr>
<th>LETHAL CONCENTRATION (CL50):</th>
<th>LT-VM: Maximum Value Tolerance Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDHL:</td>
<td>Human=100ppm-8hours causes irritating effects</td>
</tr>
<tr>
<td>TOXIC CONCENTRATION (TClo):</td>
<td>CNS =160ppm-83 minutes causes depression of the CNS</td>
</tr>
</tbody>
</table>

**APPROPRIATE INDIVIDUAL PROTECTION EQUIPMENT**

| Breathing protection | Mask against organic vapors, mask. |
| Hand protection | Viton Rubber Gloves, Nitrile rubber. |
| Eye protection | Eye protection |
| Skin and body protection | Safety footwear (boot) and apron. |
| Special precautions | Emergency showers and eye wash should be installed at the handling sites |
| Hygiene measures | Do not inhale the vapors. Avoid contact with the eyes and skin. Remove the dirty or embedded clothes. Smoking, eating and drinking should be forbidden at the area of application. Always use hot water, soap and cleaning creams for cleaning. Do not use gasoline, diesel oil or other solvent for personal hygiene. |

**9. Physical/Chemical properties:**

| Physical state | Liquid |
| Form | Liquid |
| Odor | Characteristic |
| Color | Colorless |
| pH | N.A. |

**SPECIFIC TEMPERATURES AT WHICH CHANGES IN THE PHYSICAL STATE OCCUR**

| Boiling point | 85-87°C (Trichloroethylene) |
| Distillation range | Not determined |
| Freezing point | Not determined |
| Melting point | Not determined |
| Flash point | >90°C |
| Self-igniting temperature | Not determined |
| Limit of explosiveness in air | LIE: 7%; LSE: 52% (1) |
| Steam pressure | 57.8 mmHg @ 20°C (1) |
| Vapor density | 4.5 (Ar=1) |
| Rate of evaporation | Não Not determined |
| Density (apparent) | 1.43 a 1.47 g/ml |
| Solubility | Insoluble in water. Soluble in organic solvents in general |

*Based on the values of the pure solvent according to the supplier’s FISPQ*
10. Stability and reactivity:

**SPECIFIC CONDITIONS**

<table>
<thead>
<tr>
<th>Chemical stability</th>
<th>Stable under the normal recommended handling and storage conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability</td>
<td>Stable under normal use and stock conditions.</td>
</tr>
<tr>
<td>Dangerous reactions</td>
<td>None; when the product is stored, applied and processed correctly, the solvent reacts violently with active metals (sodium, beryllium, lithium).</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Keep away from heat and sources of ignition.</td>
</tr>
<tr>
<td>Incompatible materials</td>
<td>Active metals (Sodium, Barium, Beryllium and others), strong alkalining and oxidizing agents.</td>
</tr>
<tr>
<td>Hazardous products from the Breakdown</td>
<td>Product does not have corrosive action on materials. The combustion of the product may emit acid and toxic gases (carbon oxides, chlorinated products, phosgene). It can react with alkaline compounds to generate chloroacetylene, which are explosive and highly toxic.</td>
</tr>
<tr>
<td>Risk of spontaneous polymerization</td>
<td>Does not occur.</td>
</tr>
</tbody>
</table>

11. Toxicological information:

**INFORMATION ACCORDING TO THE DIFFERENT WAYS OF EXPOSURES**

**Acute toxicity**

The overexposure to the product's vapors, above the professional limits of exposure, causes headache, nausea, dizziness, sleepiness and even unconsciousness. Exposures at concentrations equal or greater than 5000 ppm cause anesthetic effects, causing loss of consciousness and can even lead to death in extreme cases.

**Site effects**

The prolonged or repeated exposure can cause skin irritation. The repeated contact can cause drying and peeling of the skin.

**Sensitization**

Not available

**Chronic toxicity**

The constant and prolonged exposure to the vapors released by the remover in an unhealthy environment, and without individual or collective protection equipment, can cause chemical dependency, causing even disease of the liver and kidneys.

