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Safety Data Sheet

Petra Brake Stop Squeal

1.- IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1 PRODUCT IDENTIFIER

PRODUCT FORM: GRAPHITE DISPERSION
TRADE NAME: BRAKE STOP SQUEAL
PRODUCT CODE: 6002

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXUTRE AND USES ADVISED AGAINST

PRODUCT DESIGNED TO COVER BRAKE PADS TO REDUCE NOISE AND SQUEAL.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET:

Petra Oil Company, Inc.
6100 West by Northwest Blvd.
Ste 190
Houston, Texas 77040
PH. NU. 888-738-7261

1.4 EMERGENCY PHONE NUMBER: CHEMTREC: (800) 424-9300

2.- HAZARDS IDENTIFICATION

2.1 CLASSIFICATION (GHS-US)

FLAMMABLE LIQUID (CATEGORY 2)
ACUTE TOXICITY, INGESTION (CATEGORY 4)
SKIN IRRITATION (CATEGORY 2)
EYE IRRITATION (CATEGORY 2)
EYE DAMAGE (CATEGORY 1)
STOT SE (CATEGORY 3)

2.2 LABEL ELEMENTS

PICTOGRAMS

SIGNAL WORD: **DANGER**

HAZARD STATEMENTS

H225 HIGHLY FLAMMABLE LIQUID AND VAPOR
H302 HARMFUL IF SWALLOWED
H315 CAUSES SKIN IRRITATION
H318 CAUSES SERIOUS EYE DAMAGE
H335 MAY CAUSE RESPIRATORY IRRITATION
H336 MAY CAUSE DROWSINESS OR DIZZINESS
H319 CAUSES SERIOUS EYE IRRITATION

PRECAUTIONARY STATEMENTS
PREVENTION

P210: KEEP AWAY FROM HEAT, HOT SURFACES, SPARKS, OPEN FLAMES AND OTHER IGNITION SOURCES. NO SMOKING.
P233: KEEP CONTAINER TIGHTLY CLOSED
P240: GROUND/BOND CONTAINER AND RECEIVING EQUIPMENT
P241: USE EXPLOSION-PROOF EQUIPMENT
P243: TAKE PRECAUTIONARY MEASURES AGAINST STATIC DISCHARGE.
P280: WEAR PROTECTIVE GLOVES/PROTECTIVE CLOTHING/EYE PROTECTION/FACE PROTECTION
P102: KEEP OUT OF REACH OF CHILDREN.
P103: READ LABEL BEFORE USE

RESPONSE
P303+P361+P353 IF ON SKIN (OR HAIR): TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING. RINSE SKIN WITH WATER/ SHOWER

STORAGE
P403+P235 STORE IN A WELL VENTILATED PLACE. KEEP COOL.

DISPOSAL
P501 DISPOSE CONTENTS BY INCINERATION

2.3 OTHER HAZARDS

CHRONIC HEALTH EFFECTS

PERSONS WITH PRE-EXISTING LIVER, KIDNEY, CENTRAL NERVOUS SYSTEM AND BLOOD DISORDERS SHOULD AVOID CONTACT WITH THIS PRODUCT.

2.4 UNKNOWN ACUTE TOXICITY
NO DATA AVAILABLE

3.- COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 SUBSTANCES
NOT APPLICABLE

3.2 MIXTURES

NAME	CAS NUMBER	%	CLASSIFICATION
BUTANOL	71-36-3	1 – 3 %	AC TOX ING 4 H302 SKIN IRR 2 H315 EYE DAM 1 H318 STOT SE 3 H335, H336
ISOPROPANOL	67-63-0	>60 %	EYE IRR 2 H319 STOT SE 3 H336
PURE GRAPHITE	7440-44-0	3 – 8 %	NOT CLASSIFIED

4.- FRIST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES

EYE CONTACT: IMMEDIATELY WASH EYES WITH PLENTY WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY WASH SKIN WITH PLENTY OF NEUTRAL SOAP AND WATER FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING SEPARATELY BEFORE REUSE OR DISCARD. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

INHALATION: REMOVE PERSON TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET IMMEDIATE MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING. GIVE AT LEAST 3-4 GLASSES OF WATER. KEEP AFFECTED PERSON WARM AND AT REST. GET IMMEDIATE MEDICAL ATTENTION

NEVER GIVE ANYTHING IN THE MOUTH TO AN UNCONSCIOUS PERSON.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

SKIN: MAY CAUSE MILD IRRITATION, REDNESS AND PAIN. ABSORPTION THROUGH SKIN MAY CAUSE SYSTEMIC EFFECTS.

EYE CONTACT: VAPORS MAY IRRITATE THE EYES. SPLASHES MAY PRODUCE SEVERE IRRITATION WITH STINGING, TEARING, REDNESS, CORNEAL BURNT AND PAIN.

INHALATION: INHALATION OF VAPORS IRRITATES RESPIRATORY TRACT. EXPOSURE TO HIGH CONCENTRATIONS MAY CAUSE DIZZINESS, HEADACHE, CENTRAL NERVOUS SYSTEM

DEPRESSION, UNCONSCIOUSNESS, LACK OF COORDINATION AND EQUILIBRIUM, LUNG AND KIDNEY DAMAGE AND EVEN DEATH.

