



MATERIAL SAFETY DATA SHEET CTW6 (Aerosol)

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CRACK TEST PRODUCTS FAST DRY WHITE BACKGROUND CTW6

SYNONYMS: "CTW 6"

PROPER SHIPPING NAME: AEROSOLS

PRODUCT USE: For use with colour contrast magnetic inks during magnetic particle inspection and for marking out and other identification purposes.

SUPPLIER:

Company: Russell Fraser Sales Pty Ltd

Date Revised: August, 2021

Date Australian contact details added: May 2013

Address: 7/38 Waratah Street, Kirrawee, NSW, 2232, AUS

Phone: 02 9545 4433 (7am-5pm AEST) **Fax:** 02 9545 4218 **Emergency Tel After Hours:** 0416 055 166

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

POISONS SCHEDULE

None

RISK

Extremely flammable.

Harmful by inhalation and if swallowed.

Irritating to eyes and skin.

Limited evidence of a carcinogenic effect.

Risk of explosion if heated under confinement.

Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Possible risk of harm to the unborn child.

Vapours may cause drowsiness and dizziness.

SAFETY

Keep container in a well ventilated place.

Avoid exposure - obtain special instructions before use.

To clean the floor and all objects contaminated by this material, use water and detergent.

Keep container tightly closed.

Keep away from food, drink and animal feeding stuffs.

Take off immediately all contaminated clothing.

In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.

If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).

This material and its container must be disposed of as hazardous waste.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
toluene	108-88-3	30-60
titanium dioxide	13463-67-7	<10 [^]
flattening aids		<10
dimethyl ether	115-10-6	30-60

Section 4 - FIRST AID MEASURES

SWALLOWED

- If swallowed do NOT induce vomiting.

- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

continued...

EYE

If aerosols come in contact with the eyes:

- Immediately hold the eyelids apart and flush the eye continuously for at least 15 minutes with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).

INHALED

If aerosols, fumes or combustion products are inhaled:

- Remove to fresh air.
- Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN

Treat symptomatically.

Following acute or short term repeated exposures to toluene:

- Toluene is absorbed across the alveolar barrier, the blood/air mixture being 11.2/15.6 (at 37 degrees C.) The concentration of toluene, in expired breath, is of the order of 18 ppm following sustained exposure to 100 ppm. The tissue/blood proportion is 1/3 except in adipose where the proportion is 8/10.
- Metabolism by microsomal mono-oxygenation, results in the production of hippuric acid. This may be detected in the urine in amounts between 0.5 and 2.5 g/24 hr which represents, on average 0.8 gm/gm of creatinine. The biological half-life of hippuric acid is in the order of 1-2 hours.
- Primary threat to life from ingestion and/or inhalation is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (eg cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO₂ <50 mm Hg or pCO₂ > 50 mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial damage has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- Epinephrine (adrenaline) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
- Lavage is indicated in patients who require decontamination; ensure use.

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
o- Cresol in urine	0.5 mg/L	End of shift	B
Hippuric acid in urine	1.6 g/g creatinine	End of shift	B, NS
Toluene in blood	0.05 mg/L	Prior to last shift of workweek	

NS: Non-specific determinant; also observed after exposure to other material

B: Background levels occur in specimens collected from subjects NOT exposed.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

SMALL FIRE:

- Water spray, dry chemical or CO₂

LARGE FIRE:

- Water spray or fog.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.

continued...

- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- If safe, switch off electrical equipment until vapour fire hazard removed.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 100 metres in all directions.

FIRE/EXPLOSION HAZARD

- Liquid and vapour are flammable.
- Moderate fire hazard when exposed to heat or flame.
- Vapour forms an explosive mixture with air.
- Moderate explosion hazard when exposed to heat or flame.
- Vapour may travel a considerable distance to source of ignition.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- Aerosol cans may explode on exposure to naked flame.
- Rupturing containers may rocket and scatter burning materials.
- Hazards may not be restricted to pressure effects.
- May emit acrid, poisonous or corrosive fumes.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

Combustion products include: carbon dioxide (CO₂), other pyrolysis products typical of burning organic material.

FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

HAZCHEM: 2Y

Personal Protective Equipment

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Wear protective clothing, impervious gloves and safety glasses.
- Shut off all possible sources of ignition and increase ventilation.
- Wipe up.
- If safe, damaged cans should be placed in a container outdoors, away from all ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Absorb or cover spill with sand, earth, inert materials or vermiculite.
- If safe, damaged cans should be placed in a container outdoors, away from ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.
- Collect residues and seal in labelled drums for disposal.

continued...

