

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

MAY 22, 2006



PERMIT TO INSTALL

NO. 52-06

ISSUED TO
LINDE GAS, L.L.C.

LOCATED AT
5001 DEWITT ROAD
CANTON TOWNSHIP, MICHIGAN 48188

IN THE COUNTY OF
WAYNE

STATE REGISTRATION NUMBER

M4691

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: 4/12/2006	
DATE PERMIT TO INSTALL APPROVED: 5/22/2006	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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Common Abbreviations / Acronyms

Common Acronyms		Pollutant/Measurement Abbreviations	
AQD	Air Quality Division	Btu	British Thermal Unit
BACT	Best Available Control Technology	°C	Degrees Celsius
CAA	Clean Air Act	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
EPA	Environmental Protection Agency	gr	Grains
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallon of Applied Coating Solids	H ₂ S	Hydrogen Sulfide
GC	General Condition	hp	Horsepower
HAP	Hazardous Air Pollutant	lb	Pound
HVLP	High Volume Low Pressure *	m	Meter
ID	Identification	mg	Milligram
LAER	Lowest Achievable Emission Rate	mm	Millimeter
MACT	Maximum Achievable Control Technology	MM	Million
MAERS	Michigan Air Emissions Reporting System	MW	Megawatts
MAP	Malfunction Abatement Plan	ng	Nanogram
MDEQ	Michigan Department of Environmental Quality	NO _x	Oxides of Nitrogen
MSDS	Material Safety Data Sheet	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM-10	Particulate Matter less than 10 microns diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	psia	Pounds per square inch absolute
PTI	Permit to Install	psig	Pounds per square inch gauge
RACT	Reasonably Available Control Technology	scf	Standard cubic feet
ROP	Renewable Operating Permit	sec	Seconds
SC	Special Condition Number	SO ₂	Sulfur Dioxide
SCR	Selective Catalytic Reduction	THC	Total Hydrocarbons
SRN	State Registration Number	tpy	Tons per year
TAC	Toxic Air Contaminant	µg	Microgram
TEQ	Toxicity Equivalence Quotient	VOC	Volatile Organic Compound
VE	Visible Emissions	yr	Year

* For High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (psig).

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **[R336.1201(1)]**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **[R336.1201(4)]**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **[R336.1201(6)(b)]**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **[R336.1201(8), Section 5510 of Act 451, PA 1994]**
5. The AQD District Supervisor shall be notified, in writing, of a change in ownership or operational control of the stationary source or emission unit(s) authorized by this Permit to Install pursuant to R336.1219. The notification shall include all of the information required by R336.1219(1)(a) and (b). In addition, a new owner or operator must submit a written statement pursuant to R336.1219(1)(c), agreeing to and accepting the terms and conditions of this Permit to Install, and shall notify the AQD District Supervisor of any change in the contact person for this Permit to Install. **[R336.1219]**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **[R336.1901]**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **[R336.1912]**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.

9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law nor does it affect any liability for past violations under the Natural Resources and Environmental Protection Act, 1994 PA 451.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.
11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R336.1303. **[R336.1301]**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this permit to install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R336.1370(2). **[R336.1370]**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R336.2001 and R336.2003, under any of the conditions listed in R336.2001. **[R336.2001]**

SPECIAL CONDITIONS

Emission Unit Identification

Emission Unit ID	Emission Unit Description	Stack Identification
EU-AcetyleneProduction	Production of acetylene gas (purified and unpurified). Includes but not limited to: 5,000 lbs totes of calcium carbide (CaC ₂), hopper, shaker, generator, lime slurry pit, storage silos, three stage purifying system (sulfuric acid and caustic) / scrubber, compressor, drier, cylinder fill room, use of glycol water mixture, and acetylene cylinders. Note: Acetylene gas is highly flammable and explosive.	In-plant Emissions
Changes to the equipment described in this table are subject to the requirements of R336.1201, except as allowed by R336.1278 to R336.1290.		

