

Name of product	FISPQ No.: 0007
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1. Identification of product and company	
■ Name of product:	Bufpal Fluid and Chemical Cleaner
■ Internal identification code of product:	480101, 480102, 480106, 480109, 480110
■ Name of company:	BORRACHAS VIPAL S/A
■ Address:	Rua Buarque de Macedo, 365 95320-000 Nova Prata - RS - Brazil
■ CNPJ	87870952/0001-44
■ Company's telephone No.:	(54) 3242-1666
■ Telephone for emergencies:	(54) 3242-1666
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■ E-mail:	vipal@vipal.com.br

2. Composition and information about the components				
■ Compound:	Trichloroethene solvent.			
■ Chemical nature:	Chlorinated hydro-carbide			
■ Components or impurities that contribute to danger:				
Chemical or generic name	Concentration or concentration range	Danger classification and labeling		
Trichloroethene	≅ 100% (p/p)	Toxic Substances - 6		
• International Identification				
Substance	EINECS N°	Risk Phrases	Safety Phrases	Indication(s) of Danger and Symbol(s)
Trichloroethene	201-167-4	R45, R36/38, R52/53, R67	S45, S53, S61	T 
Risk Phrases R36/38: Irritating to eyes and skin; R45: May cause cancer; R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment R67: Vapors can cause giddiness and drowsiness.		Safety Phrases S45: In case of accident or if you feel inwell seek medical advice immediately (show lable where possible); S53: Avoid exposure. obtain special medical instruction before use; S61: Avoid release to the environment. Refer to special instructions/Safety data sheet;		
T – Toxic				

3. Identification of risks	
■ Major risks:	Fluid and its fumes are toxic.
■ Effects of the product:	
⇨ Adverse effects to human health:	Inhaled fumes are irritant and SNC depressant.
⇨ Environmental effects:	The product's fumes in the air intoxicate the environment. The product and the water resulting from fire fighting are harmful to flora and fauna. The product decants in water. The product spilled on the ground might be partially evaporated, partially leached and percolate, contaminating the water table, thereby restricting its utilization. The biodegradation speed depends on the climatic conditions, the dilution and the existing microorganisms.

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◇ <i>Physical and chemical risks:</i>	Fluid and its fumes are toxic and not inflammable.
◇ <i>Specific risks:</i>	Toxic product.
■ <i>Main symptoms:</i>	From inhalation: dizziness, unconsciousness, headache, nausea. From touch on skin: Resection, chafing and dermatitis.
■ <i>Classification of the chemical product:</i>	Toxic Substance.
■ <i>Emergency overview:</i>	On spilling: Immediately sand and segregate the area. On fire: Although the product is not inflammable, remove ignition sources.

4. First aid measures

■ <i>First aid measures:</i>	
◇ <i>Inhalation:</i>	Take the victim out to fresh air, keeping it quiet and warm. Minister artificial breathing, if required. Provide a physician.
◇ <i>Touch on skin:</i>	Remove the contaminated clothes. Do not rub the affected areas. Wash with lots of water and soap. Provide a physician.
◇ <i>Touch on eyes:</i>	Wash with lots of water. Provide a physician.
◇ <i>Ingestion:</i>	Induce vomiting, then give mineral oil and a diluted solution of Epsom salt. Provide a physician.
■ <i>Actions to be avoided:</i>	Washing the skin with solvent. Do not give epinephrine or vascular stimulants.
■ <i>Brief description of main symptoms and effects:</i>	Chafing of the respiratory ducts, skin, eyes and mucous membranes, discomfort from odor.
■ <i>Protection for the aid provider and/or notes for the physician:</i>	The responsible for providing first aid actions should use all individual protection equipment recommended in this sheet, according to the existing scenery. Central Nervous System's Depressant (SNC).

