



STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT

NEW SOURCE REVIEW PERMIT  
TO CONSTRUCT AND OPERATE  
A STATIONARY SOURCE

Issued pursuant to Title 22a of the Connecticut General Statutes and Section 22a-174-3a of the Regulations of Connecticut State Agencies.

Owner/Operator: Spartech Polycast, Inc.  
Address: 69 Southfield Avenue  
Stamford, CT 06903  
Equipment Location: 69 Southfield Avenue  
Stamford, CT 06903  
Equipment Description: Polysilicate Resin mixing, Storage and Coating  
Operation

Town-Permit Numbers: 172-0156  
Premises Numbers: 91  
Original Permit Issue Date: 10/19/00  
Modification Issue Date: 7/16/07  
Expiration Date: None

*for* *Anne Mori*  
Gina McCarthy  
Commissioner

*July 16, 2007*  
Date

**ORIGINAL**

**PERMIT FOR PROCESS EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

**PART I. PROCESS DESCRIPTION**

**A. General Process Description**

Polysilicate Resin coating shall be mixed in batches. The mixed resin product shall be stored in sealed containers or drums until needed. Mixed resin shall be used to coat the surface of acrylic sheets by means of dipping. All dipping shall occur within an enclosed space under negative pressure. The coated sheets shall air dry for a short period of time inside the enclosed space. Finally, the coated sheets shall be cured in a steamed heated oven. All exhaust air from dipping and drying shall be captured and vented to a catalytic oxidizer, which shall destroy at least 90% of all volatile organic compounds captured.

**B. Equipment Design Specifications**

1. Mixing Tank Volume: 500 gallons
2. Storage Tank Volume: 500 gallons
3. Dipping and Drying Operation:
  - a. All dipping and drying shall occur within an enclosed space under negative pressure
  - b. Dip Tank volume: 500 gallons
  - c. Overflow tank volume: 85 gallons

**C. Control Equipment Specifications Catalytic Oxidizer With Inlet Gas Pre-heat System:**

1. Type of fuel: Natural Gas
2. Design Inlet Flowrate to Oxidizer:  $\leq$  3,872 ACFM
3. Catalyst Type: Engelhard Vocat 300 S Catalyst (or equivalent)

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Town No: 172      Premises No: 0091      Permit No: 0156      Stack No: 12

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**PART I. PROCESS DESCRIPTION, continued**

- 4. Maximum VOC Load to Catalytic Oxidizer: 10.79 lb/hr as VOC (calendar month average)
- 5. Maximum Rated Capacity of Catalytic Oxidizer Burner: 4.5 MMBtu/hr

**D. Stack Parameters**

Minimum exhaust gas flowrate: 1,200 ACFM +/- 20%  
Minimum distance to property line: 129 feet  
Minimum stack height: 33 feet

**PART II. OPERATING REQUIREMENTS**

Notwithstanding the design specifications or description provided in Part I, above, the Permittee of the subject source shall comply with the following operating requirements, at all times:

**A. Material Consumption Limits:**

Annual Material Consumption 17,000 gallons of polysilicate resin coating, including makeup solvent added, per any period of 12 consecutive months, where consumption is the difference between material added to the process and spent process material removed from the process as waste or by-product.

**B. Catalytic Oxidizer System Operating Requirements:**

- 1. Capture Efficiency of Catalytic Oxidizer System: 100% of dipping and drying emissions
- 2. Destruction Efficiency of Catalytic Oxidizer System: ≥ 90% of emissions captured

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**PART II. OPERATING REQUIREMENTS, continued:**

3. Minimum Catalyst Media Operating Temperature: the greater of 491 °F (255 °C) or the average temperature at which the most recently performed stack test, conducted in accordance with Appendix C of this permit, demonstrates a destruction efficiency of  $\geq 90\%$  of emissions captured.
4. Maximum Annual Fuel Consumption: Fuel consumption for the oxidizer specified in this permit is 39.42 million cubic feet of natural gas during any period of 12 consecutive months.
5. Maximum VOC Load to Catalytic Oxidizer: 10.79 lb/hr as VOC (calendar month average)

**C. Operations and Maintenance Requirements**

1. The Permittee shall operate and maintain all equipment in accordance with the manufacturer's recommendations.
2. The Permittee shall operate the catalytic oxidizer at all times during which dipping and drying are occurring. The Permittee shall equip the dipping and drying operation and catalytic incinerator with an interlocking mechanism. Such mechanism shall prevent the operation of the dipping and drying operation at all times during which the operating temperature of the catalyst media is below the minimum value specified in Part II of this permit.

