UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

Solvents & Coatings Materials Division

MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE 04/16/99

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

8515 DEVELOPER

PRODUCT NAME:	ANHYDROL SOLVENT SPECIAL 190 Proof PM-4081 (ETHANOL A1-190)
CHEMICAL NAME:	Denatured Ethanol
CHEMICAL FAMILY:	Alcohols
FORMULA:	N/A (mixture)
MOLECULAR WEIGHT:	N/A (mixture)
SYNONYMS:	Special Industrial Solvent, Government Formula AI
CAS # AND NAME:	See Section III, "Ingredients"

II. PHYSICAL DATA

BOILING POINT, 760 mm Hg:	77.38 C (171.30°F)
SPECIFIC GRAVITY(H2O = 1):	0.80910 AT 20C
FREEZING POINT:	<-90 C (<-130°F)
VAPOR PRESSURE AT 20°C:	43.600 mmHg

EMERGENCY PHONE NUMBERS: 1-800-UCC-HELP (NUMBER AVAILABLE AT ALL TIMES) OR (304) 744-3487

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39 Old Ridgebury Road, Danbury, CT 06817-0001

PRODUCT NAME: ANHYDROL SOLVENT SPECIAL 190 Proof PM-4081

VAPOR DENSITY (AIR = 1): 1.5

EVAPORATION RATE (Butyl Acetate = 1): 3.20

SOLUBILITY IN WATER by wt: 100% AT 20 C

APPEARANCE: Transparent colorless

ODOR: Characteristic

PHYSICAL STATE: Liquid

PERCENT VOLATILES (by weight): 100

III. INGREDIENTS

%	MATERIAL	CAS#	EXPOSURE LIMIT
79.6	Ethanol	64-17-5	See Section V
4.2	Methanol	67-56-1	See Section V
0.9	Methyl Isobutyl Ketone	108-10-1	See Section V
6.5	Water	7732-18-5	None established
8.8	Isopropanol	67-63-0	See Section V

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:
61'F (16'C)
Tag Closed Cup ASTM D 56
74'F (23'C)
Tag Open Cup ASTM D 1310

FLAMMABLE LIMITS IN AIR % by volume:
LOWER: 3.3 (Ethyl Alcohol)
UPPER: 19.0 (Ethyl Alcohol)

EXTINGUISHING MEDIA: Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

SPECIAL FIRE FIGHTING PROCEDURES: Use water spray to cool fire-exposed containers and structures.

Use water spray to disperse vapors; re-ignition is possible.
Use self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point.
Vapors from this material may settle in low or confined areas or travel a long distance to an ignition source and flash back explosively.
This material may produce a floating fire hazard.
Static ignition hazard can result from handling and use. Electrically bond and ground all containers and equipment before transfer or use of material. Use proper bonding and grounding during product transfer as described in National Fire Protection Association Document NFPA 77.
See "Other Precautions" in Section IX.

V. HEALTH HAZARD DATA

EXPOSURE LIMIT(S):

Ethanol: 1000 ppm TWA, OSHA & ACGIH
Methanol: 200 ppm TWA (skin), OSHA & ACGIH
250 ppm STEL (skin), OSHA & ACGIH
Isopropanol: 400 ppm TWA, OSHA & ACGIH
500 ppm STEL, OSHA & ACGIH
Methyl Isobutyl Ketone: 50 ppm TWA, OSHA & ACGIH
75 ppm STEL, OSHA & ACGIH

EFFECTS OF ACUTE OVEREXPOSURE:

SWALLOWING:

May cause nausea, abdominal pain, vomiting, headache, dizziness, shortness of breath, weakness, fatigue, leg cramps, restlessness, confusion, drunken behavior, visual disturbances, drowsiness, coma, and death. There may be a delay of several hours between swallowing methanol and the onset of signs and symptoms. The effects observed are in part due to acidosis and partially to cerebral edema. Visual effects include blurred vision, diplopia, changes in color perception, restriction of visual fields, and complete blindness. Ingestion of moderate quantities of methanol also produces metabolic acidosis. Onset of symptoms may be delayed up to 48 hours. 60-200 ml of methanol is a fatal dose for most adults. Ingestion of as little as 10 ml has caused blindness. With massive overdoses, liver, kidney, and heart muscle injuries have been described.

SKIN ABSORPTION:

Prolonged or widespread contact may result in the absorption of potentially harmful amounts of methanol.