5. Measures for fire fighting

■ <i>Adequate extinguishing means:</i>	Although it is not inflammable, on adjacent fire use dry chemical powder extinguishers (PQS), chemical foam or CO₂. Use water spray jet to cool surroundings.
■ <i>Inadequate extinguishing means:</i>	Water over the flame.
■ <i>Specific risks:</i>	Nearby fire might generate intensive release of toxic fumes.
■ <i>Special methods:</i>	In the event of adjacent fire, remove the containers from the fire area, if it is possible to do so with no risk.
■ <i>Firemen's protection:</i>	Use independent mask for entering closed environments.

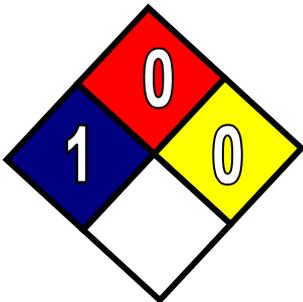
6. Control measures on spilling or leakage

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■ <i>Personal cautions:</i>	
◇ <i>Removal of ignition sources:</i>	In the event of adjacent fire, eliminate all sources of ignition, prevent sparks and flame, do not smoke in the risk area. Segregate the spilling from all ignition sources.
◇ <i>Dust control:</i>	Not applicable, since it is fluid.
◇ <i>Prevention against inhalation and touch on skin, mucous membrane and eyes:</i>	Wear impermeable gloves, clothes and boots, hermetic safety glasses for chemical products and adequate breathing protection.
■ <i>Environmental cautions:</i>	
◇ <i>Alarm system:</i>	Surround the area with contention barriers or ditches. Stop the leakage, if it is possible to do so with no risk. Do not route the spilled material to any public draining system. Absorb with earth or other absorbing material. Prevent contamination of water streams and fountains. Dragging with water must take into consideration the subsequent treatment of the contaminated water. Avoid such dragging.
■ <i>Cleaning methods:</i>	
◇ <i>Recovery:</i>	Collect the product into emergency container, duly identified and well shut. Keep the recovered product for further disposition.
◇ <i>Neutralization:</i>	Unnecessary, product of nearly neutral pH.
◇ <i>Disposition:</i>	Do not dispose off with regular garbage. Do not discharge into sewage or water streams. Segregate, if possible, for subsequent recovery or discharge. The final disposition should be supervised by expert and following the environmental legislation applicable in the community.
◇ <i>Prevention of secondary risks:</i>	Improper disposition may impact the soil and, through percolation, deteriorate the quality of the water table's waters.

7. Handling and storage	
■ <i>Handling:</i>	
◇ <i>Technical measures:</i>	
- <i>Prevention of worker's exposure:</i>	Keep the working environment aerated to avoid fume concentration in excess of bearable. Protect the worker's skin and eyes to avoid direct contact with the product.
- <i>Prevention of fire and explosion:</i>	Keep the environment aerated in order to keep the fume concentration under explosiveness limits. Use anti-sparking tools and ground the system's conductive elements in contact with the product to avoid ignition.
- <i>Cautions for safe handling:</i>	Keep the environment aerated to prevent fume generation in excess of bearable and avoid contamination from contact with other products.
◇ <i>Guidelines for safe handling:</i>	Provide local exhausting aeration where processes so require. Avoid high environmental temperatures. Avoid contact with other products.
■ <i>Storage:</i>	
◇ <i>Adequate technical measures:</i>	Keep the product inside the original container.
◇ <i>Storing conditions:</i>	
- <i>Adequate:</i>	At a well aerated site, at room temperature, far from oxidizer agents, heat and ignition sources to avoid deterioration and fire, although improbable.
- <i>To be avoided:</i>	Heat, sparks and high shelves.