INGESTION: MAY PRODUCE ABDOMINAL PAIN, CRAMPS, NAUSEA, VOMITING, DIARRHEA, MOUTH AND THROAT IRRITATION. LARGER QUANTITIES MAY CAUSE DIZZINESS, UNCONSCIOUSNESS AND EVEN DEATH.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTIONAND SPECIAL TREATMENT NEEDED
SEE SECTION 2.2 IN THIS SDS

5.- FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA: ALCOHOL FOAM, CO2, DRY CHEMICAL FOAM, WATER FOG.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLAMMABLE LIQUID. VAPORS ARE HEAVIER THAN AIR AND CAN GET TO AN IGNITION SOURCE AND FLASH BACK. GRAPHITE PRODUCES SLIPPERY CONDITIONS.

HAZARD COMBUSTION PRODUCTS: COMBUSTION MAY FORM: CARBON DIOXIDE AND CARBON MONOXIDE.
AUTO IGNITION TEMPERATURE: NOT DETERMINED.

5.2 ADVICE FOR FIREFIGHTERS

PERSONAL PROTECTION: FIREFIGHTERS MUST WEAR NIOSH APPROVED POSITIVE PRESSURE BREATHING APPARATUS (SCBA) WITH FULL FACE MASK AND FULL PROTECTIVE EQUIPMENT.
SPECIAL FIREFIGHTING PROCEDURES: EVACUATE AREA AND FIGHT FIRE FROM A SAFE DISTANCE. IF LEAK OR SPILL HAS NOT IGNITED, VENTILATE AREA AND USE WATER SPRAY TO DISPERSE GAS OR VAPOR AND TO PROTECT PERSONNEL ATTEMPTING TO STOP A LEAK. USE WATER SPRAY TO COOL ADJACENT STRUCTURES AND TO PROTECT PERSONNEL. SHUT OFF SOURCES OF FLOW IF POSSIBLE. STAY AWAY FROM STORAGE TANKS ENDS. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF STORAGE TANK DUE TO FIRE. WATER RUNOFF CAN CAUSE ENVIRONMENTAL DAMAGE. DIKE AND COLLECT WATER USED TO FIGHT FIRE. WATER SPRAY MAY BE USED FOR COOLING CONTAINERS TO PREVENT POSSIBLE PRESSURE BUILD-UP.
SPECIAL PROCEDURES: COOL CONTAINERS EXPOSED TO FIRE TO PREVENT EXPLOSIONS. RETAIN EXTINGUISHING WATER TO AVOID WATER POLLUTION.

6.- ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECUATIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

6.1.1 FOR NON-EMERGENCY PERSONNEL
EVACUATE UNNECESSARY PERSONNEL

6.1.2 FOR EMERGENCY RESPONDERS
THE FOLLOWING STEPS SHOULD BE FOLLOWED IN CASE MATERIAL IS RELEASED OR SPILLED: PERSON NOT WEARING PROTECTIVE EQUIPMENT AND CLOTHING SHOULD BE RESTRICTED FROM CONTAMINATED AREAS UNTIL HAS BEEN COMPLETED.

1. DO NOT TOUCH THE SPILLED MATERIAL; STOP THE LEAK IF IT IS POSSIBLE TO DO SO WITHOUT RISK.
2. NOTIFY SAFETY PERSONNEL.
3. REMOVE ALL SOURCES OF HEAT AND IGNITION.
4. VENTILATE POTENTIALLY EXPLOSIVE ATMOSPHERES USING MAXIMALLY EXPLOSION-PROOF EQUIPMENT.
5. USE NONSPARKING TOOLS FOR CLEANUP.
6. WATER SPRAY MAY BE USED TO REDUCE VAPORS, BUT THE SPRAY MAY NOT PREVENT IGNITION IN CLOSED SPACES.

6.2 ENVIRONMENTAL PRECAUTIONS
PREVENT ENTRY TO SEWERS AND PUBLIC WATERS. NOTIFY AUTHORITIES IF LIQUID ENTERS SEWERS OR PUBLIC WATERS.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP
FOR SMALL LIQUID SPILLS, TAKE UP WITH SAND OR OTHER NONCOMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CLOSED CONTAINERS FOR LATER DISPOSAL.

FOR LARGE LIQUID SPILL, BUILD DIKES FAR AHEAD OF THE SPILL TO CONTAIN THE MATERIAL FOR LATER RECLAMATION OR DISPOSAL

6.4 REFERENCE TO OTHER SECTIONS
SEE HEADING 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION.

7.- HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING
AVOID BREATHING VAPORS. AVOID CONTACT WITH EYES, SKIN OR CLOTHES. KEEP CONTAINERS CLOSED. USE ONLY WITH ADECUATE VENTILATION. WASH HANDS AFTER USE. KEEP AWAY FROM HEAT, SPARKS OR FLAMES.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES
VAPORS ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW AREAS. KEEP CONTAINER CLOSED WHEN NOT IN USE. STORE IN TIGHTLY CLOSED AND PROPERLY LABELED CONTAINERS IN COOL, DRY ISOLATED, WELL-VENTILATED AREA AWAY FROM HEAT, SOURCES OF IGNITION AND INCOMPATIBLES. KEEP AT TEMPERATURES HIGHER THAN FREEZING POINT.

EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE. DO NOT REUSE WITHOUT ADEQUATE PRECAUTIONS.

DO NOT EAT, DRINK OR SMOKE IN AREAS OF USE OR STORE.

