

SAFETY DATA SHEET Permabond TA4204B

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name Permabond TA4204B

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Adhesive.

1.3. Details of the supplier of the safety data sheet

Supplier Permabond Engineering Adhesives GmbH

Niederkasseler Lohweg 18

40547 Düsseldorf

Germany

info.europe@permabond.com

Manufacturer Permabond Engineering Adhesives Ltd.

Wessex Way Colden Common Winchester

Hampshire SO21 1WP United Kingdom

Tel: +44 (0)1962 711 661 Fax: +44 (0)1962 711 662 info@permabond.co.uk

1.4. Emergency telephone number

Emergency telephone CHEMTREC UK: +(44)-870-8200418 CHEMTREC US: 800-424-9300 (CCN: 829878)

National emergency telephone CHEMTREC Ireland: +(353)-19014670 number CHEMTREC Australia: +(61)-290372994

CHEMTREC New Zealand: +(64)-98010034

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Flam. Liq. 3 - H226

Health hazards Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317 STOT SE 3 - H335

Environmental hazards Aguatic Chronic 3 - H412

2.2. Label elements

Hazard pictograms





Signal word Warning

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Hazard statements H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation. H317 May cause an allergic skin reaction. H335 May cause respiratory irritation.

H412 Harmful to aquatic life with long lasting effects.

Precautionary statements P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

smoking.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P302+P352a IF ON SKIN: Wash with plenty of soap and water

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing.

P308+P313 IF exposed or concerned: Get medical advice/ attention.

Contains METHYL METHACRYLATE, ISOBORNYLMETHACRYLATE, TRIETHYLBORANE-1,3-

DIAMINOPROPANE COMPLEX

Supplementary precautionary

statements

P243 Take action to prevent static discharges.

P261 Avoid breathing vapour/ spray.

P264 Wash contaminated skin thoroughly after handling. P271 Use only outdoors or in a well-ventilated area.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P333+P313 If skin irritation or rash occurs: Get medical advice/ attention. P337+P313 If eye irritation persists: Get medical advice/ attention. P362+P364 Take off contaminated clothing and wash it before reuse.

P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P501 Dispose of contents/container in accordance with existing Community, National and

local regulations.

2.3. Other hazards

None under normal conditions. This substance is not classified as PBT or vPvB according to current EU criteria.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

METHYL METHACRYLATE 30-60%

CAS number: 80-62-6 EC number: 201-297-1 REACH registration number: 01-

2119452498-28-XXXX

Classification

Flam. Liq. 2 - H225 Skin Irrit. 2 - H315 Skin Sens. 1 - H317 STOT SE 3 - H335

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ISOBORNYLMETHACRYLATE 10-30%

CAS number: 7534-94-3 EC number: 231-403-1 REACH registration number: 01-

2119886505-27-XXXX

Classification

Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 STOT SE 3 - H335 Aquatic Chronic 3 - H412

TRIETHYLBORANE-1,3-DIAMINOPROPANE COMPLEX

1-5%

CAS number: 148861-07-8

REACH registration exemption - < 1 tonne

Classification

Acute Tox. 4 - H312 Skin Corr. 1A - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317

2,6-DI-TERT-BUTYL-P-CRESOL

<1%

CAS number: 128-37-0 EC number: 204-881-4

M factor (Acute) = 1 M factor (Chronic) = 1

REACH registration exemption - < 1 tonne

Classification

Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

The full text for all hazard statements is displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Move the exposed person to fresh air. Get medical attention if any discomfort continues.

Ingestion Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting. Get

medical attention if any discomfort continues.

Skin contact Remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms

develop, obtain medical attention

Eye contact Remove any contact lenses and open eyelids wide apart. Rinse immediately with plenty of

water for 15 minutes holding the eyelids open. Get medical attention if any discomfort

continues.

4.2. Most important symptoms and effects, both acute and delayed

Skin contact Skin irritation. Mild dermatitis, allergic skin rash.

Eye contact Irritating and may cause redness and pain.

4.3. Indication of any immediate medical attention and special treatment needed

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing

media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards Flammable liquid and vapour. Vapours are heavier than air and may travel along the floor and

accumulate in the bottom of containers. Vapours may be ignited by a spark, a hot surface or

an ember.

Hazardous combustion

products

Burning produces irritating, toxic and obnoxious fumes. Carbon monoxide, carbon dioxide, and unknown hydrocarbons. Cool containers exposed to heat with water spray and remove

5.3. Advice for firefighters

Special protective equipment

for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective

clothing

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Eliminate all sources of ignition. Ensure adequate ventilation of the working area. Do not

them from the fire area if it can be done without risk.

breathe vapour. Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with sand or other inert absorbent. Transfer to suitable, labelled containers for

disposal.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid contact with skin and eyes. Use in a well ventilated area. Do not ingest or inhale. Keep

away from sources of ignition - No smoking. Take precautionary measures against static

discharges.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep container tightly closed, in a cool, well ventilated place. Keep container dry. Store in

closed original container at temperatures between 2°C and 7°C.