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	Pursuant to rule 704 of NFPA – National Fire Protection Agency:	
	Health: 1	
	Inflammability: 0	
	Reactivity: 0	
Special: -		
- <i>Danger signaling:</i>	Identify with toxic substance symbology	
		
- <i>Incompatible products and materials:</i>	Strong oxidizers, such as, fluid chlorine and concentrate oxygen.	
⇨ <i>Safe material for packing:</i>		
- <i>Recommended:</i>	The manufacturer's original container.	
- <i>Inadequate:</i>	Any other packing.	

8. Exposure control and individual protection										
■ <i>Engineering control measures:</i>		Keep the working site aerated, and maintain fume concentration below the warned tolerance limits. At open environments, during handling, stay facing the wind to minimize inhalation.								
■ <i>Specific control parameters:</i>										
⇨ <i>Limits of occupational exposure:</i>										
Component	CAS No.	NR - 15				ACGIH				
		LT-MP		VM		TLV – TWA (8h exposure)		TLV - STEL		
		ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	exposure time
Trichlorine-ethylene	79-01-6	78	420	117	630	50	269	100	537	5 min up to 300 ppm

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CAS = Chemical Abstracts Service
 NR 15 = Regulating Rule for unhealthy operations and activities-MTb
 ACGIH = American Conference of Governmental and Industrial Hygienists
 LT – MP = Tolerance limits - weighed average
 TLV – TWA = Threshold Limit Value – Time Weighted Average
 TLV – STEL = Threshold Limit Value – Short Term Exposure Limit
 N.E. = Not found

Biologic Indicators:

Component	Toxicological Data			
	Oral DL ₅₀ (mg/kg)	Dermal DL ₅₀	Inhalant CL ₅₀	IDHL
Trichlorine-ethylene	4900, rats	29000mg/kg, rats	8450 ppm, 4h, rats	N.D.

IDHL = Immediately Dangerous to Life or Health
 DL₅₀ = Dose of a chemical substance that causes the death of 50% of a group of animals of the same kind, when ministered by the same means (oral or dermal) (DL = Lethal Dose)
 CL₅₀ = Atmospheric lethal concentration of a chemical substance that causes the death of 50% of a group of exposed animals, on a determined time (CL = Lethal Concentration)
 SNC = Central Nervous System
 N.E. = Not Found

■ **Recommended procedures for monitoring:**

Component	Tolerance Limit		Methods for evaluating contamination	
	on the air	IBMP	on the air	biologic
Trichlorine-ethylene	50ppm	300mg/g	Monitor 3500 or 3520 of 3M; Colorimetric Detecting Tube MSA/Auer 215405	Dosage of total trichlorine compounds in urine. (NR-7/IBMP = 300mg/g creat.)

IBMP = maximum permitted biologic rate (NR-7 MTb)

■ **Adequate individual protection equipment:**

⇨ <i>Breathing protection:</i>	Aeration to keep exposure below LT (tolerance limit). Respirator with chemical filter for organic fumes, code A, brown color, for low concentrations. In the event of casualty of huge extent in close environments, with no aeration, independent breathing equipment or controlled air set.
⇨ <i>Hands' protection:</i>	PVA or neoprene, butyl or nitrile rubber gloves, if there might be direct contact with the product.
⇨ <i>Eyes' protection:</i>	Glasses or facial protection, if there is splash risk.
⇨ <i>Skin's and body's protection:</i>	PVA or neoprene, butyl or nitrile rubber aprons or impermeable overalls, if there is direct contact with the product.

■ **Special cautions:**

Avoid massive exposure to fumes. Chemical products should be handled by capable and qualified people. At the sites where chemical products are handled, it should be performed the monitoring of the workers' exposure, according to the PPRA (Program of Prevention of Environmental Risks).

■ **Hygienic measures:**

Clothes, gloves, shoes, EPIs should be cleaned before being re-utilized. Always use for personal hygiene: water, soap and cleaning creams. Wash the hands before using the water closet, eating or drinking. Do not eat in the working environment. Do not use gasoline, diesel oil or other solvent derived from petroleum for personal hygiene. Good industrial hygiene and operational procedures help to reduce risks related to chemical products' handling.