The following conditions apply to: EU-AcetyleneProduction

Emission Limits

	Pollutant	Equipment	Limit	Time Period	Testing/ Monitoring Method	Applicable Requirements
1.1a	Acetylene	Drier regeneration portion of the EU-AcetyleneProduction	1.4 pph	hourly	SC 1.16 & SC 1.17	R336.1702(a), R336.1901
1.1b	Acetylene	Drier regeneration portion of the EU-AcetyleneProduction	2.5 tpy	*	SC 1.16 & SC 1.17	R336.1702(a), R336.1901
1.1c	Acetylene	Lime slurry pit of the EU-AcetyleneProduction	5.3 pph	hourly	SC 1.16 & SC 1.17	R336.1702(a), R336.1901
1.1d	Acetylene	Lime slurry pit of the EU-AcetyleneProduction	9.3 tpy	*	SC 1.16 & SC 1.17	R336.1702(a), R336.1901
1.1e	Phosphine	Drier regeneration portion of the EU-AcetyleneProduction	0.0007 pph	hourly	SC 1.16 & SC 1.17	R336.1225, R336.1901
1.1f	Phosphine	Drier regeneration portion of the EU-AcetyleneProduction	2.5 ppy	*	SC 1.16 & SC 1.17	R336.1225, R336.1901
1.1g	Phosphine	Lime slurry pit of the EU-AcetyleneProduction	0.003 pph	hourly	SC 1.16 & SC 1.17	R336.1225, R336.1901
1.1h	Phosphine	Lime slurry pit of the EU-AcetyleneProduction	9.3 ppy	*	SC 1.16 & SC 1.17	R336.1225, R336.1901

* 12-month rolling time period as determined at the end of each calendar month

Material Usage Limits

1.2 The permittee shall not produce more than 575 pounds per hour nor 1,010 tons of acetylene per 12-month rolling time period as determined at the end of each calendar month. [R336.1205(3), R336.1702, R336.1901]

Process/Operational Limits

- 1.3 The permittee shall not operate the acetylene generator portion of the EU-AcetyleneProduction for more than 3,528 hours per 12-month rolling time period as determined at the end of each calendar month. **[R336.1205(3), R336.1702(a), R336.1901]**
- 1.4 The permittee shall not operate the purifier portion of the EU-AcetyleneProduction unless the purified phosphine content is below 25 parts per million by volume. Also, the permittee shall not operate the EU-AcetyleneProduction unless the unpurified phosphine content is below 500 parts per million by volume. **[R336.1205(3), R336.1225, R336.1901, R336.1910]**
- 1.5 The permittee shall not operate the acetylene generator portion of the EU-AcetyleneProduction unless the temperature at the inlet to the acetylene purifier is maintained at or below 68°F (20°C). **[R336.1205(3), R336.1702(a), R336.1901, R336.1910]**
- 1.6 The permittee shall not operate the acetylene generator portion of the EU-AcetyleneProduction unless the temperature at the outlet from the acetylene purifier is maintained at or below 95°F (35°C). **[R336.1702(a), R336.1901, R336.1910]**
- 1.7 The permittee shall not operate the acetylene generator portion of the EU-AcetyleneProduction if the pressure drop across the acetylene purifier exceeds 30 mm water gauge. **[R336.1702(a), R336.1901, R336.1910]**

Equipment

- 1.8 The permittee shall not operate EU-AcetyleneProduction unless gas detection equipment to measure phosphine content is operated and maintained, in a satisfactory manner on a quarterly basis. **[R336.1225, R336.1901, R336.1910]**
- 1.9 The permittee shall install, calibrate, maintain and operate in a satisfactory manner an approved device to monitor and record the temperature of acetylene at the inlet to and outlet from the acetylene purifier (once per every two hours). Approved device means acceptable by District Supervisor, Air Quality Division **[R336.1702(a), R336.1901, R336.1910]**
- 1.10 The permittee shall install, operate, and maintain an approved pressure differential measurement device to monitor the pressure drop across the acetylene purifier on a continuous basis. Approved pressure differential measurement device means acceptable by District Supervisor, Air Quality Division. **[R336.1702(a), R336.1901, R336.1910]**
- 1.11 The permittee shall not fill acetylene delivery cylinders unless all hoses including required connections are maintained and operated in a satisfactory manner such as:
 - a) The permittee shall maintain air-tight connections before, during, and after filling of acetylene delivery cylinders to minimize release of acetylene, *i.e.* to avoid fugitive emissions of acetylene.
 - b) All hoses or connections are to be examined daily and shall be replaced if there is evidence of damage, deterioration, or leakage.
 - c) By June 1, 2006, the permittee shall establish procedures to minimize leaks before, during, and after transfer of acetylene to delivery cylinders and train employees to follow the procedures. **[R336.1225, R33.1901]**

