



BORDER CHEMICAL

COMPANY LIMITED

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Urea 46-0-0
SH02-09

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT IDENTIFICATION

Chemical Name Urea
Synonyms 46-0-0, Granular urea fertilizer
Trade Name Urea 46-0-0
Formula $(\text{NH}_2)_2\text{CO}$
Chemical Family Inorganic Chemical Fertilizer (Aliphatic Amide)
CAS Number 57-13-6
Molecular Weight 60.06

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	% by WT	Hazardous?	OSHA - PEL	ACGIH - TLV
Urea	57-13-6	100%	No	Not Listed	Not Listed

SECTION 3 HAZARDS IDENTIFICATION

Inhalation Dusty conditions may cause mechanical aggravation to respiratory mucous membranes.
Ingestion Minimal hazard under normal conditions of use. Ingestion of large quantities may cause gastrointestinal discomfort, vomiting, weakness or other medicinally related problems.
Skin Contact Slight dermal abrasion is possible with prolonged contact, especially around cuffs and collars.
Eye Contact Dust from this product may cause particulate discomfort to eyes.
Effects of Overdose Ingestion of large doses may cause diarrhea, nausea, abdominal cramps or formation of methemoglobinemia. Seek medical attention.
Carcinogenicity This product is not listed as carcinogenic by ACGIH, EPA, IARC, OSHA nor by NTP.

SECTION 4 FIRST AID MEASURES

Inhalation Remove to fresh air. Seek medical attention if condition persists.
Ingestion If large amount is ingested, give 2-3 glasses of water and induce vomiting. Seek medical attention.
Skin Contact Wash with soap and water. Seek medical attention if condition persists.
Eye Contact Flush eyes with running water for at least 15 minutes. Seek medical attention if condition persists.

SECTION 5 FIRE FIGHTING MEASURES

Extinguishing Media Use media suitable to extinguish source of fire.
Flash Point Not applicable
Flammable Limits Not applicable
Autoignition Temperature Not applicable
Special Fire Fighting Procedures Approach fire from up wind and wear self-contained breathing apparatus.
Unusual Fire and Explosion Hazards During extremely high temperature conditions, the product may reach melting point and decompose to release NH_3 , SO_x , PO_x , CN , CO_x . Heating mixtures of urea and oxidizers can be dangerous. Hypochlorites react with urea to form nitrogen trichloride that explodes spontaneously in air. Urea nitrate can be formed when urea is contacted with nitric acid. Urea nitrate can explode with friction.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Environmental Precautions	Keep out of water supplies, lakes, ponds, streams and rivers. This product is a fertilizer and will promote algae growth and may degrade water quality and taste.
In Case of Small Spill	Use appropriate tools to put the spilled solid in a suitable container for intended use, recycle or disposal.
In Case of Large Spill	Prevent additional discharge of material, if it is possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. Recover and place material in suitable containers for recycle, reuse, or disposal.

SECTION 7 HANDLING AND STORAGE

Precautions	Hygroscopic if relative humidity is over 76%. Contamination with ammonium nitrate fertilizers increases hygroscopicity of urea.
Handling	If user operations generate dust, fumes or mists, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Storage	Store in a cool, dry, well ventilated area. Prevent spillage and separate from strong oxidizers. Do not blend or store in contact with ammonium nitrate. Dry urea and dry ammonium nitrate will react together to produce a slurry. Avoid using containers, pipes and fittings made of zinc-clad or copper bearing alloys that are corroded by ammonia. Use normal safety procedures and good personal hygiene. Keep out of the reach of children.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation Protection	Adequate natural or general ventilation.
Respiratory Protection	Approved dust respirator when necessary.
Protective Clothing	In dusty conditions, safety glasses with side shields or goggles may be necessary.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	Decomposes
Melting Point	132.7°C (270.9°F)
Density	48 lbs per square foot
Flashpoint	Non-combustible
pH	7.6 - 8.0 (for a 10% solution)
Appearance	White prills or granules
Reaction with Water	Dissolves
Solubility (in Water)	67g/100g water @ 0°C (32°F)
Solubility (in other solvents)	Partially soluble in methanol, diethyl ether. Insoluble in n-octanol.
% Volatiles (by volume)	0
Vapour Pressure, mmHg	Not applicable
Vapour Density	Not applicable
Odour	Odourless to slightly ammoniacal
Odour Threshold	17 ppm as NH ₃
Physical State	Granular Solid
Molecular Weight	60.06
Taste	Saline