9. Physical-chemical properties

■ <i>Physical state:</i>	Liquid
■ <i>Form:</i>	Clear
■ <i>Color:</i>	Uncolored
■ <i>Odor:</i>	Sweetish, similar to that of chloroform
■ <i>pH:</i>	Not relevant
■ <i>Specific temperatures or temperature ranges where changes in the physical state take place:</i>	
⇨ <i>Distillation range:</i>	Above 87°C (at 760 mmHg)

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■ <i>Decomposition temperature:</i>	410°C, decomposition products burn
■ <i>Glare points:</i>	There is no glare on testing conditions.
■ <i>Explosiveness limits high - low:</i>	41 - 11%
■ <i>Fume pressure:</i>	50mmHg at 20°C, 500mmHg at 70°C
■ <i>Fume density:</i>	4.53 (air = 1)
■ <i>Density:</i>	1.42 to 1.45 (water = 1)
■ <i>Solubility (with indication of solvent(s)):</i>	Soluble in organic solvents
■ <i>Evaporation rate:</i>	300 (butyl-acetate = 100)
■ <i>Viscosity:</i>	0,54 cP

10. Stability and reactivity	
■ <i>Specific conditions:</i>	
◇ <i>Instability:</i>	Stable product under normal using conditions. Avoid contact with strong oxidizing chemical products. Storing temperatures in excess of 40°C are harmful to the product.
◇ <i>Dangerous reactions:</i>	Reaction with strong oxidizing chemical products (chlorates, peroxides, acids and other). Self-ignition at 410°C
■ <i>Conditions to be avoided:</i>	Ignition and heat sources, closed environments.
■ <i>Incompatible substances or materials:</i>	Strong oxidizers, such as, peroxides, liquid chlorine and concentrate oxygen
■ <i>Need to add inhibitors and additives:</i>	Stable, therefore does not require inhibitors and additives.
■ <i>Dangerous products from decomposition:</i>	By forced combustion: hydrochloric acid, chlorine, phosgene, acetylene chloride, dichlorine-acetic acid and carbonic acid gas.

11. Toxicological Information	
■ <i>Information according to the different exposure means:</i>	
◇ <i>Acute toxicity:</i>	<u>Inhalation:</u> dizziness, diplopia, paralysis of the neck's and facial muscles, death from breathing cessation and heart failure on more severe events. <u>Contact with skin:</u> Contact with the skin causes resection, and might cause chafing and dermatitis. <u>Contact with eyes:</u> fumes cause eye irritation. <u>Ingestion:</u> vomit, diarrhea, headache, cyanosis, drowsiness, motor incoordination, and on severe events, death from cardiovascular failure.
◇ <i>Local effects:</i>	<u>Inhalation:</u> might cause chafing of the upper breathing organs and damp cough (mucous secretion). <u>Contact with skin:</u> chafing and resection. <u>Contact with eyes:</u> irritation with tearing and congestion. <u>Ingestion:</u> might cause severe gastric injuries.
◇ <i>Sensitization:</i>	On bearers of allergic rhinitis, sensitizes the nasal mucous membrane.
◇ <i>Chronic toxicity:</i>	<u>Inhalation:</u> dizziness, headache, nausea, euphoria, sleep and vision disturbances, irritability and loss of appetite. <u>Contact with skin:</u> might cause dermatitis from resection. <u>Contact with eyes:</u> tearing, ocular irritation, conjunctivitis, sinusitis, cough and

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	bronchitis.
◇ Toxicologically synergic effects:	Unknown.
◇ Specific effects:	Not carcinogenic, not mutagenic, not teratogenic, not embryotoxic product.
■ Substances that cause effects:	
◇ Additives:	Unknown.
◇ Involution:	Unknown.