7.3 SPECIFIC END USES
FOLLOW LABEL DIRECTIONS

8.- EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

EXPOSURE LIMITS

INGREDIENT	AEGL 1	AEGL 2	AEGL 3	TWA	STEL	NIOSH REL	OSHA PEL	IDLH
	60 MIN	60 MIN	60 MIN	8 H	15 MIN	TWA	TWA	
	PPM	PPM	PPM	PPM	PPM	10 H (PPM)	8 H (PPM)	PPM
BUTANOL	N/D	N/D	N/D	20	N/D	50	100	1400
ISOPROPANOL	N/D	N/D	N/D	200	400	400	400	2000
PURE GRAPHITE	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D

8.2 EXPOSURE CONTROLS

VENTILATION: USE LOCAL EXHAUST OR DILUTION VENTILATION AS APPROPRIATE TO CONTROL EXPOSURES TO BELOW PERMISSIBLE LIMITS DURING THE USE OF THIS PRODUCT.
SKIN PROTECTION: WHERE THE CONTACT IS LIKELY, WEAR CHEMICAL RESISTANT GLOVES, A CHEMICAL SUIT AND RUBBER BOOTS. AVOID SKIN CONTACT WITH THIS MATERIAL.
EYE PROTECTION: DO NOT WEAR CONTACT LENSES. WEAR SAFETY GLASSES WITH SIDE SHIELDS OR GOGGLES. HAVE EYE WASHING FACILITIES READILY AVAIBLE WHERE EYE CONTACT CAN OCCUR.
RESPIRATORY PROTECTION: NOT NEEDED UNDER NORMAL USE CONDITIONS. A NIOSH APPROVED AIR PURIFYING RESPIRATOR WITH AN APPROPRIATE AN ORGANIC VAPOR CARTRIDGE OR CANISTER MAY BE APPROPRIATE UNDER CERTAIN CIRCUMSTANCES WHERE AIRBONE CONCENTRATIONS ARE EXPECTED TO EXCEED EXPOSURE LIMITS. PROTECTION PROVIDED BY AIR PURIFYING RESPIRATOR IS LIMITED. USE A POSITIVE PRESSURE AIR SUPPLIED RESPIRATOR IF THERE IS ANY POTENTIAL FOR AN UNCONTROLLED RELEASE, EXPOSURE LEVELS ARE NOT KNOW, OR ANY CIRCUMSTANCES WHERE AIR PURIFYING RESPIRATORS MAY NOT PROVIDE ADEQUATE PROTECTION

9.- PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	DARK LIQUID WITH SUSPENDED PARTICLES
ODOR	ALCOHOL-LIKE
OLFATIVE THRESHOLD	N/D
PT-CO COLOR	BLACK/GRAY
PH	N/A
MELTING POINT	N/D
EVAPORATION RATE	N/D
SPECIFIC GRAVITY	0.808 g/ml
BOILING POINT	N/D
VISCOSITY @25°C	< 10 cps

FLASH POINT (CCC)	14 °C
PUNTO DE CONGELAMIENTO	N/D
PRESIÓN DE VAPOR (mmHg)	33@20°C
DENSIDAD DE VAPOR	N/D
COEFICIENTE DE REPARTO	N/D
TEMPERATURA DE DESCOMPOSICIÓN	N/D
SOLUBILIDAD EN AGUA	MISCIBLE

9.2 OTHER INFORMATION
NO ADDITIONAL INFORMATION AVAILABLE

10.- STABILITY AND REACTIVITY

10.1 REACTIVITY: NO ADDITIONAL INFORMATION AVAILABLE

10.2 CHEMICAL STABILITY: THIS PRODUCT IS STABLE UNDER NORMAL STORAGE CONDITIONS.

10.3 HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

10.4 CONDITIONS TO AVOID: HEAT, SPARKS, OPEN FLAMES, HOT GLOWING SURFACES OR ELECTRICS ARCS.

10.5 INCOMPATIBILITY: AVOID CONTACT WITH STRONG OXIDIZING AGENTS, ACIDS AND BASES.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS: COMBUSTION MAY FORM: CARBON DIOXIDE, CARBON MONOXIDE.

11.- TOXICOLOGICAL INFORMATION

BUTANOL
ORAL LD50 RAT: 790 MG/KG
INHALATION LC50 RAT: 8000 PPM/4H
SKIN LD50 RABBIT: 3400 MG/KG

ISOPROPANOL
ORAL LD50 RAT MG/KG
ORAL LD50 RABBIT 8.0 G/KG
ORAL LD50 MOUSE 3600 MG/KG
ORAL LD50 DOG 4797 MG/KG
SKIN LD50 RABBIT 12,800 MG/KG
TOXIC ORAL DOSE IN HUMANS IS 0.5 A 1 ML/KG (70% IPA) APPROXIMATELY BUT DEPENDS ON EACH INDIVIDUAL.