INHALATION:

May cause dizziness, drowsiness, disturbances of vision, and tingling, numbness, and shooting pains in the hands and forearms.
High vapor concentrations may cause a burning sensation in the nose and throat, and stinging and watering in the eyes. At concentrations which cause irritation, dizziness, faintness, drowsiness, nausea, and vomiting may also occur.

SKIN CONTACT:

Prolonged contact may cause defatting of the skin with possible reddening and itchiness.

EYE CONTACT:

Liquid may cause discomfort in the eye with slight excess redness and possibly swelling of the conjunctiva.

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May cause temporary superficial injury of the cornea.

EFFECTS OF REPEATED OVEREXPOSURE:

Long-term repeated overexposure to methanol vapor concentrations of 3000 ppm or greater may allow a cumulative effect to occur with resulting nausea, vomiting, headache, ringing in the ears, insomnia, trembling, unsteady gait, vertigo, clouded and double vision. Liver and/or kidney injury may occur. Prolonged overexposure at levels of 800-1000 ppm may result in severe eye damage in some persons.
Long-term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis.

OTHER HEALTH HAZARDS:

Repeated ingestion of ethanol by pregnant mothers has been shown to adversely affect the central nervous system of the fetus, producing a collection of effects which together constitute the fetal alcohol syndrome. These include mental and physical retardation, disturbances of learning, motor and language deficiencies, behavioral disorders, and small size head.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Due to its defatting properties, methanol may aggravate an existing skin condition, e.g.,eczema. Due to its potential for liver and kidney injury, methanol may aggravate existing liver and/or kidney diseases.
Repeated exposure to ethanol may aggravate liver injury produced from other causes.

ADDITIONAL TOXICITY INFORMATION:

The International Agency for Research on Cancer (IARC) has determined that the consumption of alcoholic beverages is causally related to the occurrence of malignant tumors of the oral cavity, pharynx, larynx, esophagus and liver in humans. The carcinogenic response attributed to drinking alcoholic beverages has not been verified in studies with laboratory animals. Established uses of denatured ethanol and non-beverage uses of pure ethanol are not considered to pose any significant cancer hazard.
Ethanol has been shown to have a weak skin sensitizing potential in a very small percentage of the population.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: If patient is fully conscious, give two glasses of water. Induce vomiting. Obtain medical attention without delay. If medical advice is delayed, and if the person has swallowed a moderate volume of material (a few ounces), then give three to four ounces of hard liquor, such as whiskey.

SKIN: Remove contaminated clothing. Wash skin with soap and water. Obtain medical attention if contact has been widespread and prolonged, or if irritation persists. Wash clothing before reuse.

INHALATION: Remove to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen may be given by qualified personnel. Obtain medical attention.

EYES: Immediately flush eyes with water and continue washing for several minutes. Remove contact lenses, if worn. Obtain medical attention.

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NOTES TO PHYSICIAN: The combination of visual disturbances, metabolic acidosis, and formic acid in the urine is evidence of methanol poisoning. The therapeutic intravenous administration of ethanol (10 ml per hour) allows it to be preferentially oxidized and reduces production of methanol metabolites. Acidosis must be treated by means of intravenous sodium bicarbonate, and methanol elimination may be increased by hemodialysis, as indicated. Treatment should be based on blood methanol levels and acid-base balance. Folates may be administered to enhance the metabolism of formaldehyde. 4-Methyl pyrazole has been suggested as an antidote: because of its alcohol dehydrogenase inhibiting effects, it reduces the production of formate and the development of metabolic acidosis. However, the value of this antidote remains to be proven in humans. Symptoms vary with the alcohol level of the blood. Mild alcohol intoxication occurs at blood levels between 0.05%-0.15% and approximately 25% of individuals will show signs of intoxication at these levels. Above 0.15% the person is definitely under the influence of ethanol and 50%-95% of individuals at this level are clinically intoxicated. Severe poisoning occurs when the blood ethanol level is 0.3%-0.5%. Above 0.5% the individual will be comatose and death can occur. The unabsorbed ethanol should be removed by gastric lavage after intubating the patient to prevent aspiration. Avoid the use of depressant drugs or the excessive administration of fluids. In the presence of hypoglycemia, administer 5%-10% glucose intravenously, plus thiamine 100 mg intramuscularly. Hemodialysis is indicated if the blood ethanol is above 5 mg/ml. Naloxone may be useful to reverse clinical alcoholic coma and 0.4-1.2 mg intravenously may arouse ethanol-intoxicated patients.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: None known.