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
 - Wear protective clothing when risk of exposure occurs.
 - Use in a well-ventilated area.
 - Prevent concentration in hollows and sumps.
 - DO NOT enter confined spaces until atmosphere has been checked.
 - Avoid smoking, naked lights or ignition sources.
 - Avoid contact with incompatible materials.
 - When handling, DO NOT eat, drink or smoke.
 - DO NOT incinerate or puncture aerosol cans.
 - DO NOT spray directly on humans, exposed food or food utensils.
 - Avoid physical damage to containers.
 - Always wash hands with soap and water after handling.
 - Work clothes should be laundered separately.
 - Use good occupational work practice.
 - Observe manufacturer's storing and handling recommendations.
 - Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
- DO NOT allow clothing wet with material to stay in contact with skin.

SUITABLE CONTAINER

- Aerosol dispenser.
- Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

Avoid reaction with oxidising agents.

STORAGE REQUIREMENTS

Keep dry to avoid corrosion of cans. Corrosion may result in container perforation and internal pressure may eject contents of can.

- Store in original containers in approved flammable liquid storage area.
- DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
- No smoking, naked lights, heat or ignition sources.
- Keep containers securely sealed. Contents under pressure.
- Store away from incompatible materials.
- Store in a cool, dry, well ventilated area.
- Avoid storage at temperatures higher than 40 deg C.
- Store in an upright position.
- Protect containers against physical damage.
- Check regularly for spills and leaks.
- Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA	TWA ppm	STEL mg/m ³	STEL ppm	Peak mg/m ³	Peak ppm	TWA mg/m ³	F/CC
Australia Exposure Standards	toluene (Toluene)		50	191	150	574			
Australia Exposure Standards	dimethyl ether (Dimethyl ether)		400	760	500	950			

The following materials had no OELs on our record under the following CAS

- toluene:

PERSONAL PROTECTION

RESPIRATOR

Type AX Filter of sufficient capacity

continued...

EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

No special equipment needed when handling small quantities.

OTHERWISE:

For potentially moderate exposures:

Wear general protective gloves, eg. light weight rubber gloves.

For potentially heavy exposures:

Wear chemical protective gloves, eg. PVC. and safety footwear.

OTHER

No special equipment needed when handling small quantities.

OTHERWISE:

- Overalls.
- Skin cleansing cream.
- Eyewash unit.
- Do not spray on hot surfaces.

ENGINEERING CONTROLS

General exhaust is adequate under normal conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is

essential to obtain adequate protection.

Provide adequate ventilation in warehouse or closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

White highly flammable liquid with solvent odour; does not mix with water.

PHYSICAL PROPERTIES

Liquid.

Gas.

Does not mix with water.

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Immiscible

pH (1% solution): Not Applicable

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): >1

Lower Explosive Limit (%): Not Available

Autoignition Temp (°C): Not Available

State: Liquid

Boiling Range (°C): Not Available

Specific Gravity (water= 1): Not Available

pH (as supplied): Not Applicable

Vapour Pressure (kPa): Not Available

Evaporation Rate: Fast

Flash Point (°C): -41 pr opellant

Upper Explosive Limit (%): Not Available

Decomposition Temp (°C): Not Available

Viscosity: Not Available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Elevated temperatures.
- Presence of open flame.
- Product is considered stable.
- Hazardous polymerisation will not occur.

continued...

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

Harmful by inhalation and if swallowed.
 Irritating to eyes and skin.
 Vapours may cause dizziness or suffocation.
 Vapours may cause drowsiness and dizziness.

CHRONIC HEALTH EFFECTS

Limited evidence of a carcinogenic effect.
 Possible risk of harm to the unborn child.
 Harmful: danger of serious damage to health
 by prolonged exposure through inhalation.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.
 unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

TOLUENE:

TOXICITY

Oral (human) LDLo: 50 mg/kg
 Oral (rat) LD50: 636 mg/kg
 Inhalation (human) TClO: 100 ppm
 Inhalation (man) TClO: 200 ppm
 Inhalation (rat) LC50: >26700 ppm/1h
 Dermal (rabbit) LD50: 12124 mg/kg

IRRITATION

Skin (rabbit): 20 mg/24h- Moderate
 Skin (rabbit): 500 mg - Moderate
 Eye (rabbit): 0.87 mg - Mild
 Eye (rabbit): 2 mg/24h - SEVERE
 Eye (rabbit): 100 mg/30sec - Mild

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

DIMETHYL ETHER:

TOXICITY

Inhalation (rat) LC50: 308000 mg/m³

IRRITATION

Nil Reported

MATERIAL	CARCINOGEN	REPROTOXIN	SENSITISER	SKIN
toluene	IARC:Group 3	ILOEI		

CARCINOGEN

IARC: International Agency for Research on Cancer (IARC) Carcinogens: toluene Category: Group 3: Not classifiable as to carcinogenicity to humans

REPROTOXIN

ILOEI: ILO Chemicals in the electronics industry that have toxic effects on reproduction: toluene

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant:Not Determined

DO NOT discharge into sewer or waterways.
 Refer to data for ingredients, which follows:

TOLUENE:

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	7.3- 22.8
BCF<100:	13.2 (EELS)
log Kow (Sangster 1997):	2.73
log Pow (Verschueren 1983):	2.69
BOD5:	5%
COD:	21%
ThOD:	3.13
Half- life Soil - High (hours):	528
Half- life Soil - Low (hours):	96
Half- life Air - High (hours):	104
Half- life Air - Low (hours):	10
Half- life Surface water - High (hours):	528
Half- life Surface water - Low (hours):	96
Half- life Ground water - High (hours):	672
Half- life Ground water - Low (hours):	168
Aqueous biodegradation - Aerobic - High (hours):	528
Aqueous biodegradation - Aerobic - Low (hours):	96
Aqueous biodegradation - Anaerobic - High (hours):	5040

continued...