7.3. Specific end use(s)

Specific end use(s) Adhesive.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

METHYL METHACRYLATE

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Long-term exposure limit (8-hour TWA): WEL 50 ppm 208 mg/m³ Short-term exposure limit (15-minute): WEL 100 ppm 416 mg/m³

2,6-DI-TERT-BUTYL-P-CRESOL

Long-term exposure limit (8-hour TWA): WEL 10 mg/m³

WEL = Workplace Exposure Limit.

METHYL METHACRYLATE (CAS: 80-62-6)

DNEL Workers, Industry/Professional - Inhalation; Long term : 208 mg/m³

Workers, Industry/Professional - Dermal; Long term : 13.67 mg/kg/day Workers, Industry/Professional - Inhalation; Short term : 416 mg/m³

PNEC Workers, Industry/Professional - Water; Long term <0.94 mg/l

ISOBORNYLMETHACRYLATE (CAS: 7534-94-3)

DNEL Workers - Dermal; Long term systemic effects: 1.04 mg/kg/day

PNEC Fresh water; 4.66 μg/l

marine water; 0.466 µg/l

STP; 2.45 mg/l

Sediment (Freshwater); 0.604 mg/kg Sediment (Marinewater); 0.06 mg/kg

Soil; 0.118 mg/kg

2,6-DI-TERT-BUTYL-P-CRESOL (CAS: 128-37-0)

DNEL Workers - Inhalation; Long term systemic effects: 3.5 mg/m³

Workers - Dermal; Long term systemic effects: 0.5 mg/kg/day

PNEC Fresh water; 0.199 μg/l

marine water; 0.02 µg/l

STP; 0.17 mg/l

Sediment (Freshwater); 99.6 µg/kg Sediment (Marinewater); 9.96 µg/kg

Soil; 8.33 mg/kg

TRIMETHYLENEDIAMINE (CAS: 109-76-2)

DNEL Workers - Inhalation; Long term systemic effects: 3 mg/m³

Workers - Dermal; Long term systemic effects: 0.26 mg/kg/day

PNEC Fresh water; 0.2 mg/l

marine water; 0.02 mg/l

STP; 10 mg/l

Sediment (Freshwater); 96 mg/kg Sediment (Marinewater); 9.6 mg/kg

Soil; 19 mg/kg

8.2. Exposure controls

Protective equipment







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Appropriate engineering

controls

Provide adequate ventilation. Avoid inhalation of vapours. Observe any occupational

exposure limits for the product or ingredients.

Eye/face protection If risk of splashing, wear safety goggles or face shield. Personal eye protection should

conform to EN 166

Hand protection It is recommended that chemical-resistant, impervious gloves are worn. Gloves should

> conform to EN 374. For exposure up to 4 hours, wear gloves made of the following material: Nitrile rubber. Thickness: ≥ 0.4 mm The selected gloves should have a breakthrough time of at least 0.5 hours. For exposure up to 8 hours, wear gloves made of the following material: Nitrile rubber. Thickness: ≥ 0.4 mm The selected gloves should have a breakthrough time of at least 8 hours. The breakthrough time for any glove material may be different for different glove manufacturers. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration

is detected.

Other skin and body

protection

Employee must wear appropriate protective clothing and equipment to prevent any possibility

of skin contact with this substance.

Hygiene measures Wash at the end of each work shift and before eating, smoking and using the toilet. Promptly

remove any clothing that becomes contaminated. When using do not eat, drink or smoke.

Respiratory protection Ensure adequate ventilation of the working area. Respiratory protection may be required if

excessive airborne contamination occurs. Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible.

Organic vapour filter. Type A. (EN14387)

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance Liquid.

Colourless. Colour

Odour Ester.

Odour threshold Not available. Hq Not relevant.

Melting point Not available.

~100°C Initial boiling point and range

≈30°C Flash point

Evaporation rate Not available.

Upper/lower flammability or

explosive limits

Not available.

Vapour pressure Not available. Not available. Vapour density

Relative density 1.0

Solubility(ies) Insoluble in water. Soluble in the following materials: Organic solvents.

Partition coefficient Not available. Auto-ignition temperature Not available.

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Viscosity ≈10000 mPa s @ 23°C

Oxidising properties Not available.

