Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB. No. 1218-0072

IDENTITY *(As Used on Label and List)*
AE51 (52) (53) (54) CO_2 Cylinders

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the spaces must be marked to indicate that.

Section I

Manufacturer's Name **Various Overseas Suppliers**	Emergency Telephone Number **513-772-7646**
Address *(Number, Street, City, State, and ZIP Code)* **Austria, Japan, Hungary**	Telephone Number for Information **513-772-7646**
	Date Prepared **9/12/05**
	Signature of Preparer *(optional)*

Section II --- Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity: Common name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% *(optional)*
Carbon Dioxide Gas (CO_2)	**5000 PPM**	**5000 PPM/ 3000 STEL; 93**	**None**	

Section III --- Physical/Chemical Characteristics

Boiling Point **129°F**		Specific Gravity (H_2O = 1) **1.98**	
Vapor Pressure (mm Hg.) **PSIG 745°F**		Melting Point **N/A**	
Vapor Density (AIR = 1) **1997**		Evaporation Rate (Butyl Acetate = 1) **N/A**	

Solubility in Water **180 g/cc**

Appearance and Odor **Cylinder containing colorless, odorless gas.**

Section IV --- Fire and Explosion Hazard Data

Flash point (Method used) **N/A**	Flammable Limits **N/A**	LEL **N/A**	UEL **N/A**

Extinguishing Media **Non-flammable. Use extinguishing media appropriate for a surrounding fire.**

Special Fire Fighting Procedures **Non-flammable gas - UN 1013. Wear fire-fighting protective equipment and NIOSH-approved full-faced self-contained breathing apparatus. Evacuate area. Cool fire-exposed containers with water spray.**

Unusual Fire and Explosion Hazards **Heat of fire may rupture cylinders. Do not heat cylinders over 120°F. CO_2 is not effective with chemicals that have their own oxygen supply or with reactive metals and their hydrides.**

(Reproduce locally)

OSHA 174, Sept. 1985

Section V --- REACTIVITY DATA

Stability	Unstable		Conditions to Avoid **High heat.**
	Stable **X**		

Incompatability *(Materials to Avoid)* **Sodium peroxide mixed with AL and MG reactive.**

Hazardous Decomposition or Byproducts **In the presence of an electrical discharge.**

Hazardous Polymerization	May Occur		Conditions to Avoid **N/A**
	Will Not Occur **X**		

Section VI --- Health Hazard Data

Route(s) of Entry: Inhalation? **Yes** Skin? **Yes** Ingestion? **No**

Health Hazards *(Acute and Chronic)* **CO_2 is an asphyxiant. High concentrations can produce paralysis of the respiratory control center of the nervous system. 2-3% will increase respiration. >4% will produce labored breathing and is dangerous for even a few minutes. >12% causes rapid breathing and death. As gas escapes, cylinder freezes. May cause freeze burns on skin.**

Carcinogenicity: NTP? **No** ARC Monographs? **No** OSHA Regulated? **No**

Signs and Symptoms of Exposure **Faint "acidic" taste, headache, dizziness, shortness of breath, muscular weakness, drowsiness, and ringing of the ears.**

Medical Conditions Generally Aggravated by Exposure **Individuals with chronic pre-existing respiratory diseases or heart disorder should refrain from breathing excessive carbon dioxide. Recovery is usually rapid from short term overexposure.**

Emergency and First Aid Procedures **Inhalation: Remove to fresh air. Give oxygen/CPR if needed. Rescue personnel should wear self-contained breathing apparatus with full-face mask. Skin: Immediately flush with copious amounts of water for 15 minutes. Cylinder freezes as gas escapes.**

Section VII --- Precautions for Safe Handling and Use

Steps to Be taken in Case Material is Released or Spilled **Remove personnel. Ventilate area. Wear self-contained breathing apparatus. Move leaking container outdoors if without risk. Slowly release into atmosphere with adequate ventilation.**

Waste Disposal Method **Dispose of in compliance with local, state and federal regulations.**

Precautions to be Taken in Handling and Storing **Store CO_2 cylinders (with safety caps installed) upright in a cool, dry location, away from chemicals.**

Other Precautions **Wear protective gloves. Possible freeze burns due to dry ice.**

Section VIII --- Control Measures

Respiratory Protection *(Specify Type)*	**NIOSH-approved respirator or dust mask when concentrations exceed PEL.**	Special	**None**
Ventilation	Local Exhaust **X**	Other	**None**
	Mechanical *(General)*	**If needed to keep exposure levels below**	
Protective Gloves	**Leather gloves.**	Eye Protection	**Safety glasses or full-face shield.**

Other Protective Clothing or Equipment **Self-contained breathing apparatus.**

Work/Hygienic Practices **Keep safety valves in good working condition. Keep debris and unnecessary equipment away from CO_2 cylinders. Close valves when not in use and when empty. Verify sufficient oxygen concentration.**

* U.S.G.O.: 1986-491-529/45775