

MATERIAL SAFETY DATA SHEET

**CATALYTIC
GENERATORS, LLC.**

Section 1: Company and Product Identification and Use				
PRODUCT NAME:		Ethy-Gen® II Ripening Concentrate		
PRODUCT USE:		In a Catalytic Generator for Fruit Ripening, Tobacco and Citrus Degreening. For Industry Use Only in Commercial Ripening Rooms.		
MANUFACTURER:		Catalytic Generators, LLC 1185 Pineridge Road Norfolk, VA 23502-2095 U.S.A.		
EMERGENCY TELEPHONE:		CHEMTREC: (800) 424-9300 (North America) or (703) 527-3887		
PREPARED BY:		Catalytic Generators, LLC		
TELEPHONE:		(757) 855-0191		
PREPARATION DATE:		August 2008		
Section 2: Hazardous Ingredients				
Hazardous Ingredient	%	CAS Number	LD ₅₀ of Ingredient	LC ₅₀ of Ingredient
Ethanol	60 - 100	64-17-5	Rat (Oral) 7060 mg/kg	Rat (Inhalation) 20,000 ppm, 10 hour
Ethyl Acetate	1 - 5	141-78-6	Rat (Oral) 5620 mg/kg	Rat (Inhalation) 200 mg/l, 1 hour
Isopropyl Alcohol	1 - 5	67-63-0	Rat (Oral) 4700 mg/kg	Rat (Inhalation) 19,000 ppm, 8 hour
Section 3: Hazards Identification				
EMERGENCY OVERVIEW:		Hazards: Warning! Flammable Liquid. Can burn with little or no visible flame. May be irritating to the eyes and upper respiratory tract. May affect the central nervous system. Appearance: Clear / Transparent Liquid Odor: Fruity / Sweet		 
Potential Health Effects				
ROUTES OF ENTRY:		Skin Contact / Eye Contact / Inhalation / Ingestion		
EFFECTS OF ACUTE EXPOSURE TO PRODUCT:		May cause eye and upper respiratory tract irritation. Short-term overexposure above 1,000 ppm by the inhalation route may cause central nervous system (CNS) effects such as headache and irritation of eyes, nose and throat. If continued for more than an hour additional CNS effects may occur such as: dizziness, drowsiness, loss of appetite, and an inability to concentrate. Gastrointestinal (stomach) effects may occur with symptoms such as nausea and vomiting.		
SKIN:		Defatting of the skin with irritation, dryness and cracking.		
EYE:		Eye exposure generally causes transient pain, irritation, and reflex lid closure. A foreignbody sensation may persist for one to two days. Vapors produce transient stinging and tearing, but no apparent adverse effects. Transiently impaired perception of color may occur with acute ingestion or chronic alcoholism.		

Emergency Numbers:

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Outside USA, collect calls accepted, 24 hrs/day

EFFECTS OF CHRONIC EXPOSURE TO PRODUCT:	Long-term exposure can cause loss of appetite, weight loss, nervousness, memory loss, mental retardation and liver damage. May cause dermatitis by defatting the skin from prolonged or repeated contact. Alcoholic beverages are carcinogenic to humans. Ethanol has developmental effects that are associated with ethanol intake. Examples of chronic ethanol abuse effects include physical dependence, malnutrition, amnesia, dementia, somnolence, cardiac myopathy, hepatotoxicity, GI bleeding and pancreatitis. Combined exposure to ethanol and certain other chemicals may result in increased effects.		
Section 4: First Aid Measures			
INGESTION:	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.		
INHALATION:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.		
EYE CONTACT:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.		
SKIN CONTACT:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.		
Section 5: Fire Fighting Measures			
FLAMMABILITY:	Yes, under conditions of heat, sparks, open flames, contact with oxidizing materials.		
MEANS OF EXTINCTION:	Alcohol foam, CO ₂ , dry chemical. Cool exposed containers with water. Water may be ineffective on fire.		
FLASHPOINT AND METHOD:	12°C (53.6°F), Closed Cup		
UPPER FLAMMABLE LIMIT:	14.0% by volume		
LOWER FLAMMABLE LIMIT:	3.5% by volume		
AUTOIGNITION TEMPERATURE:	Determined not to have an auto-ignition temperature below 400°C (752°F)		
EXPLOSION DATA:	Insensitive to impact. Unlikely to accumulate a static charge. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area.		
HAZARDOUS COMBUSTION PRODUCTS:	Burning can produce Carbon Monoxide (CO; highly toxic if inhaled) and/or Carbon Dioxide (CO ₂ ; in sufficient concentrations can act as an asphyxiant).		
NFPA:	Health: 1	Fire: 3	Reactivity: 0

