



TRICAN MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION			
Product Name	TCR-1	Code	1174
Supplier	Trican Well Service Ltd. 2900, 645 – 7 th Ave S.W. Calgary, Alberta, T2P 4G8 For Product Information/MSDS Call: 403-266-0202 or 403-723-3688 (8:00 AM – 5:00 PM MST, Monday – Friday)	Revision Date	July 7, 2011
Product Uses	Well Stimulation Fluid	Supersedes Date	May 13, 2010
24 Hour Emergency Numbers	CANUTEC 613-996-6666 (Canada 24 hours)	Original Creation	August 20, 2002
WHMIS (Pictograms)		WHMIS (Classification)	
 		B3 Combustible Liquid D2A Very Toxic material causing other toxic effects D2B Toxic materials causing other toxic effects	

SECTION 2. HAZARDS IDENTIFICATION	
Hazard Summary	<p>WARNING! COMBUSTIBLE LIQUID AND VAPOUR. IRRITANT. ASPIRATION HAZARD. CANCER HAZARD. ENVIRONMENTAL HAZARD</p> <p>Inhalation of vapours may cause respiratory irritation, headache, dizziness, nausea, loss of consciousness, and in cases of extreme exposure, possibly death. This is a low viscosity material - if swallowed, it may be aspirated and can cause serious or fatal lung damage.</p> <p>Avoid excessive heat, open flames, sparks and ignition sources. Liquid can release vapors that readily form flammable mixtures at or above the flashpoint. Product can accumulate static charge which may cause a fire or explosion.</p> <p>Avoid breathing vapours or mists. Do not ingest. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Avoid prolonged or repeated contact with skin. Wear suitable protective clothing, gloves and eye/face protection. Provide eyewash in work area.</p> <p>Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.</p>
Routes of Exposure	Eyes, skin, inhalation and ingestion.
Potential Acute Health Effects	<p>Eyes Contact Direct liquid contact with eyes may cause eye irritation. Vapours or mists may cause eye irritation.</p> <p>Skin Contact/Absorption Prolonged or repeated skin contact may result in skin irritation. May be absorbed through the skin.</p> <p>Inhalation May cause irritation of mouth, throat and respiratory system. May cause effects on the central nervous system including headache, dizziness, nausea, confusion, loss of consciousness, and in cases of extreme exposure, possibly death.</p> <p>Ingestion Low viscosity material - if swallowed may enter the lungs and cause lung damage.</p>
Medical Conditions Aggravated by Exposure	Not available
<i>See also Toxicological Information (Section 11)</i>	

Additional Remarks	Not available
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SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Name	CAS #	% (wt)
Kerosene, straight-run	8008-20-6	60-100
2-butoxyethanol (ethylene glycol monobutyl ethanol)	111-76-2	1-5
Xylene, mixed isomers	1330-20-7	1-5
Ethyl benzene	100-41-4	0.1-1

SECTION 4. FIRST AID MEASURES

Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. If irritation develops, seek medical attention.
Skin Contact	Remove contaminated clothing. Wash thoroughly with soap and water. If irritation persists, seek medical attention.
Inhalation	Remove from further exposure. For those providing assistance, avoid exposure to yourself and others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth to mouth resuscitation.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of material into lungs. Never give anything by mouth to an unconscious person. Seek medical attention immediately.
Notes to Physician	Treat symptomatically.
Additional Remarks	Not available

SECTION 5. FIRE FIGHTING MEASURES

Conditions of Flammability	Combustible liquid. When heated above the flashpoint, releases flammable vapours. When mixed with air and exposed to ignition source, vapours can burn in open or explode if confined. Vapours may be heavier than air and may travel long distances along the ground before ignition and flashing back to vapour source. Vapours may collect in low or confined areas creating fire or explosion hazard. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Burning liquid may float on water.
Extinguishing Media	Use alcohol foam, CO ₂ , dry chemical or water fog. Do not use solid water stream as it may scatter material and spread the fire. Straight streams of water may be used to cool fire-exposed surfaces. Prevent run-off from fire control or dilution from entering streams or sewers..
Protection of Firefighters	As in any fire, wear full fire fighting gear including NIOSH-approved positive pressure self-contained breathing apparatus.
Hazardous Combustion Products	Oxides of carbon. Toxic particulate and vapours.
Sensitivity to Mechanical Impact	Not expected
Sensitivity to Static Discharge	This product is sensitive to static discharge. Bond and ground all containers before transferring material.
Additional Remarks	Not available