GRAPHITE
NOT AVAILABLE

12.- ECOLOGICAL INFORMATION

12.1 TOXICITY

BUTANOL

LC50 PIMEPHALES PROMELAS (FATHEAD MINNOW) 1730 MG/L/96 HR (95% CONFIDENCE LIMIT 1630-1840 MG/L); AGE 33 DAYS OLD, WATER HARDNESS 47.7 MG/L (CACO3), TEMP 24.7 DEG C, PH 7.64, DISSOLVED OXYGEN 6.3 MG/L, ALKALINITY 45.5 MG/L (CACO3) STATIC BIOASSAY
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOW) 1950, 1950, 1950, 1950, & 1910 MG/L AT 1, 24, 48, 72, & 96 HR, RESPECTIVELY, AT 18 TO 22 DEG C (STATIC BIOASSAY IN LAKE SUPERIOR WATER)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOW) 1940, 1940, 1940, 1940, & 1940 MG/L AT 1, 24, 48, 72, & 96 HR, RESPECTIVELY, AT 18 TO 22 DEG C (STATIC BIOASSAY IN RECONSTITUTED WATER)
TOXICITY THRESHOLD (CELL MULTIPLICATION INHIBITION TEST) SCENEDESMUS QUADRICAUDA (GREEN ALGAE) 875 MG/L
TOXICITY THRESHOLD (CELL MULTIPLICATION INHIBITION TEST) MICROCYSTIS AERUGINOSA (ALGAE) 100 MG/L
TOXIC DOSE CHLORELLA PYRENOIDOSA (ALGAE) 8,500 MG/L
TOXICITY THRESHOLD (CELL MULTIPLICATION INHIBITION TEST): URONEMA PARDUCZI CHATTON-LWOFF (PROTOZOA) 8.0 MG/L
TOXICITY THRESHOLD (CELL MULTIPLICATION INHIBITION TEST): ENTOSIPHON SULCATUM (PROTOZOA) 55 MG/L
EC50 DAPHNIA MAGNA (DAPHNID) 2337 MG/L/24 HR, TOXIC EFFECT: LOST ABILITY TO SWIM
EC50 DAPHNIA MAGNA (DAPHNID) 1983 MG/L/48 HR, TOXIC EFFECT: LOST ABILITY TO SWIM

ISOPROPANOL

LD50 CARASSIUS AURATUS (GOLDFISH) > 5000 MG/L/24 HR MODIFIED ASTM D 1345 BIOASSAY
LD100 SEMOLITUS ATROMACULATUS (CREEK CHUB) 1100 MG/L/24 HR IN DETROIT RIVER WATER /CONDITIONS OF BIOASSAY NOT SPECIFIED/
LC50 POECILIA RETICULATA (GUPPIES) 7060 PPM/7 DAY /CONDITIONS OF BIOASSAY NOT SPECIFIED/
LC50 CRANGON CRANGON (BROWN SHRIMP) 1400 MG/L/48 HR (RANGE 900-1950 MG/L) /CONDITIONS OF BIOASSAY NOT SPECIFIED/
LC50 CRANGON CRANGON (BROWN SHRIMP) 1150 MG/L/96 HR (RANGE 750-1650 MG/L) /CONDITIONS OF BIOASSAY NOT SPECIFIED/
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 11,830 MG/L/1 HR (STATIC BIOASSAY IN LAKE SUPERIOR WATER AT 18-22 DEG C)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 11,160 MG/L/24 HR (STATIC BIOASSAY IN LAKE SUPERIOR WATER AT 18-22 DEG C)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 11,130 MG/L/48 HR, 72 HR, 96 HR, RESPECTIVELY (STATIC BIOASSAY IN LAKE SUPERIOR WATER AT 18-22 DEG C)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 9.64 G/L/96 HR (95% CONFIDENCE LIMIT 9.23-10.0 G/L); AGE 31 DAYS OLD, WATER HARDNESS 48.3 MG/L (CACO3), TEMP 24.4 DEG C, PH 7.79, DISSOLVED OXYGEN 6.6 MG/L, ALKALINITY 45.9 MG/L (CACO3), TANK VOL: 6.3 L, ADDITIONS: 3.75 VOL/DAY (FLOW-THROUGH BIOASSAY)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 10.4 G/L/96 HR (95% CONFIDENCE LIMIT 10.2-10.6 G/L); AGE 29 DAYS OLD, WATER HARDNESS 52.5 MG/L (CACO3), TEMP 24.6 DEG C, PH 7.09, DISSOLVED

OXYGEN 6.7 MG/L, ALKALINITY 39.5 MG/L (CACO3), TANK VOL: 5.5 L, ADDITIONS: 13.1 VOL/DAY (FLOW-THROUGH BIOASSAY)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 6.55 G/L/96 HR (95% CONFIDENCE LIMIT 5.77-7.45 G/L); AGE 31 DAYS OLD, WATER HARDNESS 44.0 MG/L (CACO3), TEMP 24.6 DEG C, PH 7.87, DISSOLVED OXYGEN 6.7 MG/L, ALKALINITY 42.0 MG/L (CACO3), TANK VOL: 1.0 L, ADDITIONS: 36 (FLOW-THROUGH BIOASSAY)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 9.54 G/L/96 HR (95% CONFIDENCE LIMIT 9.10-10.0 G/L); AGE 31 DAYS OLD, WATER HARDNESS 48.3 MG/L (CACO3), TEMP 24.4 DEG C, PH 7.79, DISSOLVED OXYGEN 6.6 MG/L, ALKALINITY 45.9 MG/L (CACO3), TANK VOL: 6.3 L, ADDITIONS: 3.75 VOL/DAY (FLOW-THROUGH BIOASSAY)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 6.12 G/L/96 HR (95% CONFIDENCE LIMIT 5.58-6.72 G/L); AGE 31 DAYS OLD, WATER HARDNESS 44.0 MG/L (CACO3), TEMP 24.6 DEG C, PH 7.87, DISSOLVED OXYGEN 6.7 MG/L, ALKALINITY 42.0 MG/L (CACO3), TANK VOL: 1.0 L, ADDITIONS: 36 VOL/DAY (FLOW-THROUGH BIOASSAY)
LC50 PIMEPHALES PROMELAS (FATHEAD MINNOWS) 9.49 G/L/96 HR (95% CONFIDENCE LIMIT 8.91-10.1 G/L); AGE 29 DAYS OLD, WATER HARDNESS 52.5 MG/L (CACO3), TEMP 24.4 DEG C, PH 7.09, DISSOLVED OXYGEN 6.7 MG/L, ALKALINITY 39.5 MG/L (CACO3), TANK VOL: 5.5 L, ADDITIONS: 13.1 VOL/DAY (FLOW-THROUGH BIOASSAY)