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Section 6: Accidental Release Measures			
LEAK AND SPILL PROCEDURES:	Assure adequate ventilation in leak or spill area. Remove all sources of heat or ignition. Depending upon the nature and size of the release, responders may need to be HAZWOPER trained. Responders must be provided with appropriate personal protective equipment. If necessary, use water spray or alcohol-resistant foam to reduce vapors. Contain and recover the liquid, where possible. Do not flush to sewer. Absorb liquid onto a compatible absorbent material; handle as a flammable material. Containerize spill cleanup residues to prevent release of vapors, prevent contact with heat, sparks, open flames, and oxidizing materials.		
Section 7: Handling and Storage			
HANDLING PROCEDURES:	Avoid contact with sparks, open flames, and oxidizing materials. Do not smoke while using this product. When transferring product from a metal container, ensure that container is grounded.		
STORAGE PROCEDURES:	Store in a dry locked storage area in accordance with local fire code.		
NOTE:	The ethylene generated by the use of this product is a simple asphyxiant at high levels and is flammable. The Lower Explosive Limit of ethylene is 2.7% (27,000 ppm).		
Section 8: Exposure Control / Personal Protection			
EXPOSURE LIMITS	Ethanol	Ethyl Acetate	Isopropyl Alcohol
OSHA PEL:	1,000 PPM	400 PPM	400 PPM
ACGIH TLV:	1,000 PPM	400 PPM	500 PPM
ENGINEERING CONTROLS:	Use in well ventilated area. When necessary, a system of local or general exhaust is recommended to keep employee exposures below allowable exposure limits. When transferring product from a metal container, ensure that container is grounded.		
PERSONAL PROTECTIVE EQUIPMENT:	Skin: Use chemical-resistant gloves such as rubber, neoprene or vinyl. When skin contact is possible, wear long-sleeved shirt, long pants, socks, shoes, head and face protection. Eye: Use chemical / splash safety goggles when eye contact is possible. Inhalation: Under normal conditions, the use of this product should not require respiratory protection. Whenever conditions warrant respirator use, a respiratory program that meets OSHA 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed.		
Section 9: Physical and Chemical Properties			
PHYSICAL STATE:	Liquid	ODOR AND APPEARANCE: Clear with Fruity Odor	
ODOR THRESHOLD:	Not Avail.	SPECIFIC GRAVITY: 0.793 @ 20°C (68°F)	
VAPOR DENSITY:	1.59	VAPOR PRESSURE: 44.6 mmHg @ 20°C (68°F)	
EVAPORATION RATE:	1.7	BOILING POINT: 78.3°C (173°F)	
pH:	Not Appl.	FREEZING POINT: -114.1°C (-173.4°F)	
VISCOSITY:	1.49 @ 20°C (68°F)		
COEFFICIENT OF WATER / OIL DISTRIBUTION:		-0.31	
FLASHPOINT AND METHOD:		12°C (53.6°F), Closed Cup	
UPPER FLAMMABLE LIMIT:		14.0% by volume	
LOWER FLAMMABLE LIMIT:		3.5% by volume	
AUTOIGNITION TEMPERATURE:		Determined not to have an auto-ignition temperature below 400°C (752°F)	