SECTION 10 STABILITY AND REACTIVITY

Stability (Normal conditions)	Stable under normal conditions.
Conditions to avoid	Extremely high temperatures (over 130°C (266°F))
Materials to avoid	Strong oxidizing agents such as hypochlorites, nitric acid, sodium nitrite, phosphorous pentachloride and nitrosyl perchlorate. Prolonged contact may cause oxidation of unprotected metals. Contamination of solid urea with solid ammonium nitrate or phosphatic fertilizers increases the hygroscopicity of urea.
Hazardous Decomposition Products	NH ₃ , SO _x , PO _x , CN, CO _x
Hazardous Polymerization	Will not occur.
Corrosivity	Slightly corrosive to steel, aluminum, zinc, and copper. Non-corrosive in presence of glass or stainless steel.
Other information	Absorbs moisture from the air. Hygroscopic; Keep containers tightly closed. Avoid contact with moisture. Slow hydrolysis will produce corrosive acids.

SECTION 11 TOXICOLOGICAL INFORMATION

Routes of Exposure	Ingestion, inhalation
LD ₅₀ (Rat, oral)	14300 mg/kg
Special Remarks	Very low toxicity for humans or animals under normal conditions of careful, responsible use. Urea is used in small quantities as a feed supplement for livestock. Urea ingestion may be harmful to wildlife, livestock and birds at body burdens of several thousands of mg/kg if ingested without adequate mixing. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs to prevent animal overexposure.
Other Effects on Humans	May cause irritation of the mucous membranes and upper respiratory tract.

SECTION 12 ECOLOGICAL EFFECTS

Aquatic Toxicity Rating: TLm 96: over 1000 ppm. Urea will slowly release ammonia and degrade to nitrate. Ammonia is a toxic hazard to fish. However, ammonia release is slow, making urea much less toxic than ammonium salts. Aquatic toxicity tests indicate 24 hour exposure at 16,000 mg/L of urea did not kill Creek Chubs. Non-cumulative when applied using normal agricultural practices. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use. Do not contaminate any body of water or waterway by direct application, cleaning of equipment or disposal. Products of degradation include ammonia, nitrogen oxides (NO, NO₂) carbon oxides (CO, CO₂) and water. Urea and its products of degradation will promote algae growth and may degrade water quality and taste. Notify downstream users. Will dissolve and disperse in water. Reclaiming material may not be viable.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Disposal Procedure	Recover and place material in a suitable container for intended use or disposal. Ensure disposal is in compliance with government requirements and local regulations.
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SECTION 14 TRANSPORT INFORMATION

This product is not regulated by Transport Canada (TDG) nor the US DOT.

SECTION 15 CARCINOGENICITY INFORMATION

Carcinogenic?	
By ACGIH	No
By EPA	No
By IARC	No
By OSHA	No
By NTP	No

SECTION 16 OTHER INFORMATION

ACGIH	American Conference of Governmental Industrial Hygienists
CAS#	Chemical Abstracts Service Registry Number
DOT	Department of Transportation
EPA	Environmental Protection Agency
IARC	International Agency for Research on Cancer
LD ₅₀	The lethal dose expected to kill 50% of a group of test animals.
NTP	National Toxicology Program
OSHA	US Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value

SECTION 17 NOTES

SECTION 18 MSDS PREPARATION INFORMATION

Prepared by	Border Chemical Company Limited - (204) 222-3276
Date Issued	August 15, 2001
Date Reviewed/Revised	June 2003, April 30, 2006
Emergency Phone Number	(204) 222-3276 - 24 hours

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