GRAPHITE

NOT AVAILABLE

12.2 PERSISTENCE AND BIODEGRADABILITY

BUTANOL
TERRESTRIAL FATE: BASED ON A CLASSIFICATION SCHEME, AN ESTIMATED KOC VALUE OF 72(SRC), DETERMINED FROM A LOG KOW OF 0.88 AND A REGRESSION-DERIVED EQUATION, INDICATES THAT N-BUTYL ALCOHOL IS EXPECTED TO HAVE HIGH MOBILITY IN SOIL(SRC). VOLATILIZATION OF N-BUTYL ALCOHOL FROM MOIST SOIL SURFACES IS EXPECTED TO BE AN IMPORTANT FATE PROCESS(SRC) GIVEN A HENRY'S LAW CONSTANT OF 8.8X10-6 ATM-CU M/MOLE. THE POTENTIAL FOR VOLATILIZATION OF N-BUTYL ALCOHOL FROM DRY SOIL SURFACES MAY EXIST BASED UPON A VAPOR PRESSURE OF 7 MM HG. THE BIODEGRADATION HALF-LIFE OF N-BUTYL ALCOHOL IN A SUB-SURFACE SOIL FROM BLACKSBURG, VA WAS APPROXIMATELY 7 DAYS.

AQUATIC FATE: BASED ON A CLASSIFICATION SCHEME, AN ESTIMATED KOC VALUE OF 72(SRC), DETERMINED FROM A LOG KOW OF 0.88 AND A REGRESSION-DERIVED EQUATION, INDICATES THAT N-BUTYL ALCOHOL IS NOT EXPECTED TO ADSORB TO SUSPENDED SOLIDS AND SEDIMENT IN WATER(SRC). VOLATILIZATION FROM WATER SURFACES IS EXPECTED TO BE AN IMPORTANT FATE PROCESS BASED UPON A HENRY'S LAW CONSTANT OF 8.8X10-6 ATM-CU M/MOLE. USING THIS HENRY'S LAW CONSTANT AND AN ESTIMATION METHOD, VOLATILIZATION HALF-LIVES FOR A MODEL RIVER AND MODEL LAKE ARE 2 AND 29, DAYS RESPECTIVELY(SRC). ACCORDING TO A CLASSIFICATION SCHEME, AN ESTIMATED BCF OF 3(SRC), FROM ITS LOG KOW AND A REGRESSION-DERIVED EQUATION, SUGGESTS THE POTENTIAL FOR BIOCONCENTRATION IN AQUATIC ORGANISMS IS LOW. IN A RIVER DIE-AWAY TEST, N-BUTYL ALCOHOL ACHIEVED 33% OF ITS THEORETICAL BOD IN 5 DAYS, SUGGESTING BIODEGRADATION WILL BE AN IMPORTANT FATE PROCESS IN WATER(SRC).

ATMOSPHERIC FATE: ACCORDING TO A MODEL OF GAS/PARTICLE PARTITIONING OF SEMIVOLATILE ORGANIC COMPOUNDS IN THE ATMOSPHERE, N-BUTYL ALCOHOL, WHICH HAS A VAPOR PRESSURE OF 7 MM HG AT 25 DEG C, IS EXPECTED TO EXIST SOLELY AS A VAPOR IN THE AMBIENT ATMOSPHERE. VAPOR-PHASE N-BUTYL ALCOHOL IS DEGRADED IN THE ATMOSPHERE BY REACTION WITH PHOTOCHEMICALLY-PRODUCED HYDROXYL RADICALS(SRC). THE HALF-LIFE FOR THE REACTION IN

AIR WITH HYDROXYL RADICALS IS ESTIMATED TO BE 46 HOURS(SRC), CALCULATED FROM ITS RATE CONSTANT OF 8.3X10-12 CU CM/MOLECULE-SEC AT 25 DEG C.

