Product Safety Assessment

**UCARSOL™ CR Solvents**


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**Product Overview**

- UCARSOL™ CR solvents are colorless to yellow liquids with an ammonia-like odor. These products are completely soluble (mix well) in water and do not evaporate easily (have a high vapor pressure). For further details, see Product Description.
- UCARSOL CR solvents are high-performance solvents specifically designed for bulk carbon dioxide (CO$_2$) removal or total acid gas removal in natural-gas processing. For further details, see Product Uses.
- UCARSOL CR solvents are for industrial use only. Worker exposure is possible at a manufacturing facility or at the gas-treatment plants that use these solvents. For further details, see Exposure Potential.
- Eye contact with these solvents may cause chemical burns or severe irritation with corneal injury, possibly resulting in impairment of vision, even blindness. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated contact may cause chemical burns to the skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Inhalation of heated material or mist may cause respiratory irritation and other effects. For further details, see Health Information.
- The components in UCARSOL CR solvents are readily biodegradable, unlikely to accumulate in the food chain, and slightly toxic to toxic to fish and other aquatic organisms. For further details, see Environmental Information.
- UCARSOL CR solvents are stable under recommended storage conditions. They are hygroscopic, meaning they absorb moisture from the air. They become corrosive when wet. Exposure to elevated temperatures can cause these solvents to decompose. Avoid contact with nitrites, strong acids, strong oxidizers, and halogenated hydrocarbons. For further details, see Physical Hazard Information.

**Manufacture of Product**

- **Capacity** – Dow Gas Treating Products and Services is a global leader in the supply of products to meet all hydrogen sulfide (H$_2$S), carbon dioxide (CO$_2$), and other acid-gas treating requirements. UCARSOL™ CR solvents are formulated at facilities in Texas and Belgium in quantities sufficient to meet market demand.

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Product Description

UCARSOL™ CR solvents are colorless to yellow liquids with an ammonia-like odor. These solvents are a blend of components resulting in products with high-performance gas-treating properties. UCARSOL CR solvents are completely soluble (mix well) in water and do not evaporate readily or quickly (have a high vapor pressure).

Product Uses

UCARSOL™ CR solvents are used for the removal of carbon dioxide (CO₂) and hydrogen sulfide (H₂S) in natural-gas processing.

Exposure Potential

UCARSOL™ CR solvents are used in natural-gas treatment facilities. Based on the uses for these solvents the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in a manufacturing facility that produces UCARSOL CR solvents or in the gas-treatment facilities that use these solvents. They are produced, distributed, stored, and consumed in closed systems. Those working with UCARSOL CR solvents in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit unnecessary exposure. See Health Information.

- **Consumer exposure to UCARSOL CR solvents** – UCARSOL CR solvents are for industrial use only. Consumer contact is not likely. See Health Information.

- **Environmental releases** – The components in UCARSOL CR solvents are soluble in water and have low volatility. Once introduced to water, these chemicals will have a tendency to remain in water. Some formulations are harmful to fish and other aquatic organisms. Because the components are biodegradable, they will be treated by sewage treatment plants. In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. For small spills, absorb with noncombustible absorbents such as sand, vermiculite, or Zorbball. Do not use ground corn cobs, sawdust, peat moss, or other organic absorbents. Collect recovered material in suitable and properly labeled containers. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, evacuate personnel to a location upwind of the spill and keep personnel out of low-lying areas. Ventilate the area. Spilled material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Only trained and properly protected personnel must be involved in clean-up operations. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Keep people away. Isolate the fire and deny unnecessary entry. Use water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam to fight the fire. Alcohol-resistant ATC type foams are preferred. A direct water stream may spread the fire. Firefighters must wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.
Health Information\(^1,2\)

**Eye contact** – Eye contact with these solvents may cause severe irritation or chemical burns with corneal injury, which may result in permanent impairment of vision, even blindness.

**Skin contact** – Skin contact with these solvents may cause mild to severe irritation depending on the product. Repeated skin contact may cause chemical burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. The response may be more severe on scratched or cut skin or if the solvent is confined under gloves, jewelry, or clothing.

**Inhalation** – At room temperature, exposure to vapor is minimal due to low volatility. Inhaling vapors from heated material or mist may cause respiratory irritation and other effects.

**Ingestion** – These solvents have low toxicity if swallowed; however, swallowing may result in chemical burns of the mouth and throat. Swallowing may result in abdominal pain, nausea, or vomiting. Aspiration into the lungs could occur during ingestion or vomiting, causing tissue damage or lung injury.

**Repeated exposure** – In animals, a component in some formulations has affected the kidneys, liver, heart, and nervous system.

**Other** - Contains component(s) which have been shown to interfere with reproduction in animal studies. Genetic toxicity studies in animals were negative.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Environmental Information\(^1,2\)

The components used to produce UCARSOL™ CR solvents have low volatility and are soluble in water. When introduced to water, these materials will have a tendency to remain in water. Under environmental conditions, these materials will have a tendency to bind to soil or sediment.

The components used to produce UCARSOL CR solvents are unlikely to persist in the environment. The components are readily biodegradable, which suggests they will be rapidly and completely removed from water and soil environments, including biological wastewater treatment plants.

The components used to produce UCARSOL CR solvents have a low potential to accumulate in the food chain and are slightly toxic to toxic to fish and other aquatic organisms on an acute basis.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Physical Hazard Information\(^1,2\)

UCARSOL™ CR solvents are stable under recommended storage conditions. They are hygroscopic, meaning they absorb moisture from the air and become corrosive when wet. Avoid moisture. Exposure to elevated temperatures can cause these solvents to decompose.

Avoid contact with nitrites, strong acids, strong oxidizers, halogenated hydrocarbons, and metals such as aluminum, copper, copper alloys, zinc, and galvanized metals. These products may react with various halogenated organic solvents resulting in temperature and/or pressure increases in

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closed systems. Heating above 60°C in the presence of aluminum can result in corrosion and the generation of flammable gas.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

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Regulatory Information
Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of UCARSOL™ CR solvents. These regulations may vary by city, state, country, or geographic region. Information may be found by requesting the relevant Safety Data Sheet or Contact Us.

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Additional Information
- Safety Data Sheet (http://www.dow.com/webapps/msds/msdssearch.aspx)
- Contact Us (www.dow.com/gastreating/contact/)
- Dow Gas Treating Products and Services (http://www.dow.com/gastreating/)
- UCARSOL™ CR 301, 302, and 303 Solvents for Bulk CO₂ Removal, The Dow Chemical Company, Form No. 170-01419-0704, July 2004
  http://www.dow.com/gastreating/solution/ngp_cor.htm

For more business information about UCARSOL CR solvents, visit the Dow Gas Treating Products and Services web site at www.dow.com/gastreating/.

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References
1 UCARSOL™ CR Solvent 301 Material Safety Data Sheet, The Dow Chemical Company
2 UCARSOL CR Solvent 421 Material Safety Data Sheet, The Dow Chemical Company
NOTICES:

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