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Eliminate all ignition sources. Isolate hazard area and restrict access. Try to work upwind of spill. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8). Shut off leak only if it can be done safely.
Environmental Precautions	Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has , or if it contaminates soil/vegetation.
Clean Up Methods	Land Spill: Eliminate sources of ignition. Shut off source taking normal safety precautions. A vapor-suppressing foam may be used to reduce vapors. Take measures to minimize the effects on ground water. Recover by pumping using explosion proof equipment or contain spilled liquid with sand or other suitable absorbent and remove mechanically into containers. Water Spill: Eliminate sources of ignition and warn other ships in the vicinity to

	stay clear. Notify port and other relevant authorities. Confine with booms if skimming equipment is available to recover the spill. Otherwise disperse in unconfined waters, if permitted by regulatory authorities the use of suitable dispersants should be considered where recommended in local oil spill procedures.
Additional Remarks	Waste must be disposed of in accordance with federal, provincial and local environmental control regulations.

SECTION 7. HANDLING AND STORAGE

Equipment	Locate eyewash station in use area. Avoid sparking conditions. Use a non-sparking or explosion-proof tools and equipment around this material. Ground and bond all transfer equipment.
Procedures	<p>Fire Prevention Keep product away from high energy ignition sources, heat, sparks, pilot lights, static electricity, and open flame. Portable containers approved for storing fuel must be placed on the ground and the nozzle must stay in contact with the container when filling to prevent build-up and discharge of static electricity. Never use cutting torch on or near container (even empty) explosion may result. Do not reuse empty container.</p> <p>Worker Contact Harmful if in contact with or absorbed through the skin. Avoid inhalation of vapors or mists. Use in well ventilated area away from all ignition sources. Avoid contact with eyes, skin or clothing. Launder clothes before reuse. Wear appropriate personal protective equipment. Maintain good personal hygiene. Do not smoke, eat or drink when handling this product. Wash thoroughly after handling product and before eating, drinking or smoking.</p> <p>Special Precautions: To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe standards required by national and/or local laws and regulations. Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Use the correct grounding procedures. Refer to the National or Local regulations covering safety at petroleum handling and storage areas for this product.</p>
Storage Requirements	Store in a cool, well-ventilated area, away from ignition sources. Keep container tightly closed when not in use.
Additional Remarks	Empty containers retain residue (liquid and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity or other sources of ignition; they may explode and cause injury or death. Do not attempt to refill or clean a container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

SECTION 8. EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Guidelines / Limits	Not established for product.
Exposure Guideline / Limits for Components	
Kerosene	ACGIH TLV: TWA 200 mg/m ³ ; absorbed through skin.
2-Butoxyethanol	ACGIH TLV: TWA 20 ppm
Xylenes	ACGIH TLV: TWA 100 ppm; STEL 150 ppm
Ethylbenzene	ACGIH TLV: TWA 100 ppm; STEL 125 ppm
Please consult with local authorities for acceptable provincial exposure limits since values can vary from jurisdiction to jurisdiction.	
Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours or mists below their respective threshold limit value. Ensure that eyewash stations and safety showers are near the work location.
Personal Protection	<p>Personal Protective Equipment recommendations are based on anticipated known manufacturing and use conditions. These conditions are expected to result in only incidental exposure. A thorough review of the job tasks and conditions by a safety professional is recommended, however, to determine the level of person protective equipment appropriate for these job tasks and conditions.</p> <p>Respirator A respirator should be worn if material is heated or agitated and there is potential for inhalation of vapours or mist. A NIOSH-approved air-purifying mask equipped with organic vapour cartridges and P95 prefilters is</p>

	recommended. In poorly ventilated areas or emergency situations use a NIOSH-approved atmosphere-supplying respirator.
Hands	Nitrile or neoprene gloves.
Eyes	Chemical safety goggles if product is handled in such a way that liquid splashes may occur.
Body	Wear long sleeves and pants of an impervious material to prevent skin contact. Remove contaminated clothing and launder separately before reuse.
Feet	Steed toed, chemical resistant boots.
Other	Emergency eyewash fountains and safety showers should be in the immediate vicinity of any potential exposure.