ISOPROPANOL

TERRESTRIAL FATE: BASED ON A CLASSIFICATION SCHEME, AN ESTIMATED KOC VALUE OF 25(SRC), DETERMINED FROM A LOG KOW OF 0.05 AND A REGRESSION-DERIVED EQUATION, INDICATES THAT ISOPROPANOL IS EXPECTED TO HAVE VERY HIGH MOBILITY IN SOIL(SRC). VOLATILIZATION OF ISOPROPANOL FROM MOIST SOIL SURFACES IS EXPECTED TO BE AN IMPORTANT FATE PROCESS(SRC) GIVEN A HENRY'S LAW CONSTANT OF 8.10X10-6 ATM-CU M/MOLE. THE POTENTIAL FOR VOLATILIZATION OF ISOPROPANOL FROM DRY SOIL SURFACES MAY EXIST(SRC) BASED UPON A VAPOR PRESSURE OF 45.4 MM HG. ISOPROPANOL IS READILY DEGRADED IN AEROBIC SYSTEMS; THE RANGE OF HALF-LIVES FOR AEROBIC DEGRADATION USING A SEWAGE SLUDGE INOCULUM ARE <1 DAY TO 48 DAYS(SRC). ISOPROPANOL HAS ALSO BEEN SHOWN TO BE READILY DEGRADED UNDER ANAEROBIC CONDITIONS.
AQUATIC FATE: BASED ON A CLASSIFICATION SCHEME, AN ESTIMATED KOC VALUE OF 25(SRC), DETERMINED FROM A LOG KOW OF 0.05 AND A REGRESSION-DERIVED EQUATION, INDICATES THAT ISOPROPANOL IS NOT EXPECTED TO ADSORB TO SUSPENDED SOLIDS AND SEDIMENT(SRC). VOLATILIZATION FROM WATER SURFACES IS EXPECTED BASED UPON A HENRY'S LAW CONSTANT OF 8.10X10-6 ATM-CU M/MOLE. USING THIS HENRY'S LAW CONSTANT AND AN ESTIMATION METHOD, VOLATILIZATION HALF-LIVES FOR A MODEL RIVER AND MODEL LAKE ARE 57 HOURS AND 29 DAYS, RESPECTIVELY(SRC). ACCORDING TO A CLASSIFICATION SCHEME, AN ESTIMATED BCF OF 3(SRC), FROM A LOG KOW AND A REGRESSION-DERIVED EQUATION(6), SUGGESTS THE POTENTIAL FOR BIOCONCENTRATION IN AQUATIC ORGANISMS IS LOW(SRC). ISOPROPANOL IS READILY DEGRADED IN AEROBIC SYSTEMS; THE RANGE OF HALF-LIVES FOR AEROBIC DEGRADATION USING A SEWAGE SLUDGE INOCULUM ARE <1 DAY TO 48 DAYS(SRC). ISOPROPANOL HAS ALSO BEEN SHOWN TO BE READILY DEGRADED UNDER ANAEROBIC CONDITIONS.
ATMOSPHERIC FATE: ACCORDING TO A MODEL OF GAS/PARTICLE PARTITIONING OF SEMIVOLATILE ORGANIC COMPOUNDS IN THE ATMOSPHERE, ISOPROPANOL, WHICH HAS A VAPOR PRESSURE OF 45.4 MM HG AT 25 DEG C, IS EXPECTED TO EXIST SOLELY AS A VAPOR IN THE AMBIENT ATMOSPHERE(SRC). VAPOR-PHASE ISOPROPANOL IS DEGRADED IN THE ATMOSPHERE BY REACTION WITH PHOTOCHEMICALLY-PRODUCED HYDROXYL RADICALS(SRC); THE HALF-LIFE FOR THIS REACTION IN AIR IS ESTIMATED TO BE 3.2 DAYS(SRC), CALCULATED FROM ITS RATE CONSTANT OF 5.07X10-12 CU CM/MOLECULE-SEC AT 25 DEG C.

12.3 BIOACCUMULATIVE POTENTIAL
SEE 12.1

12.4 MOBILITY IN SOIL

BUTANOL

THE KOC OF N-BUTYL ALCOHOL IS ESTIMATED AS 72(SRC), USING A LOG KOW OF 0.88 AND A REGRESSION-DERIVED EQUATION. ACCORDING TO A CLASSIFICATION SCHEME, THIS ESTIMATED KOC VALUE SUGGESTS THAT N-BUTYL ALCOHOL IS EXPECTED TO HAVE HIGH MOBILITY IN SOIL(SRC).

ISOPROPANOL

THE KOC OF ISOPROPANOL IS ESTIMATED AS 25(SRC), USING A MEASURED LOG KOW OF 0.05 AND A

REGRESSION-DERIVED EQUATION. ACCORDING TO A CLASSIFICATION SCHEME, THIS ESTIMATED KOC VALUE SUGGESTS THAT ISOPROPANOL IS EXPECTED TO HAVE VERY HIGH MOBILITY IN SOIL(SRC).

GRAPHITE
NOT AVAILABLE

13.- DISPOSAL CONSIDERATIONS

SPECIAL CARE MUST BE TAKEN WHEN THE CHEMICAL MATERIAL IS USED AND DISPOSED OFF, JUST AS ITS CONTAINERS TO PREVENT ENVIRONMENT POLLUTION. THE RESIDUES CAN BE ELIMINATED BY FILTRATION AND THEN SPRAY INCINERATION:

FLUID BED, 450-980 °C WITH RESIDENCE TIME OF SECONDS FOR GASES AND LIQUIDS.

ROTATIVE OVEN, 820-1600 °C WITH RESIDENCE TIME OF SECONDS FOR GASES AND LIQUIDS.

LIQUID INJECTION, 650-1600 °C WITH RESIDENCE TIME OF 0.1-2 SECONDS.

14.- TRANSPORT INFORMATION

Secretaría de Comunicaciones y transportes (SCT) – NOM-002-SCT2/1994 (México)
Información generral para la transportación de embarques.