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**PART II. OPERATING REQUIREMENTS, continued**

3. The Permittee shall test the temperature monitoring device in the catalytic oxidizer after each block of 4,380 hours of oxidizer operation. A testing and calibrating procedure document shall be written detailing all steps in the testing and calibration procedure. This procedure document shall be maintained at the premises and made available to the Commissioner upon request. Should the results of testing indicate a percent error of  $\pm 1.5\%$ , based on temperatures measured in degrees Fahrenheit, the Permittee shall repair, calibrate and/or replace the portion of the process and/or monitoring system responsible for the error.
4. The Permittee shall, by means of stack emissions testing, demonstrate compliance with the capture and destruction efficiencies set forth in Part II of this permit. Stack emissions testing shall be performed according to Appendix B of this permit, after each block of 8,760 hours of oxidizer operation.
5. The Permittee shall perform periodic maintenance activities according to a documented maintenance and operations plan. Such plan shall be maintained at the premises and made available to the Commissioner upon request.

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**PART II. OPERATING REQUIREMENTS, continued**

**D. Emissions Limits**

The Permittee shall not exceed the emission limits stated herein at any time.

**Table 1. Allowable Emissions**

**Operating Mode ID: Polysilicate Resin - Mixing, Storage, Coating  
and Catalytic Oxidizer**

<u>CRITERIA POLLUTANTS</u>	<u>Lb/Hour</u>	<u>Lb/MMbtu</u>	<u>MASC</u> <u>(µg/m3)</u>	<u>TPY</u>
<b><u>Oxidizer:</u></b>				
TSP		<u>0.012</u>		<u>0.24</u>
SOx, expressed as SO <sub>2</sub>		<u>0.001</u>		<u>0.02</u>
NOx, expressed as NO <sub>2</sub>		<u>0.100</u>		<u>1.97</u>
VOC		<u>0.005</u>		<u>0.10</u>
CO		<u>0.021</u>		<u>0.41</u>
PM-10		<u>0.012</u>		<u>0.247</u>
<b><u>PROCESS VOC</u></b>	<u>1.08</u>			<u>4.73</u>

1. Criteria Pollutants

Demonstration of compliance with the emission limits for criteria pollutants stated in Table 1 shall be met by calculating the actual emission rates using emission factors from the following sources:

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**PART II. OPERATING REQUIREMENTS, continued**

- a. *VOC from Mixing, Storage, Dipping, Drying and Cleaning Operations*- Daily record keeping of the number of sheets coated: Not to exceed 1582 ft<sup>2</sup>/hour (both sides of the sheet surface area coated)
- b. *Catalytic Oxidizer* - Emission factors determined from FIRE Version 6.2 for external combustion sources rated at less than 10 MMBtu/hr and the actual quantity of natural gas burned by the source.

2. Hazardous Air Pollutants (HAPs)

- a. Emissions of Hazardous Air Pollutants ("HAPs") from this source shall not exceed the Maximum Allowable Stack Concentration ("MASC") for emissions of any Hazardous Air Pollutant listed in Tables 29-1, 29-2, 29-3 of the RCSA, calculated in accordance with the provisions of Section 22a-174-29 of the RCSA, as may be amended from time to time.

b. 
$$\text{MASC}(\mu\text{g}/\text{m}^3) = \frac{0.885 * (\text{HLV}) * [X + 1.08 * V^{.64}]^{1.56}}{V} \quad \text{<Equation 1>}$$

where:

HLV = Hazard Limiting Value for each specific HAP emitted in the use and consumption of coating materials and solvents

V = The exhaust gas flowrate exiting the stack (actual m<sup>3</sup>/second)

X = The distance from the stack to the nearest property line (meters)

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**PART II. OPERATING REQUIREMENTS, continued**

Demonstration of compliance with the provisions of Section 22a-174-29 of the RCSA, regarding the MASC for each Hazardous Air Pollutant, shall be made by periodically calculating an Actual Stack Concentration ("ASC") and comparing said ASC value with the MASC value for the same time period, based on the same average operating parameters specified for that time period. The ASC for each Hazardous Air Pollutant shall not exceed the MASC for that pollutant for the specified time period and operating parameters.