9.2. Other information

Other information Not relevant.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity The following materials may react with the product: Strong acids.

10.2. Chemical stability

Stability Stable at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Possibility of hazardous

reactions

Under normal conditions of storage and use, no hazardous reactions will occur.

10.4. Conditions to avoid

Conditions to avoid Take precautionary measures against static discharges. Avoid heat, flames and other sources

of ignition.

10.5. Incompatible materials

Materials to avoid Strong oxidising agents. Strong acids. Strong alkalis.

10.6. Hazardous decomposition products

Hazardous decomposition

products

Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified

organic compounds.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects The mixture is classified based on the available hazard information for the ingredients as

defined in the classification criteria for mixtures for each hazard class or differentiation in Annex I to Regulation 1272/2008/EC. Relevant available health/ecological information for the

substances listed under Section 3 is provided in the following.

Skin sensitisation

Skin sensitisation May cause sensitisation by skin contact.

Aspiration hazard

Aspiration hazard None under normal conditions.

Inhalation May cause respiratory system irritation.

Skin contact Irritating to skin.

Eye contact Irritating and may cause redness and pain.

Toxicological information on ingredients.

METHYL METHACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD₅₀ 5,000.0

mg/kg)

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Species Rat

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ 5,000.0

mg/kg)

Species Rat

Acute toxicity - inhalation

Acute toxicity inhalation

29.8

(LC50 vapours mg/l)

Species Rat

Skin corrosion/irritation

Skin corrosion/irritation Not irritating. Prolonged skin contact may cause temporary irritation.

Serious eye damage/irritation

Serious eye Not irritating.

damage/irritation

Respiratory sensitisation

Respiratory sensitisation Mouse: Sensitising.

Skin sensitisation

Skin sensitisation Local Lymph Node Assay (LLNA) - Mouse: Sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro Inconclusive.

Genotoxicity - in vivo This substance has no evidence of mutagenic properties.

Carcinogenicity

Carcinogenicity CMR: no

IARC carcinogenicity IARC Group 3 Not classifiable as to its carcinogenicity to humans.

Reproductive toxicity

Reproductive toxicity -

fertility

No evidence of reproductive toxicity in animal studies.

Reproductive toxicity -

No evidence of reproductive toxicity in animal studies. non-teratogenic, not

development embryotoxic

Specific target organ toxicity - single exposure

Target organs Respiratory tract Irritation.

Specific target organ toxicity - repeated exposure

Target organs No specific target organs known.

Aspiration hazard

Aspiration hazard Based on available data the classification criteria are not met.

ISOBORNYLMETHACRYLATE

Acute toxicity - oral

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Acute toxicity oral (LD₅o

mg/kg)

2,000.1

Species Rat

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ 3,000.0

mg/kg)

Species Rabbit

Acute toxicity - inhalation

Notes (inhalation LC₅₀) No information available.

Skin corrosion/irritation

Animal data Erythema/eschar score: Well defined erythema (2). Fully reversible within 7 days.

Serious eye damage/irritation

Serious eye Rabbit Not irritating.

damage/irritation

Skin sensitisation

Skin sensitisation Guinea pig maximization test (GPMT) - Guinea pig: Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitroGene mutation: Negative.

Carcinogenicity

Carcinogenicity No specific test data are available.

Reproductive toxicity

Reproductive toxicity -

Screening - NOAEL 500 mg/kg/day, Oral, Rat F1

fertility

Reproductive toxicity -

development

Developmental toxicity: - NOEC: >500 mg/kg/day, Oral, Rat

Specific target organ toxicity - single exposure

STOT - single exposure Based on available data the classification criteria are not met.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Based on available data the classification criteria are not met.

Aspiration hazard

Aspiration hazard Not applicable.

2,6-DI-TERT-BUTYL-P-CRESOL

Acute toxicity - oral

Acute toxicity oral (LD₅o

6,000.0

mg/kg)

Species Rat

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ 2,000.1

mg/kg)

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Species Rat

Skin corrosion/irritation

Animal data Erythema/eschar score: No erythema (0). Not irritating.

Serious eye damage/irritation

Serious eye

damage/irritation

Method: OECD 405, Rabbit Not irritating.

Skin sensitisation

Skin sensitisation - Guinea pig: Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitroGene mutation: Negative.

Genotoxicity - in vivo Chromosome aberration: Negative.

Carcinogenicity

Carcinogenicity No evidence of carcinogenicity in animal studies.

IARC carcinogenicity IARC Group 3 Not classifiable as to its carcinogenicity to humans.

Reproductive toxicity

Reproductive toxicity -

fertility

Two-generation study - NOAEL 100 mg/kg/day, Oral, Rat F1

Reproductive toxicity -

development

Developmental toxicity: - LOAEL: 500 mg/kg/day, Oral, Rat

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available. No information available.

