



Material Safety Data Sheet

CARWA 3609 S

V1.0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

PRODUCT NAME : CARWA 3609 S
UTILIZATION : SOLVENT FOR INDUSTRIAL APPLICATIONS.
SUPPLY : CARCO CHEMICAL CO., LTD.
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2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS	EINECS	Symbol (s)	R-phase (s)
Methyl Benzene	108-88-3	203-625-9	F, Xn	R11, R38, R48/20, R63, R65, R67
2-Propanol	67-63-0	200-661-7	F, Xi	R11, R36, R67
2-Propanone	67-64-1	200-662-2	F, Xi	R11, R36, R66, R67
Methyl Acetate	79-20-9	201-185-2	F	R11, R38, R41
2-Butanone	78-93-3	201-159-0	F, Xi	R10, R66, R67
1-Propanol	71-23-8	200-746-9	F	R11, R38, R41
Ethyl Ethanoate	141-78-6	205-500-4	F	R11
Butyl Acetate	123-86-4	204-658-1	F	R10, R66, R67
Ethylene Glycol Monobutyl Ether	111-76-2	203-905-0	Xn	R20/21/22, R37

3. HAZARDS IDENTIFICATION

HEALTH HAZARDS : Harmful effect on health is severely damaged by contact / get a long time and by inhalation. Vapours may cause drowsiness and dizziness. Slightly irritating to respiratory system. Skin irritation Causes moderate eye irritation Harmful: may cause lung damage if swallowed. May damage organs Organ or system of the body Contact / get a long time. See details in Chapter 11 organs means moonlight. Neural hearing Central nervous system (CNS), respiratory system, eyes may be harmful to an unborn baby.



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SIGNS AND SYMPTOMS : Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestions, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Auditory system effects may include temporary hearing loss and/or ringing in the ears.

AGGRAVATED MEDICAL CONDITION: Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Central nervous system (CNS). Skin. Auditory system.

SAFTY HAZARDS : Highly flammable. In use, may form flammable/explosive vapour-air mixture. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.

4. FIRST AID MEASURES

GENERAL INFORMATION : Keep victim calm. Obtain medical treatment immediately. DO NOT DELAY.

INHALATION : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

SKIN CONTACT : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

EYE CONTACT : Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.



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INGESTION : If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

ADVICE TO PHYSICIAN : Potential for chemical. Consider: gastric lavage with protected airway, administration of activated charcoal. Potential for cardiac sensitization, particularly in abuse situations. Hypoxia or negative inotropes may enhance these effects. Consider: oxygen therapy. Call a doctor or poison control center for guidance.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

SPECIFIC HAZARDS : The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water. Carbon monoxide may be evolve if incomplete combustion occurs.

EXTINGGULSHING MEDIA: Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

PROTECTIVE EQUIPMENT: Wear full protective clothing and self-contained breathing apparatus.

FOR FIREFIGHTERS

ADDITIONAL ADVICE : Keep adjacent containers cool by spraying with water

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations. Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal.

PROTECTIVE MEASURES : Isolate hazard area and deny entry to unnecessary or unprotected personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and firefighting water) to avoid environmental contamination. Prevent from spreading or



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entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Ventilate contaminated area thoroughly.

CLEAN UP METHODS : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

For small liquid spills (> 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

ADDITIONAL ADVICE : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Vapour may form an explosive mixture with air. See Chapter 13 for information on disposal.

7. HANDLING AND STORAGE

GENERAL PRECAUTIONS : Avoid breathing vapour or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

HANDLING : Avoid inhaling vapour and/or mists. Avoid contact with skin, eyes, and clothing. Extinguish any naked flames. Do not smoke. Remove ignition



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sources. Avoid sparks. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec). Avoid splash filling. Do not use compressed air for filling, discharging, or handling operations. Handling Temperature: Ambient.

STORAGE : Bulk storage tanks should be diked (bunded). Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources and other sources of heat. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable product which are not harmful or toxic to man or to the environment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Storage Temperature: Ambient.

TRANSPOSITION : Containers closed when not in use. Do not use compressed air for filling.

PRODUCT

RECOMMENDED : For containers, or container linings use mild steel, stainless steel.

MATERIALS

UNSUITABLE MATERIALS: Natural, butyl, neoprene or nitrile rubbers.

CONTAINER ADVICE : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

ADDITIONAL INFORMATION : Ensure that all local regulations regarding handling and storage facilities are followed



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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

In the absence of occupational exposure standards for this product. It is recommended that the following are adopted.

Material	Source	Type	ppm	mg/m ³	Notation
Methyl Benzene	ACGIH	TWA	100		
	ACGIH	STEL	150		
	ACGIH	SKIN_DES			can be absorbed into the skin.
2-Propanol	ACGIH	TWA	200		
	ACGIH	STEL	250		
2-Propanone	ACGIH	TWA	750		
	ACGIH	STEL	1000		
	NIOSH	TWA	250		
Methyl Acetate	ACGIH	TWA	200		
	ACGIH	STEL	250		
2-Butanone	ACGIH	TWA	200		
	ACGIH	STEL	300		
1-Propanol	ACGIH	TWA	200		
	ACGIH	STEL	250		
Ethyl Ethanoate	ACGIH	TWA	400		
Butyl Acetate	ACGIH	TWA	150		
	ACGIH	STEL	200		
Ethylene Glycol	ACGIH	TWA	20		
Monobutyl Ether	ACGIH	STEL	50		

ADDITIONAL INFORMATION : Ventilation system good enough for control of airborne concentrations under the limit.