Shipping name: Líquido inflammable, nos (Contiene isopropanol) (Can be transported as Limited Quantity)

UN Number: 1993
Class/Division: 3
Packing Group: II
Label: see section 2.
Limited Quantity: 5 L

CANT. LTDA.

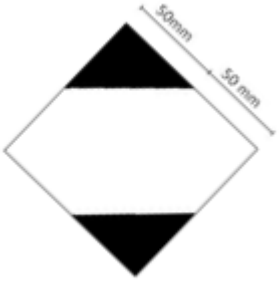


Fig. 1 Signal for containers with limited quantities.

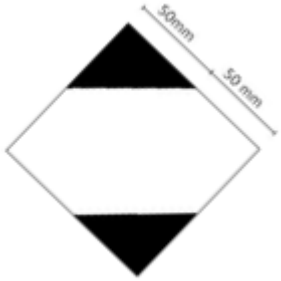
According to NOM-011-SCT2/2012: 5.11 It is not necessary that containers/packages with hazardous substances or materials in limited quantities, have the Official Transport Name or UN number but must have the signal in Fig. 1. This signal must be clearly visible, legible and must be capable of withstanding weather exposure without suffering any degradation.

U.S. Department of Transportation (DOT) 49 – CFR 172
General Transportation Information for Bulk Shipments

Shipping name: Liquid, flammable, n.o.s. (Limited Quantity can be used for flammable liquids not exceeding 5 L capacity)
UN/NA Number: UN 1993
Class/Division: 3
Packing Group: II
Label: see Section 2
Limited Quantity: 5 L per container

Special information (PHMSA): This product may be classified as LTD. QTY. when transported in quantities equal to or less than 5 L per container and 30 Kg per package, but must have the signal LIMITED QUANTITY (LIMITED QUANTITY).

LTD. QTY.



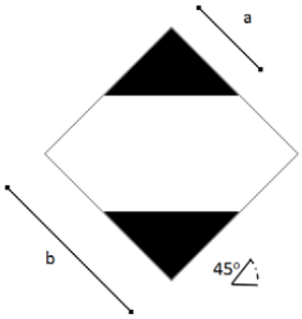
Signal for containers with limited quantities

International Maritime Dangerous Goods (IMDG) CODE General Transportation Information for Shipments

Shipping name: Liquid, flammable, n.o.s. (Limited Quantity can be used for flammable liquids not exceeding 5 L capacity)
UN/NA Number: UN 1993
Class/Division: 3
Packing Group: II
Label: see Section 2
Limited Quantity: 5 L per container

It can be classified as LIMITED QUANTITY for maritime transportation according to IMDG CODE, 3.2 COLUMN 7. According to the 35 ammendment of the same code, the following signal must be used for limited quantities transportation.

LTD. QTY.



b = 100 mm
a = 50 mm
For packages not able to accommodate 100 mm mark, then
b = ≥ 50mm
a = 1/2b
Mark must be placed at a 45° angle
Line must be black with minimum 2 mm thickness
Top and bottom shaded areas must be black
Center section may be white or same color as corruagate
Text of other marks inside the diamond are not permitted

15.- REGULATORY INFORMATION

OCCUPATIONAL EXPORURE LEVELS	BUTANOL	ISOPROPANOL	GRAPHITE
AUSTRALIA	STEL 50 ppm (152 mg/m^3), JUL2008	TWA 50 ppm (205 mg/m^3), STEL 75 ppm (307 mg/m^3), JUL2008	NOT AVAILABLE
BELGIUM	TWA 50 ppm (154 mg/m^3), Skin, MAR2002	TWA 20 ppm (83 mg/m^3),	NOT AVAILABLE
	STEL 50 ppm (150 mg/m^3), OCT 2002	STEL 50 ppm (208 mg/m^3), MAR2002	NOT AVAILABLE
DENMARK	STEL 50 ppm (150 mg/m^3), OCT 2002	TWA 20 ppm (83 mg/m^3), OCT 2002	NOT AVAILABLE
EU	NOT AVAILABLE	TWA 83 mg/m^3 (20 ppm);	NOT AVAILABLE
	NOT AVAILABLE	STEL 208 mg/m^3 (50 ppm), FEB 2006	NOT AVAILABLE
FINLAND	TWA 50 ppm (150 mg/m^3), STEL 75 ppm (225 mg/m^3), Skin, JAN1999	NOT AVAILABLE	NOT AVAILABLE

FRANCE	VLE 50 ppm (150 mg/m^3), FEB2006	VME 20 ppm (83 mg/m^3), VLE 50 ppm (208 mg/m^3), FEB2006	NOT AVAILABLE
GERMANY	MAK 310 mg/m^3 (100 mL/m^3), 2005	MAK 83 mg/m^3 (20 mL/m^3), 2005	NOT AVAILABLE
HUNGARY	TWA 45 mg/m^3, STEL 90 mg/m^3, Skin, SEP2000	TWA 83 mg/m^3, STEL 208 mg/m^3, SEP2000	NOT AVAILABLE
JAPAN	OEL-continuous 50 ppm (150 mg/m^3), skin, APR2007	OEL 50 ppm (200 mg/m^3), APR2007	NOT AVAILABLE
KOREA	STEL 50 ppm (150 mg/m^3), 2006	TWA 50 ppm (205 mg/m^3), STEL 75 ppm (300 mg/m^3), 2006	NOT AVAILABLE
MEXICO	peak 50 ppm (150 mg/m^3) (skin), 2004	TWA 50 ppm (205 mg/m^3), 2004	NOT AVAILABLE
	NOT AVAILABLE	TWA 75 ppm (307 mg/m^3), 2004	NOT AVAILABLE
NETHERLANDS	NOT AVAILABLE	MAC-TGG 104 mg/m^3, 2003	NOT AVAILABLE
NEW ZELAND	NOT AVAILABLE	TWA 50 ppm (205 mg/m^3);	NOT AVAILABLE
	STEL 50 ppm (150 mg/m^3), skin, JAN2002	STEL 75 ppm (307 mg/m^3), JAN2002	NOT AVAILABLE