SECTION 12: Ecological information

Ecotoxicity The product contains a substance which is harmful to aquatic organisms and which may

cause long-term adverse effects in the aquatic environment.

12.1. Toxicity

Toxicity The mixture is classified based on the available hazard information for the ingredients as

defined in the classification criteria for mixtures for each hazard class or differentiation in Annex I to Regulation 1272/2008/EC. Relevant available health/ecological information for the

substances listed under Section 3 is provided in the following.

Ecological information on ingredients.

METHYL METHACRYLATE

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 96 hours: > 79 mg/l, Oncorhynchus mykiss (Rainbow trout)

Acute toxicity - aquatic

invertebrates

EC₅₀, 48 hours: 69 mg/l, Daphnia magna

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Acute toxicity - aquatic

plants

NOEC, 72 hours: > 110 mg/l, Selenastrum capricornutum EC₅₀, 72 hours: > 100 mg/l, Selenastrum capricornutum

Acute toxicity microorganisms EC₂₀, 30 minutes: 150 - 200 mg/l, Activated sludge

Chronic aquatic toxicity

Chronic toxicity - fish early NOEC, 35 days: 9.4 mg/l, Danio rerio (Zebrafish)

life stage

Chronic toxicity - aquatic

invertebrates

NOEC, 21 days: 37 mg/l, Daphnia magna

ISOBORNYLMETHACRYLATE

Acute aquatic toxicity

LC₅₀, 96 hours: 1.79 mg/l, Danio rerio (Zebrafish) Acute toxicity - fish

Acute toxicity - aquatic

invertebrates

EC₅₀, 48 hours: > 2.57 mg/l, Daphnia magna

Acute toxicity - aquatic

plants

EC₅o, 72 hours: 2.28 mg/l, Pseudokirchneriella subcapitata

Chronic aquatic toxicity

Chronic toxicity - aquatic

invertebrates

NOEC, 21 days: 0.233 mg/l, Daphnia magna

2,6-DI-TERT-BUTYL-P-CRESOL

Acute aquatic toxicity

0.1 < L(E)C50 ≤ 1 LE(C)₅₀

M factor (Acute)

Acute toxicity - fish LC₅₀, 96 hours: 0.199 mg/l, Fish

Acute toxicity - aquatic

invertebrates

EC₅₀, 48 hours: 0.48 mg/l, Daphnia magna

Acute toxicity - aquatic

plants

EC₅₀, 96 hours: 0.758 mg/l, Algae

Chronic aquatic toxicity

M factor (Chronic) 1

12.2. Persistence and degradability

Persistence and degradability The product is not readily biodegradable.

Ecological information on ingredients.

METHYL METHACRYLATE

Biodegradation Water - Degradation 94%: 14 days

ISOBORNYLMETHACRYLATE

Biodegradation Water - Degradation 70%: 28 days

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12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not available.

Ecological information on ingredients.

2,6-DI-TERT-BUTYL-P-CRESOL

Partition coefficient log Pow: 5.1

12.4. Mobility in soil

Mobility No data available. The product has poor water-solubility.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB

This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

assessment

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste disposal should be in accordance with existing Community, National and local

regulations Empty containers may contain product residue; follow SDS and label warnings

even after they have been emptied.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the

local Waste Disposal Authority.

Waste class 08 04 09* waste adhesives and sealants containing organic solvents or other dangerous

substances.

SECTION 14: Transport information

14.1. UN number

1993

14.2. UN proper shipping name

FLAMMABLE LIQUID, N.O.S. (contains Methylmethacrylate)

14.3. Transport hazard class(es)

3

Transport labels



14.4. Packing group

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14.5. Environmental hazards

14.6. Special precautions for user

EmS F-E, S-E

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Tunnel restriction code (D/E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Not applicable.

Annex II of MARPOL 73/78

and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009

No. 716).

EU legislation Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16

December 2008 on classification, labelling and packaging of substances and mixtures (as

amended).

COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation,

Authorisation and Restriction of Chemicals (REACH)

Guidance Workplace Exposure Limits EH40.

CHIP for everyone HSG228.

Safety Data Sheets for Substances and Preparations.

Approved Classification and Labelling Guide (Sixth edition) L131.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Revision date 26/01/2022

Revision 9

Supersedes date 31/03/2021

Hazard statements in full H225 Highly flammable liquid and vapour.

H226 Flammable liquid and vapour. H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H319 Causes serious eye irritation. H335 May cause respiratory irritation.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects. H412 Harmful to aquatic life with long lasting effects.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.