12. Ecological information

■ Environmental effects, behavior and impact of the product:	
◇ Mobility:	In water means: notwithstanding it being hardly soluble, most of it settles on the sub-aqueous table, generating a concentrate source of on-going contamination. In soil means: solvents percolate, and may reach water tables. In atmospheric means: solvents evaporate as time elapses.
◇ Persistence/degradation:	The solvents in water will tend to accumulate on the sub-aqueous tables, generating a concentrate source of on-going contamination. The solvents percolated in soil will remain unchanged for indeterminate time.
◇ Bio-accumulation:	It does not bio-accumulate
◇ Expected behavior:	Spilled or applied, its solvents will tend to evaporate and disperse in the atmosphere, preferably close to the ground, in view of its density's being greater than the air's.
◇ Environmental impact:	If the product is spilled into the water, its solvents will harm aquatic life until their decomposition. Its solvents, once distributed in the soil by percolation, may harm flora, fauna and water tables. In the atmosphere, the solvents' fumes may contribute to the heater effect.
◇ Eco-toxicity:	Air: Its solvents' fumes are harmful to the environment. Water: May transmit undesirable features to the water, hindering its utilization. <ul style="list-style-type: none"> • Benzene: as least probable component of this product, has its maximum limit established for waters class 1, 2 and 3 at 0.01 mg/l; • Floating materials: established as virtually absent in waters class 1, 2, 3, 4, 5, 6, 7 and 8; • Oils and Greases: established as virtually absent in waters class 1, 2, 3, 5 and 7, and iridescences are acceptable for waters class 4, 6 and 8; For special class water, no kind of contaminant is acceptable. Source: Resolution CONAMA No. 20, of June 18, 1986. Soil: Its solvents may affect the soil and, by percolation, contaminate the waters of the water table.

13. Considerations relating treatment and disposal

■ Treatment and disposal methods:	
◇ Product:	The product not utilized for its purpose, must be arranged on a covered area, in closed containers, in good conditions, identified, and conveyed for treatment at a site duly authorized by the relevant environmental body.
◇ Product remnants:	In practice, they do not exist.
◇ Used packing:	Do not re-utilize packing. Empty packing should be arranged on a covered area, in closed containers, in good conditions, identified, and conveyed for treatment at a site duly authorized by the relevant environmental body.

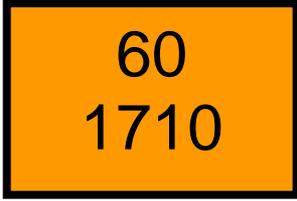
14. Information with respect to transportation

■ National and international regulations:									
◇ Land and Fluvial:									
ONU Number	Appropriate name for shipment	Risk class	Risk number	Packing group	Special provisions	Exempt quantity	In case of emergency		
							EPI	EmS Note	Kit

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1710	Trichlorine-ethylene	6.1	60	III	N.E.	100 kg	A	74	1
⇨ <i>Sea:</i>									
ONU Number	Appropriate name for shipment	Risk class	Risk number	Packing group	Special provisions	Exempt quantity	Emergency Note		
1710	Trichlorine-ethylene	6.1	N.E.	III	N.E.	5 liters	F-A, S-A		

⇨ <i>Air:</i>	
ONU Number	1710
Appropriate name for shipment	Trichlorine-ethylene
Class	6.1
Danger label	Toxic
Packing Group	III
Maximum quantity per internal packing in passenger/cargo aircrafts	0.5 liter (Y605), IP3
Maximum quantity per external packing in passenger/cargo aircrafts	2 liters , external packing 4G
Maximum quantity per internal packing in passenger/cargo aircrafts	5 liters (605), IP3
Maximum quantity per external packing in passenger/cargo aircrafts	60 liters , external packing 4G
Maximum quantity per internal packing in cargo aircrafts	10 liters (612), IP3
Maximum quantity per external packing in cargo aircrafts	220 liters , external packing 4G
Practical Guide on Response to Emergency (ERG Code-ICAO)	6A