- c. ASC shall be calculated using the following equation:

$$\text{ASC } (\mu\text{g}/\text{m}^3) = C * F^{-1} * 2.6714 * 10^8 \quad \text{<Equation 2>}$$

where:

**C = lbs/hr mass emission rate of each HAP**

**F = Exhaust gas flowrate exiting the stack (actual cubic feet per minute)**

Notwithstanding the emissions limits and compliance demonstration methods set forth in Part II of this Permit, the Commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

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**PART III. STACK EMISSION TEST REQUIREMENTS** (see Appendix B for General Requirements if applicable)

Stack emission/performance testing shall be required for the following:

- |  |   |
|--|---|
| <input type="checkbox"/> None at this time | <input type="checkbox"/> PM-10                |
| <input type="checkbox"/> TSP               | <input type="checkbox"/> NOx                  |
| <input type="checkbox"/> SOx               | <input checked="" type="checkbox"/> VOC       |
| <input type="checkbox"/> CO                | <input type="checkbox"/> Other (HAPs): _____, |
| <input type="checkbox"/> Pb                |   |

Stack emissions tests, required under Part II of this permit shall be conducted in accordance with Appendix C.

Should the results of stack emission testing indicate the failure to achieve compliance with the emission limits and/or control efficiencies of this permit, the Permittee shall act in accordance with the provisions of Part V of this permit.

Notwithstanding the provisions of Part V of this permit, the Permittee shall notify the Commissioner, in writing, of any stack emissions test results that indicate the failure to achieve compliance with the emission limits and/or control efficiencies of this permit within seven business days of discovering the apparent failure to comply. Such notice shall include a schedule of corrective actions to remedy the apparent failure to comply. Nothing in this paragraph shall preclude the initiation of enforcement action by the Commissioner or his designee to assure compliance with the limits of this permit.

**PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS**

- A. The Permittee shall maintain a list of all materials and the material safety data sheets for all materials used in the formulation of polysilicate resin and/or used for cleaning the equipment specified in this permit.
- B. The Permittee shall maintain quarterly records of the amount of materials purchased for use with this source.

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**PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS,  
continued**

- C. The Permittee shall maintain monthly and annual records of all materials consumed in the process of mixing polysilicate resin and in the process of cleaning the equipment specified in this permit. Such records shall include, at least, the date, the name of the material, the amount of each material used, and the total amount of polysilicate resin produced during each recording period in units of pounds and/or gallons (including any off-spec resin collected to be removed from the premises as by-product or waste). For the purposes of this permit annual material consumption shall be the sum of each material consumed during the current month and the amount of each material consumed during the previous 11 months.
- D. The Permittee shall install and operate a temperature monitoring device. Such device shall continuously monitor and record the temperature within the catalyst media. All temperature records shall indicate the date and the operating hours of the dipping, curing, and oxidizer operations.
- E. The Permittee shall maintain monthly and annual records of the amounts of all materials removed from this process as either by-product, solid waste, and/or manifested waste from the production, storage, use of polysilicate resin and from cleaning operations. Such records shall include, at least, the date, the name of the material, the amount of each material removed from the process during each recording period in units of pounds and/or gallons, and any material content analysis that may have been performed on the removed material. For the purposes of this permit annual material removed shall be the sum for each material disposed of as by-product, solid waste, or manifested waste during the current month and the amount of that same material disposed of as by-product, solid waste, or manifested waste during the previous 11 months.