**Toxicologically synergic effects**

Not available

**Specific effects**

Repeated exposure to high concentrations of the solvent can produce adverse effects to the liver and kidneys. According to the producer of Trichloroethylene, none of the toxic effects of the solvent should occur if the exposures are kept below the current Occupational Exposure Limit.

12. Ecological information:

**Environmental effects, behavioral effects and impacts of the product**

Repeated exposure to high concentrations of the solvent can produce adverse effects to the liver and kidneys. According to the producer of Trichloroethylene, none of the toxic effects of the solvent should occur if the exposures are kept below the current Occupational Exposure Limit.

**Mobility**

Trichloroethylene is a highly volatile liquid, being moderately soluble in water and with high mobility in soil and sediments.

**Persistence/degradability**

Trichloroethylene is not readily biodegradable, the solvent suffers photodegradation in the air, and slow degradation in the soil.

**Bioaccumulation**

The solvent (trichloroethylene) has low potential for bioaccumulation.
13. Considerations regarding treatment and disposal:

METHODS AND TREATMENT AND DISPOSAL

Product remains: According to the current legislation. Do not dispose the materials in sewers or water bodies.

Used packing: According to the current legislation.

14. Information on transportation:

NATIONAL AND INTERNATIONAL REGULATION

Product considered dangerous, by its components according to ordinance 204 dated 05/20/2007 of the ministry of transportation.

For containing the chlorinated solvents, the VF Chemical Remover is considered a dangerous product for land, sea or air transport according to the respective regulations (ADR; IMDG; IATA-DGR).

DANGEROUS PRODUCT REGULATION

<table>
<thead>
<tr>
<th>UN Number</th>
<th>1710</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate name for shipment</td>
<td>Liquid containing chlorinated solvent (Trichloroethylene)</td>
</tr>
<tr>
<td>Risk class</td>
<td>6.1</td>
</tr>
<tr>
<td>Risk number</td>
<td>60</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
</tbody>
</table>

15. Regulations:

Name of substance/preparation: Liquid containing chlorinated solvent (Trichloroethylene)

Indication of Hazards and Risk Symbol: TOXIC (T)

Risk Sentences (R)

- R 45: Can cause cancer
- R 36/38: Irritates the eyes and skin.
- R 52/53: Harmful to the aquatic organisms, long-term damaging effects.
- R 66: Can cause drying and dermatitis
- R 67: Can cause sleepiness and vertigo by inhalation of the vapors

Safety Sentences (S)

- Reserved for professional users
- S 53: Avoid exposure – obtain specific instructions before use.
- S 9: Keep the recipient well closed.
- S 16: Keep away from any source of flame or spark. Do not smoke or eat.
- S 36/37: Use appropriate protective clothing and gloves

Ordinance 204 – 05/20/1997 – classification and definition of the Class of dangerous products.
NBR 14725-4 Standard
Ordinance 3214 of the Ministry of Labor NR 15 - Activities in Unhealthy Operations and NR 07 - Occupational Health Medical Control Program / PCMSO

Portuguese legislation DL 63/ 2008
16. Other Information:

Concentração de VOC > 90%

This FISPQ was prepared according to Portuguese legislation DL 63/2008, version corrected on 01/26/2010

Produto para uso exclusivo industrial

The information contained in this FISPQ was researched and compiled from reliable sources, from MSDS of suppliers and from legislations applicable to the product.

The data of this FISPQ refer to the specific product and are not valid when this product is being used in combination with other products.

Abbreviations and symbols used in this document:

ACGIH – American Conference of Governmental Industrial Hygienists
IMDG - International Maritime Dangerous Goods Code
IATA-DGR - International Air Transport Association - Dangerous Goods Regulation
LT-MP – Tolerance Limit - Weighted Average
N.A. – Not applicable
NR - Regulatory Standard
PCMSO – Occupational Health Medical Control Program
TLV-TWA - Threshold Limit Value-Time Weighted Average
TLV-STEL - Threshold Limit Value - Short term Exposure Limit
VM – Maximum Value
VOC - Volatile organic Compound

Elaborated on: November/2007
Revised on: 28/05/2010