FILIPINES	TWA 100 ppm (300 mg/m^3), JAN1993	NOT AVAILABLE	NOT AVAILABLE
POLAND	TWA 50 mg/m^3, STEL 140 mg/m^3, JAN1999	MAC(TWA) 200 mg/m^3, MAC(STEL) 300 mg/m^3, JAN1999	NOT AVAILABLE
RUSSIA	TWA 10 mg/m^3, STEL 30 mg/m^3, JUN2003	STEL 5 mg/m^3, SKIN, JUN2003	NOT AVAILABLE
SWEDEN	TWA 15 ppm (45 mg/m^3),	TWA 25 ppm (100 mg/m^3);	NOT AVAILABLE
	STEL 30 ppm (90 mg/m^3), Skin, JUN2005	STEL 50 ppm (200 mg/m^3), JUN2005	NOT AVAILABLE
SWITZERLAND	MAK- week 50 ppm (150 mg/m^3);	MAK- week 20 ppm (82 mg/m^3),	NOT AVAILABLE
	KZG- week 50 ppm (150 mg/m^3), DEC2006	KZG- week 40 ppm (164 mg/m^3), SKIN, DEC2006	NOT AVAILABLE
THAILAND	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE
TURLEY	TWA 100 ppm (300 mg/m^3), JAN1993	NOT AVAILABLE	NOT AVAILABLE

UNITED KINGDOM	NOT AVAILABLE	TWA 50 ppm (208 mg/m^3);	NOT AVAILABLE
	STEL 50 ppm (154 mg/m^3) (skin), 2005	STEL 100 ppm (SKIN), 2005	NOT AVAILABLE

16. OTHER INFORMATION

NFPA CLASSIFICATION
HEALTH HAZARD: 1
FIRE: 3
REACTIVITY HAZARD: 0

ABREVIATURES AND ACRONYMS

AEGL'S ACCUTE EXPOSURE GUIDELINE LIMITS
AEGL-1 IS THE AIRBORNE CONCENTRATION, EXPRESSED AS PARTS PER MILLION OR MILLIGRAMS PER CUBIC METER (PPM OR MG/M3) OF A SUBSTANCE ABOVE WHICH IT IS PREDICTED THAT THE GENERAL POPULATION, INCLUDING SUSCEPTIBLE INDIVIDUALS, COULD EXPERIENCE NOTABLE DISCOMFORT, IRRITATION, OR CERTAIN ASYMPTOMATIC NONSENSORY EFFECTS. HOWEVER, THE EFFECTS ARE NOT DISABLING AND ARE TRANSIENT AND REVERSIBLE UPON CESSATION OF EXPOSURE.
AEGL-2 IS THE AIRBORNE CONCENTRATION (EXPRESSED AS PPM OR MG/M3) OF A SUBSTANCE ABOVE WHICH IT IS PREDICTED THAT THE GENERAL POPULATION, INCLUDING SUSCEPTIBLE INDIVIDUALS, COULD EXPERIENCE IRREVERSIBLE OR OTHER SERIOUS, LONG-LASTING ADVERSE HEALTH EFFECTS OR AN IMPAIRED ABILITY TO ESCAPE.
AEGL-3 IS THE AIRBORNE CONCENTRATION (EXPRESSED AS PPM OR MG/M3) OF A SUBSTANCE ABOVE WHICH IT IS PREDICTED THAT THE GENERAL POPULATION, INCLUDING SUSCEPTIBLE INDIVIDUALS, COULD EXPERIENCE LIFE-THREATENING HEALTH EFFECTS OR DEATH.
TWA TIME WEIGHED AVERAGE;
STEL SHORT TERM EXPOUSRE LIMIT;
NIOSH NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
REL RECOMMENDED EXPOSURE LIMIT;
OSHA OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
PEL PERMISSIBLE EXPOSURE LIMIT
IDLH IMMEDIATE DOSE LETHAL TO HUMANS;
GHS GLOBAL HARMONIZING SYSTEM
N/D NOT DETERMINED
N/A NOT APPLICABLE

REFERENCES

NIOSH POCKET GUIDE
EUROPEAN CHEMICAL EDADNCY
WIRELESS INFORMATION SYSTEM FOR EMERGENCY RESPONDERS, NATIONAL LIBRARY OF MEDICINE
POISINDEX® Y MEDITEXT® (THIS DATA BASES MUST BE CONSULTED POR ASSISTENCE IN CASE OF DIAGNOSTIC OR TREATMENT FOR SPECIFIC CASES)
CAMEO CHEMICALS DATABASE OF HAZARDOUS MATERIALS
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION WEBPEDAD

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