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Section 10: Stability and Reactivity	
CHEMICAL STABILITY:	The product is stable.
SUBSTANCES TO AVOID:	Contact with acetyl chloride or other strong oxidizing agents may result in a violent reaction
REACTIVITY:	Does not react with air, water or other common materials
DECOMPOSITION PRODUCTS:	Not expected to decompose under normal conditions
CONDITIONS TO AVOID:	Avoid contact with strong oxidizers, excessive heat, sparks or open flame
HAZARDOUS POLYMERIZATION:	Not expected to occur
Section 11: Toxicological Properties	
See Section 3 for Potential Health Effects.	
This product has not been tested for toxicological properties; however, the ingredients have.	
ETHANOL	
Ethanol is not toxic by OSHA criteria. Given that OSHA has established the threshold limit value at 1000 ppm (10 hour, time weighted average), the human risk to ethanol exposure in an industrial environment appear to be minimal.	
ACUTE TOXICITY:	Oral Rat LD50 = 7060 MG/KG BW/T Inhalation Rat: LC50 = 20000 ppm 10 HR
CARCINOGENICITY:	The International Agency for Research on Cancer (IARC) has determined alcoholic beverages are carcinogenic to humans and the occurrence of malignant tumors of the oral cavity, pharynx, larynx, esophagus and liver is causally related to the consumption of alcoholic beverages in humans. The American Conference of Governmental Industrial Hygienists (ACGIH) list ethyl alcohol as an A4 - Not classifiable as a Human Carcinogen. EPA review of available literature indicates that carcinogenic effects are not expected from the industrial uses of ethanol.
REPEATED DOSE TOXICITY:	Exposure of over 1000 ppm may cause headache, drowsiness and lassitude, loss of appetite, inability to concentrate and throat irritation.
REPRODUCTIVE EFFECTS:	Excessive consumption of alcoholic beverages during pregnancy can cause fetal alcohol syndrome. The development of physical and mental manifestation in the offspring; it may also cause defects in the central nervous system, heart, kidney and limbs. Moderate consumption can be associated with reduced birth weight and behavioral defects.
ETHYL ACETATE	
LD50 / LC50:	Oral Rat LD50 = 5620 MG/KG Inhalation Rat LC50 = 200 MG/L, 1 HOUR
CARCINOGENICITY:	Not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.
REPRODUCTIVE EFFECTS:	Not Available
ISOPROPYL ALCOHOL	
LD50 / LC50:	Inhalation Rat LC50 = 19,000 PPM 8 HOURS Oral Rat LD50 = 4700 MG/KG Skin Rabbit LD50 = 12,870 MG/KG
CARCINOGENICITY:	No
REPRODUCTIVE EFFECTS:	Slight effects on reproductive function have been noted in male animals after administration of large oral doses. Levels of exposure that demonstrated no effects in laboratory animals are very high when compared to human exposure under normal use in the workplace.