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**PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS,  
continued**

- F. The Permittee shall install and operate a non-resettable fuel metering device on the catalytic oxidizer. Such device shall continuously monitor the amount of natural gas consumed by the oxidizer. For each month of operation, the Permittee shall record the monthly and annual fuel consumption for the catalytic oxidizer. For the purposes of this permit, annual fuel consumption shall be defined as the sum of the fuel consumed during the current month and the aggregate amount of fuel consumed during the previous 11 months.
- G. The Permittee shall monitor and record the daily and monthly hours of operation of the dipping, drying and curing operations. Such records shall include the date of operation, the time at which coating, drying, and curing operations began, the time at which coating, drying and curing operations ended; and the total number of hours during which coating and curing operations were conducted. Monthly hours of operation shall be the sum of the hours during which coating and curing operations were conducted during each calendar month.
- H. The Permittee shall record the number of sheets and the square footage coated on a daily basis: Not to exceed 1582 ft<sup>2</sup>/hr (both sides of the sheet surface area coated).
- I. The Permittee shall calculate and record the monthly and annual emissions of VOC from this source in units of tons/month and tons/year, respectively. For the purposes of this permit, annual emissions shall be the sum of VOC emissions from the current month and the VOC emissions from the previous 11 consecutive months.

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**PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS,  
continued**

- J. The Permittee shall calculate and record the maximum actual concentration of each and every Hazardous Air Pollutant listed in Tables 29-1,-2, and -3 of Section 22a-174-29 of the RCSA and emitted in the exhaust gases exiting the discharge point of this source. This calculation need only be repeated if one or more of the following occur:
1. There is a decrease of 20% or more in any of the stack parameters listed in Part I of this Permit, or
  2. There is a increase of 20% or more in the maximum rate of emission of any Hazardous Air Pollutant over the amounts specified in the Hazardous Air Pollutant calculations submitted to the DEP on October 15, 2002, or
  3. There is a change in the materials used that results in the emission of a Hazardous Air Pollutant that was not present in the Hazardous Air Pollutant calculations submitted to the DEP on October 15, 2002.
- K. The Permittee shall maintain a copy of the Hazardous Air Pollutant calculations submitted to the DEP on October 15, 2002 and any subsequent Hazardous Air Pollutant calculations.
- L. Any monthly and annual records required in accordance with Part IV of this Permit shall be generated on or before the 30th day of each month for operations of this process that occurred during the preceding calendar month. Such records shall be made available to the Commissioner upon request.

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**PART V. CONTROL EQUIPMENT**

- A. The Permittee shall at all times comply with Section 22a-174-7 of the RCSA concerning the use of all control equipment.

**PART VI. PREMISES REQUIREMENTS**

- A. The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23.
- B. At all times, operations of this facility shall be carried out in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations under RCSA Section 22a-69-1 through 22a-69-7.4, inclusive.
- C. When not in use, all solvents, cleaners, coatings, and cleaning apparatus shall be kept in closed containers to minimize evaporative losses of VOC.

**PART VII. ADDITIONAL TERMS AND CONDITIONS**

- A. This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B. Any representative of the DEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.

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**PART VII. ADDITIONAL TERMS AND CONDITIONS, cont.**

- C. This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D. This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons of municipalities who are not parties to this permit.
- E. Any document, including any notice, which is required to be submitted to the Commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under Section 22a-175 of the Connecticut General Statutes, under Section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F. Nothing in this permit shall affect the Commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the Commissioner.

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**PART VII. ADDITIONAL TERMS AND CONDITIONS, continued**

- G. Within fifteen days of the date the Permittee becomes aware of a change in any information submitted to the Commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the Commissioner.
- H. The date of submission to the Commissioner of any document required by this permit shall be the date such document is received by the Commissioner. The date of any notice by the Commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the Commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.
- I. Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

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Appendices Attached (Applicable if  checked)

A Continuous Emission Monitoring Requirements

B Stack Emission Test Requirements

C Schedule of Events for Periodic Stack Emissions Tests

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### STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF AIR MANAGEMENT

#### Appendix B: SOURCE STACK TESTING GENERAL REQUIREMENTS

Pursuant to the Regulations of Connecticut State Agencies, the owner/operator of this facility shall submit an Intent-to-Test (ITT) package consisting of an ITT form (Form AE-405) and a test protocol. The test protocol shall be consistent with the Bureau's Emission Source Test Guideline specifying the test methodology to be followed and the conditions under which the process and its control equipment will be operated. The process shall be operated at a minimum of 90% of the permitted maximum rated capacity and the control equipment shall be operated as specified in this permit.