INCOMPATIBILITY (materials to avoid):
Strong oxidizing agents.
Strong inorganic acids.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:
Burning can produce the following products:
Carbon monoxide and/or carbon dioxide.
Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None known.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Small spills can be flushed with large amounts of water; larger spills should be collected for disposal.
Extinguish and do not turn on any ignition source until the area is determined to be free from fire or explosion hazard.
Wear suitable protective equipment.

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WASTE DISPOSAL METHOD:

Incinerate in a furnace where permitted under Federal, State, and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Use self-contained breathing apparatus in high vapor concentrations.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory where this product is stored and handled in closed equipment.
Special, local ventilation is needed at points where vapors can be expected to escape to the workplace air.

PROTECTIVE GLOVES:

Neoprene
PVC-coated

EYE PROTECTION:

Safety Glasses or Monogoggles

OTHER PROTECTIVE EQUIPMENT:

Eye Bath, Safety Shower
Chemical Apron

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

DANGER!
MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.
FLAMMABLE.
VAPOR HARMFUL.
HARMFUL IF ABSORBED THROUGH SKIN.
CAUSES EYE IRRITATION.

MAY CAUSE DIZZINESS AND DROWSINESS.
MAY CAUSE HEART MUSCLE DAMAGE.
MAY CAUSE LIVER AND KIDNEY DAMAGE.

Do not swallow.
Keep away from heat, sparks and flame.
Avoid breathing vapor.
Do not get in eyes, on skin, on clothing.
Keep container closed.
Use with adequate ventilation.
Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point and may flashback explosively.
Wash thoroughly after handling.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS:

Vapors may settle in low or confined areas, or travel a long distance to an ignition source and flash back explosively.

ADDITIONAL INFORMATION: There may be additional product safety information on this product, which may be obtained by calling your Union Carbide Corporation Sales or Customer Service Contact.
PROCESS HAZARD: Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical Vapors."

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Methanol	67-56-1	4.2
Methyl Isobutyl Ketone	108-10-1	0.9
Acetaldehyde	75-07-0	0.0010
Acetone	67-64-1	0.0002

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

*** NONE ***

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Methanol	67-56-1	4.2

Toxic Substances Control Act (TSCA) STATUS:

The ingredients of this product are on the TSCA inventory.

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STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains trace levels of ACETALDEHYDE, known to the State of California to cause cancer.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

EXTRAORDINARILY HAZARDOUS SUBSTANCES (=> 0.0001%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Acetaldehyde	75-07-0	0.0010

HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethanol	64-17-5	79.6
Isopropanol	67-60-3	8.8
Methanol	67-56-1	4.2

PENNSYLVANIA Right-to-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethanol	64-17-5	79.6
Isopropanol	67-60-3	8.8
Methanol	67-56-1	4.2

CALIFORNIA SCAQMD RULE 443.1 VOC'S:

VOC 775.36 g/l; Vapor Pressure 43.600 mm Hg @ 20 C

OTHER REGULATORY INFORMATION:

EPA Hazard Categories: Immediate Health, Delayed Health, and Fire.

NEW YORK STATE BULK STORAGE REGULATIONS (6 NYCRR Parts 595-599)

This product is covered by 6 NYCRR for Bulk Storage and Release Reporting and Response. Technical guidance and recommended practices are as follows:

MATERIALS OF CONSTRUCTION

Suitable materials of construction are: Steel, stainless steel, baked phenolic lined steel, galvanized steel, copper, and copper alloy.

Materials not to be used: Aluminum. Plastics are not recommended for flammable liquids.

STORAGE SYSTEM DESIGN

Design should comply with applicable industry, Federal, and local codes for a Class IB Flammable liquid with regards to mechanical, electrical, safety and health components. Should also comply with NYS/DEC Chemical Bulk Storage regulations Parts 598.3 to 598.6 (for existing tanks) or Parts

599.2 and 599.7 (for new or substantially modified tanks).

CONDITIONS FOR STORAGE
Store at normal ambient temperatures.

INSPECTION AND MAINTENANCE
A testing/inspection program which ensures structural integrity and proper system operation should be established. Inspection and maintenance procedures and testing of equipment should comply with NYS/DEC regulations Parts 598.7 to 598.10.

TRANSFER AND UNLOADING
These operations should comply with NYS/DEC regulations, Part 598.4.

NOTE ----
The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of the use of the product are not under the control of Union Carbide, it is the user's obligation to determine conditions of safe use of the product.

REVISED SECTIONS:

Section IV: FIRE AND EXPLOSION HAZARD DATA
Section VI: REACTIVITY DATA
Section IX: SPECIAL PRECAUTIONS
Section X: REGULATORY INFORMATION

PRODUCT: 35699
F NUMBER: C00521