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Section 12: Ecological Information	
This product has not been tested for ecological impact; however, the ingredients have. This material is not classified as harmful or toxic to algae or higher aquatic plants.	
AQUATIC TOXICITY:	Ethanol: Ethanol has been shown to be practically non-toxic in tests. LC50 Rainbow Trout (<i>Salmo gairdneri</i>): 13,000 ppm. LC50 Fathead Minnow (<i>Pimephales promelas</i>): 14,200 ppm. Ethyl Acetate: Ethyl acetate exhibits low acute toxicity to aquatic organisms. Fish (<i>Salmo gairdneri</i>) 96-hr. LC50 = 230 ppm. Fish (<i>Pimephales promelas</i>) 96-hr. LC50 = 230 ppm. Crustacean (<i>Daphnia magna</i>) 48-hr. EC50 = 717 ppm. Mollusc (<i>Lymnea stagnalis</i>) 48-hr. EC50 = 1100 ppm. Isopropyl Alcohol: Isopropyl alcohol has been shown to be practically non-toxic in tests. LC50 Fathead Minnow (<i>Pimephales promelas</i>): 6,550 ppm. EC50 <i>Daphnia</i>: 2,280 ppm.
ENVIRONMENTAL FATE:	Ethanol: Degradation: When spilled on land, ethyl alcohol is apt to volatilize, biodegrade, and/or leach into the groundwater. It is anticipated, based on its physical properties, that water will serve as the terminal media. Based on these factors, it is anticipated that ethyl alcohol will neither absorb to soil nor bioconcentrate in aquatic organisms. Once in water, photolysis, hydrolysis, and biodegradation is anticipated to occur. Bioaccumulation: Not expected to occur. Ethyl Acetate: Degradation: Ethyl acetate was "readily biodegradable" when tested according to OECD Guideline 301D, Ready Biodegradability: Closed Bottle Test and had "100% degradation" when tested according to OECD Guideline 303A, "Simulation Test - Aerobic Sewage Treatment: Coupled Unit Test. Similar results were noted in numerous (at least 10) other tests for aerobic biodegradation. The BOD5/COD ratio was 0.81 when tested under aerobic conditions. A single test under anaerobic conditions indicated 100% degradation after 4 days. These data indicate that substantial biodegradation of ethyl acetate takes place rapidly under a variety of conditions. Bioaccumulation: Low potential to occur. Isopropyl Alcohol: Relatively biodegradable

Section 13: Disposal Considerations	
WASTE DISPOSAL:	All packaging, labeling, transporting and disposal of recovered material should be performed in accordance with federal, state, and local laws and regulations. Contaminated products, soil, or water may be RCRA hazardous waste / OSHA hazardous material due to low flash point.

Section 14: Transportation Information													
SPECIAL SHIPPING INFORMATION:	<table> <tr> <td>Proper Shipping Name:</td><td>FLAMMABLE LIQUID N.O.S. (CONTAINS ISOPROPYL ALCOHOL AND ETHANOL)</td></tr> <tr> <td>DOT Class Hazard:</td><td>3</td></tr> <tr> <td>UN ID:</td><td>UN1993</td></tr> <tr> <td>Packing Group:</td><td>PGII</td></tr> <tr> <td>Labels:</td><td>Flammable Liquid</td></tr> <tr> <td>Marine Pollutant:</td><td>No</td></tr> </table>	Proper Shipping Name:	FLAMMABLE LIQUID N.O.S. (CONTAINS ISOPROPYL ALCOHOL AND ETHANOL)	DOT Class Hazard:	3	UN ID:	UN1993	Packing Group:	PGII	Labels:	Flammable Liquid	Marine Pollutant:	No
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Section 15: Regulatory Information	
WHMIS:	Class B / 2; Class D / 2 / B
OSHA:	Hazardous chemical
TSCA:	Listed
SARA 313:	Not listed
SARA 311 and 312:	Fire hazard and acute / chronic health hazard
TSCA:	Listed
CALIFORNIA PROP. 65:	Ethanol causes developmental toxicity (as in alcoholic beverages)
STATE:	Ingredients are found in following state right-to-know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
CERCLA:	Not listed

Section 16: Other Information
All statements, technical information and recommendations on this MSDS are believed to be accurate and were obtained from sources currently available to us that we believe to be reliable. We make no warranty, express or implied, with respect to this information regarding its accuracy. Some information presented and conclusions drawn herein are from sources other than direct test data on the product itself. The conditions or methods of handling, storage, use or disposal of this product are beyond our control and may be beyond our knowledge. Therefore, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use or disposal of this product. Users should make their own investigations to determine the suitability of the information for their particular purposes and should know and comply with all applicable rules, regulations and laws relating to this product.
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