Specific caution conditions and measures for transportation	
⇨ <i>Land, Fluvial and Sea:</i>	<p>It is forbidden to smoke during handling, next to the packing items. It is forbidden to use flame light next to the packing items. Furthermore, apparatus and equipment capable of causing ignition of the products or their gases or fumes, should not be utilized.</p>
■ <i>Additional regulations:</i>	<p>For quantities of this product in excess of 333 kg, carried by vehicle, it is mandatory: label of combustion risk (lozenge - illustration below) and safety board (rectangle - illustration below) fixed outside of the vehicle; EPI and equipment for meeting emergency conditions; vehicle's trained driver; product's emergency sheet; license issued by the relevant environmental body for carrying dangerous products.</p> <p>It is prohibited to take passengers in the vehicle without bearing the respective EPI (Individual Protection Equipment) kits.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>

15. Regulations	
■ <i>Regulations:</i>	
⇨ <i>Information concerning risks and safety, as written on the label:</i>	1 - Utilize with adequate aeration and protect yourself by mask with filter against organic fumes. The aeration should cover both the upper side and the bottom side of the environment.

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	<p>2 - Avoid recurrent and lasting contact with the skin. Wear impermeable gloves.</p> <p>3 – This product should not be ingested; if this happens, get specialized medical aid and show this label.</p> <p>4 – Wear protection glasses against splashing</p> <p>5 – Keep away from children's and animals' reach.</p> <p>6 - Toxic product; keep always well closed, in well aerated areas and distant from heat sources.</p> <p>7 - The container should not be burnt, re-utilized or perforated.</p> <p>STORAGE: Should be in dry and aerated areas, away from heat or ignition (sparks) sources.</p>
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16. Other information	
<p>■ <i>Examples:</i></p>	
<p>⇨ <i>Special training requirements:</i></p>	<p>The user of this adhesive should be instructed to maintain the utilization area always well aerated.</p>
<p>⇨ <i>Recommended use of, and possible restrictions to the chemical product:</i></p>	<p>Recommended for sticking RV-02 repair bands on bicycles' chambers.</p>
<p>⇨ <i>Bibliographic references:</i></p>	<ul style="list-style-type: none"> • Manual of Self-protection on Handling and Roadway Transportation of Dangerous Products - July/1997 - Mercosul Edition; • Internation Maritime Dangerous Goods Code – IMO - 2002 Edition; • Dangerous Goods Regulations - IATA – 44 th Edition - 2003; • Toxicity and Safe Handling of Rubber Chemicals Fourth Edition, 1999, RAPRA Technology Ltda; • Industrial Toxicology, 1997, Roberto Charles Góes; • Manual of Labor Medicine and Safety - Anthology, 40th Edition, 1998; • Internet: <ul style="list-style-type: none"> http://www.osha.gov ; http://www.acqih.org/home.htm ; http://www.chemfinder.com ; http://www.cas.org ; http://ntp-server.niehs.nih.gov/cgi/iH_Indexes/All/iH_All_Frames.html ; http://ptcl.chem.ox.ac.uk/MSDS/mels.html ; http://www.osha-slc.gov/dts/Chemicalsampling/toc/toc_Chemsamp.html ; http://www.atsdr.cdc.gov/toxprofiles/tp3.html; http://www.nfpa.org. • NBR 14725 – Safety Data Sheet on chemical products - FISPQ, July 2001, ABNT: Brazilian Association of Technical Rules; • Manual of Product Following, Chlorinated Solvents, Dow; • Bases of Toxicology, Seizi Oga, 2nd edition, 2003.

The information and recommendations in this issue were collected from competent sources. The data in this sheet relate to a specific product. Borrachas Vipal S.A., with the data in this sheet, does not intend to establish absolute and final information concerning the product and its risks, but rather provide the data available to its employees and customers, for their individual protection, maintenance of operational continuity and Environmental preservation.