Aqueous biodegradation - Anaerobic - Low (hours):	1344
Aqueous biodegradation - Removal secondary treatment - High (hours):	75%
Photolysis maximum light absorption - High (nano- m):	268
Photolysis maximum light absorption - Low (nano- m):	253.5
Photooxidation half- life water - High (hours):	1284
Photooxidation half- life water - Low (hours):	321
Photooxidation half- life air - High (hours):	104
Photooxidation half- life air - Low (hours):	10

The lower molecular weight hydrocarbons are expected to form a "slick" on the surface of waters after release in calm sea conditions. This is expected to evaporate and enter the atmosphere where it will be degraded through reaction with hydroxyl radicals.

Some of the material will become associated with benthic sediments, and it is likely to be spread over a fairly wide area of sea floor. Marine sediments may be either aerobic or anaerobic. The material, in probability, is biodegradable, under aerobic conditions (isomerised olefins and alkenes show variable results). Evidence also suggests that the hydrocarbons may be degradable under anaerobic conditions although such degradation in benthic sediments may be a relatively slow process.

Under aerobic conditions the material will degrade to water and carbon dioxide, while under anaerobic processes it will produce water, methane and carbon dioxide.

Based on test results, as well as theoretical considerations, the potential for bioaccumulation may be high. Toxic effects are often observed in species such as blue mussel, daphnia, freshwater green algae, marine copepods and amphipods.

DO NOT discharge into sewer or waterways.

log Kow: 2.1-3

log Koc: 1.12-2.85

Koc: 37-250

log Kom: 1.39-2.89

Half-life (hr) air: 2.4-104

Half-life (hr) H₂O surface water: 5.55-528

Half-life (hr) H₂O ground: 168-2628

Half-life (hr) soil: <48-240

Henry's Pa m³ /mol: 518-694

Henry's atm m³ /mol: 5.94E-03

BOD 5 if unstated: 0.86-2.12,5%

COD: 0.7-2.52,21-27%

ThOD: 3.13

BCF: 1.67-380

Log BCF: 0.22-3.28

DIMETHYL ETHER:

Water solubility (mg/l): 35300

log Kow (Sangster 1997): 0.1

log Kow: 0.1-0.12

Koc: 14

Half-life (hr) air: 528

Half-life (hr) H₂O surface water: 2.6-30

Henry's atm m³ /mol: 9.78E-04

BCF: 1.7

Bioaccumulation: not sig

processes Abiotic: RxnOH*

Section 13 - DISPOSAL CONSIDERATIONS

- Consult State Land Waste Management Authority for disposal.
- Discharge contents of damaged aerosol cans at an approved site.
- Allow small quantities to evaporate.
- DO NOT incinerate or puncture aerosol cans.
- Bury residues and emptied aerosol cans at an approved site.

continued...

Section 14 - TRANSPORTATION INFORMATION

**Labels Required: FLAMMABLE GAS**

HAZCHEM: 2Y

UNDG:

Dangerous Goods Class: 2.1

Subrisk: None

UN Number:

1950

Packing Group:

None

Shipping Name: AEROSOLS

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE: None**REGULATIONS****toluene** (CAS: 108-88-3) is found on the following regulatory lists;

Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted extraction solvents

Australia - Australian Capital Territory Environment Protection Regulation Ecosystem maintenance - Organic chemicals - Non

-pesticide anthropogenic organics

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water

quality

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Ecosystem

maintenance

Australia Exposure Standards

Australia High Volume Industrial Chemical List (HVICL)

Australia Illicit Drug Reagents/Essential Chemicals - Category III

Australia Inventory of Chemical Substances (AICS)

Australia National Pollutant Inventory

Australia Poisons Schedule

IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk

International Agency for Research on Cancer (IARC) Carcinogens

OECD Representative List of High Production Volume (HPV) Chemicals

United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic

Substances Under International Control - Table II (English)

WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

dimethyl ether (CAS: 115-10-6) is found on the following regulatory lists;

Australia Exposure Standards

Australia Inventory of Chemical Substances (AICS)

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

REPRODUCTIVE HEALTH GUIDELINES

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

Ingredient	ORG	UF	Endpoint	CR Adeq TLV
toluene	9.6 mg/m ³	10	D	NA -

EXPOSURE STANDARD FOR MIXTURES

4643-60

Revised: August 2021