Testing

NA

Monitoring

- 1.12 The permittee shall monitor and record the acetylene produced on a calendar day basis and 12-month rolling time period as determined at the end of each calendar month. **[R336.1205(3), R336.1702, R336.1901, R336.1910]**
- 1.13 The permittee shall monitor the phosphine content of the purified acetylene every fourth hour of operation to insure that the phosphine content does not exceed 25 parts per million by volume. The permittee shall monitor the phosphine content of the unpurified acetylene on a daily basis to insure that the phosphine content of the acetylene does not exceed 500 parts per million by volume. **[R336.1225, R336.1901, R336.1910]**
- 1.14 The permittee shall monitor and record the temperature of acetylene at the inlet to and out let from the acetylene purifier on a continuous basis. **[R336.1702(a), R336.1901, R336.1910]**
- 1.15 The permittee shall monitor the pressure drop across the acetylene purifier on a continuous basis. **[R336.1702(a), R336.1901, R336.1910]**

Recordkeeping/Reporting/Notification

- 1.16 The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **[R336.1205(3), R336.1225, R336.1702(a), R336.1901]**
- 1.17 The permittee shall calculate the acetylene emissions and phosphine emissions to demonstrate compliance with emission limits mentioned in the Special Condition No. 1.1 and also hours of operation mentioned in Special Condition No. 1.3, using a method acceptable to the AQD District Supervisor. The permittee shall keep all records at the facility for a period of at least five years and make them available to the Department upon request. **[R336.1205(3), R336.1225, R336.1702(a), R336.1901]**
- 1.18 The permittee shall keep, in a satisfactory manner, the following records. The permittee shall keep all records on file at the facility for a period of at least five years and make them available to the Department upon request. **[R336.1225, R336.1702(a), R336.1901, R336.1910]**
 - a) To demonstrate compliance with Special Condition No. 1.11.
 - b) All necessary records to demonstrate compliance with Special Condition No. 1.12: Acetylene production.
 - c) To demonstrate compliance with Special Condition No. 1.13: A written log shall be kept for the monitoring of each system. This log shall identify the phosphine content, the date, time and type of acetylene monitored as well as the person performing the monitoring.
 - d) All necessary records to demonstrate compliance with Special Condition No. 1.14: Temperature of acetylene at the inlet to and out let of the acetylene purifier
 - e) To demonstrate compliance with Special Condition No. 1.15: Pressure drop across the acetylene purifier.

Stack/Vent Restrictions

NA

Date : _____

PC80 HIGH PRESSURE CHECKS

Complete at start-up, shift change & each new tote

	10:00 PM	12:00 AM	2:00 AM	4:00 AM	6:00 AM	8:00 AM	10:00 AM	12:00 PM	2:00 PM	4:00 PM	6:00 PM	8:00 PM
OIL PRESSURE 1 (20PSI +/- 5)												
	2											
	3											
OIL LEVEL (1/2 MIN.)	1											
	2											
	3											
SAFETY VALVES												
C2H2 DRIER (CYCLE & PRES.)												

PHOSPHINE READING @ 8.00 am

Check at Start-up	
FLOOR SCALE	
B/MC SCALE	
C2H2 FORKLIFT	
COMPRESSOR EMERGENCY STOP BUTTON CHECK	1
	2
	3

Record at shift change			
H2O TEMP (1/2/3)			
GAS TEMP(1/2/3)			

OPERATOR # 1 _____

OPERATOR # 2 _____

Complete at start-up, shift change & each new tote

	10:00 PM	12:00 AM	2:00 AM	4:00 AM	6:00 AM	8:00 AM	10:00 AM	12:00 PM	2:00 PM	4:00 PM	6:00 PM	8:00 PM
Generator Temp												
Gen. H2O Level												
Dump Generator												
Dump AFT. Gen.												
Flash H2O Trap												
Rinse Lime Pit												
Change Tote Gauge, Inches of H2O in the Gen. Hopper Status' (Full, 1/2, etc.)												

When running purifiers the following must be checked

Temp gauge tower #1 ACID < 68 F												
Temp gauge tower #3 CAUSTIC < 95 F												
Water Monometer Greater than 30 mm												

Complete at start-up

Please record all high temp & abnormal pressure alarm:

City H2O Meter

City H2O Temp

Check Gas HLDR

Check N2 Alarm
Air Compressor (Oil
Level/Relief)

OPERATOR # 1 _____

OPERATOR # 2 _____