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Material	Source	ประเภทของอันตราย
Methyl Benzene	ACGIH	Not classified as a carcinogen in humans.
2-Propanol	ACGIH	Not classified as a carcinogen in humans.
2-Propanone	ACGIH	Not classified as a carcinogen in humans.
Methyl Acetate	ACGIH	Not classified as a carcinogen in humans.
2-Butanone	ACGIH	Not classified as a carcinogen in humans.
1-Propanol	ACGIH	Not classified as a carcinogen in humans.
Ethyl Ethanoate	ACGIH	Not classified as a carcinogen in humans.
Butyl Acetate	ACGIH	Not classified as a carcinogen in humans.
Ethylene Glycol	ACGIH	Confirmed animal Carcinogen with unknown relevance to
Monobutyl Ether		humans.

EXPOSURE CONTROLS : The level of protection and type of controls necessary will vary dependent upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed system as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.

PERSONAL PROTECTIVE EQUIPMENT : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

RESPIRATORY PROTECTION : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapour [boiling point > 65 C (149 F)] meeting EN141. Where respiratory protective equipment is required, use a full-face mask. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure



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- HAND PROTECTION** : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS: 216) made from the following materials may provide suitable chemical protection: Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
- EYE PROTECTION** : Chemical splash goggles (chemical monogoggles).
- PROTECTIVE CLOTHING** : Chemical resistant gloves/gauntlets, boots, and apron. Where risk of splashing or in spillage clean up chemical resistant one-piece overall with integral hood.
- MONITORING METHODS** : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls.
- ENVIRONMENTAL** : Local guidelines on emission limits for volatile for limits for volatile substances must be observed for the discharge of exhaust air containing vapour.
- EXPOSURE CONTROLS**

9. PHYSICAL AND CHEMICAL PROPERTIES

Material	Boiling point(°c)	Flash point(°c)	Auto-ignition temp.(°c)	Vapour pressure (kPa at °c)	Density (kg/m ³)	Vapour density (Air=1)	Evaporation rate (nBuAc=1)
Methyl Benzene	111	4	535	3	871	3.1	2
2-Propanol	83	12	425	4.1	785	2	1.5
2-Propanone	56	-18	540	24.7	791	2	5.6
Methyl Acetate	58	-13	454	22.6	903	2.6	-
2-Butanone	80	-4	515	9.5	805	2.4	3.7
1-Propanol	68	15	371	2	804	2.1	1.0
Ethyl Ethanoate	77	-4	460	9.8	902	3	4.2
Butyl Acetate	126	22	370	1.3	900	4.0	1



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Ethylene Glycol Monobutyl Ether	171	67	240	0.1	9.1	4.1	0.1
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10. STABILITY AND REACTIVITY

STABILITY : Stable under normal conditions of use. Reacts violently with strong oxidizing agents.

CONDITIONS TO AVOID : Avoid heat, spark, open flames and other ignition sources. Prevent vapour accumulation.

MATERIALS TO AVOID : Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCT : Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

BASIC FOR ASSIGNMENT : Information given is based on product criteria. And information about the components And knowledge of the toxins on similar products.

SKIN IRRITATION : Irritation to skin.

EYE IRRITATION : Moderately irritation to eyes (but insufficient to classify).

RESPIRATORY IRRITATION: Inhalation of vapours or mists may cause irritation to the respiratory system.

SENSITISATION : Not expected to be a skin sensitizer.

ADDITIONAL

INFORMATION : Exposure to very high concentrations of similar material has been associated with irregular heart rhythms and cardiac arrest.

12. ECOLOGICAL INFORMATION

MOBILITY : If product enters soil, it will be highly mobile and may contaminate groundwater. Floats on water.

PERSISTENCE/ : Readily biodegradable. Oxidizes rapidly by photo-chemical reactions in air.



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DEGRADABILITY

BIOACCUMULATION : Does not bioaccumulate significantly.

OTHER ADVERSE EFFECTS: In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

13. DISPOSAL CONSIDERATIONS

MATERIAL DISPOSAL : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.

CONTAINER DISPOSAL : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not, puncture, cut, or weld uncleaned drums. Send to drum recover or metal reclaimer.

LOCAL LEGISLATION : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

Proper shipping name : CARWA 3609 S

Class/Division : 3

Packing group : III

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

EC Classification : Flammable, Harmful

EC Symbols : F Flammable.

T Toxic.



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EC Risk Phrases	Xn Harmful. Xi Irritant. : R10 Flammable. R11 Highly Flammable. R20/21/22 Harmful by inhalation, in contact with skin and if swallowed. R36 Eye irritation. R37 Irritating to respiratory system. R41 Harmful to the eyes. R48/20 Harmful effect on health is severely damaged by contact / get a long time. And by inhalation R63 Harmful to the unborn child. R65 Harmful may be result in lung damage if swallowed. R66 Contact / how to get it. May cause skin dryness or cracking R67 Vapours may cause drowsiness and dizziness. And dizziness
EC Safety Phrases	: S2 Keep out of reach of children S9 Keep container in well-ventilated place S16 Keep away from source of ignition S26 Contact with eyes Use lots of water to wash it off immediately. And seek medical advice S36/37 Wear suitable protective clothing and gloves. S62 Swallowing Do not try to induce vomiting Seek medical advice immediately. And containers or label to show.

16. OTHER INFORMATION

MSDS DISTRIBUTION	: The information in the this document should be made available to all who may handle the product
DISCLAIMER	: This information is based on our current knowledge and is intended to describe



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the product for the purposes of health, safety and environment requirements only. It should not therefore be construed as guaranteeing any specific property of the product.