Protective Clothing (Pictograms)



Additional Remarks Not available

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Odour and Appearance	petroleum odour; slight yellow colour
Odour Threshold	Not available
Specific Gravity	0.85
Flashpoint	38-65 °C
Upper Flammable Limit (% by volume)	Not available
Lower Flammable Limit (% by volume)	Not available
Autoignition Temperature	Not available
Vapour Density (air=1)	>1 (heavier than air)
Vapour Pressure	Not available
Evaporation Rate	Not available
Boiling Point	Not available
Freezing Point	Not available
pH	Not available
Viscosity	Not available
Solubility in Water	Not available
Coefficient of Water/Oil	Not available
Additional Remarks	Not available

SECTION 10. STABILITY AND REACTIVITY DATA

Chemical Stability	Stable
Conditions of Instability	Extreme heat, open flames and high energy sources of ignition.
Incompatible Material	Avoid contact with strong oxidizing agents, strong acids and alkalis.
Conditions of Reactivity	None specified
Hazardous Decomposition Products	Not available
Hazardous Polymerization	Will not occur
Additional Remarks	Not available

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Toxicity	Not available for product.
Acute Toxicity Information for Components	
Kerosene	Acute LD50 (rat, oral): 400 mg/kg Acute LD50 (rabbit, oral): 320 mg/kg
2-Butoxyethanol	Acute LD50 (rat, oral): 400 mg/kg Acute LD50 (rabbit, oral): 320 mg/kg Acute LD50 (rabbit, dermal): 220 mg/kg and 99 mg/kg Acute LC50 (rat, inhalation): 450 ppm/4h
Xylenes	Acute LD50 (rat oral): > 3523 mg/kg. Acute LD50 (mouse oral): 1590 mg/kg Acute LD50 (rabbit dermal): > 5 mL/kg (43 g/kg). Acute LC50 (rat inhalation): 6,350 ppm/4 hr.
Ethylbenzene	Acute LD50 (rat oral): 5.46 g/kg. Acute LD50 (rat oral): 3500 mg/kg

	Acute LD50 (rabbit dermal) 17,800 mg/kg
Effects of Acute Exposure	See <i>Hazards Identification (Section 2)</i>
Effects of Chronic Exposure	Not available
Irritancy of Product	See <i>Hazards Identification (Section 2)</i>
Skin Sensitization	Not available
Respiratory Sensitization	Not available
Carcinogenicity	This product contains ethylbenzene which has been classified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans (Group 2B) based on evidence in experimental animals, but with inadequate evidence for cancer in exposed humans.
Reproductive Toxicity	Not available
Teratogenicity	Not available
Embryotoxicity	This product contains xylene which is fetotoxic in humans. Xylene has produced delayed ossification and behavioural effects in animals in the absence of maternal toxicity.
Mutagenicity	Not available
Synergistic Products/Effects	Not available
Additional Remarks	Not available

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity	This product is expected to be harmful to aquatic life.
Degradability	Not available
Bioaccumulation	Not available
Mobility	Not available
Additional Remarks	Do not allow product or run-off from fire control to enter storm or sanitary sewers, lakes, rivers, streams or public waterways. Block off drains and ditches. May be harmful to aquatic life.

SECTION 13. DISPOSAL CONSIDERATIONS

Responsibility for proper waste disposal rests with the generator of the waste. Dispose of any waste material in accordance with all applicable federal, provincial and local regulations.

Additional Remarks Note that these regulations may also apply to empty containers, liners and rinsate. Processing, use, dilution or contamination of this product may cause its physical and chemical properties to change.

SECTION 14. TRANSPORT INFORMATION

TDG Classification

FLAMMABLE LIQUID, N.O.S. (contains Kerosene, Xylenes)
Class 3, UN1993, PG III



Marine Pollutant	Not available
Additional Transport Information	Not available
Emergency Response Guide	Guide No. 128

SECTION 15. REGULATORY INFORMATION

Canadian Regulations

WHMIS This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by the CPR.

Environmental Regulations Not available.

DSL Inventory All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

TSCA Inventory Status All components are included or are exempted from listing on the US Toxic Substances Control Act Inventory.

HMIS Rating Health: 2 Flammability: 2 Reactivity: 0 PPE: see section 8
0=Insignificant 1 = Slight 2= Moderate 3= High 4 = Extreme

ILO Classification Symbol: Xn Harmful.
Risk Phrases: R40-65-66-51/53
Limited evidence of a carcinogenic effect. Harmful: may cause lung damage if swallowed. Repeated exposure may cause skin dryness or cracking. Toxic to

aquatic organisms, may cause long term adverse effects in the aquatic environment.
Safety Phrases: S24-2-36/37-62-61
Avoid contact with skin. Keep out of the reach of children. Wear suitable protective clothing and gloves. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label. Avoid release to the environment.

SECTION 16. OTHER INFORMATION

Other Special Considerations

July 7, 2011: Change in Section 3.
May 13, 2010: Format change. Formulation change. Changes to information throughout. WHMIS classification has changed. TDG classification has changed.

Trican Well Service Ltd. Disclaimer

NOTE: The information on this MSDS is based on data which is considered to be accurate. Trican Well Service Ltd., however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

END OF MATERIAL SAFETY DATA SHEET