All proposed test methods shall comply with appropriate Federal test methods or methods acceptable to the Bureau. The ITT package must demonstrate compliance with applicable requirements of the Code of Federal Regulations (CFR) Title 40 Parts 51, 60 and 61. Any proposed test methods that deviate from those specified in these regulations must be approved by the Bureau prior to stack testing. All sampling ports shall be installed and located in compliance with 40 CFR Part 60 Appendix A, Method 1. Final plans showing the location of all sampling ports shall be submitted with the ITT package to the Air Bureau's Stack Test Group for approval prior to stack testing. Please submit an original and one copy of the ITT package to: Bureau of Air Management, Compliance & Field Operations, Stack Test Group, 79 Elm Street, 5th Floor, Hartford, Connecticut 06106-5127.

An inspection of the source may be conducted to verify that appropriate instrumentation is available, and to determine the source process parameters, indicative of compliant operation, to be monitored during stack testing. Once the ITT package is approved, the owner/operator shall be notified, in writing, by the Bureau's Stack Test Group.

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BUREAU OF AIR MANAGEMENT**

**Appendix B: SOURCE STACK TESTING GENERAL REQUIREMENTS, cont.**

The source test must be scheduled, monitored by Bureau personnel, and completed within 60 days from the date of Bureau approval of the proposed ITT package. It is the source's responsibility to conduct preparatory testing for tuning or debugging purposes prior to the Bureau-monitored stack testing. An acceptable test report must be submitted to the Bureau within 45 days of the completion of emissions testing. The owner/operator shall respond to any test report deficiency within 15 days of notification by the Bureau.

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FIRM NAME: Spartech Polycast, Inc.  
EQUIPMENT LOCATION: 69 Southfield Avenue, Stamford, CT 06903  
EQUIPMENT DESCRIPTION (MODEL, I.D. #): Polysilicate Resin Mixing,  
Storage and Coating Operation

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Town No: 172      Premises No: 0091      Permit No: 0156      Stack No: 12

**ORIGINAL**

## PERMIT FOR PROCESS EQUIPMENT

### STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF AIR MANAGEMENT

#### Appendix C: Schedule for Stack Emissions Testing required under Part II.B.4 of this Permit

Event	Due Date
Submission of Intent to Test Form and Testing Protocol specifying the use of USEPA Reference Method 25A to determine total mass of VOC to the inlet of the oxidizer, the total mass of VOC from the outlet of the oxidizer and the destruction efficiency.	No later than 60 days prior to the date on which the "8,760th hour of oxidizer operation" occurs
Emissions Test using USEPA Reference Method 25A to determine total mass of VOC to the inlet of the oxidizer, the total mass of VOC from the outlet of the oxidizer and the destruction efficiency.	No later than 60 days after the date on which the "8,760th hour of oxidizer operation" occurs provided that written approval of the test protocol has been obtained; otherwise no later than 60 days from the Permittee's receipt of Commissioner's written approval of the test protocol
Submission of Stack Test Results	As soon as available but not more than 60 days after the completion of the stack emission test

For the purposes of this permit, the "8,760th hour of oxidizer operation" is the last operating hour of each block of 8,760 hours of oxidizer operation following the most recently completed stack emissions test.

All stack emissions test required under Part II of this Permit and the schedule above shall be conducted in accordance with the provisions of Section 22a-174-5 of the Regulations of Connecticut State Agencies.

FIRM NAME: Spartech Polycast, Inc.  
EQUIPMENT LOCATION: 69 Southfield Avenue, Stamford, CT 06903  
EQUIPMENT DESCRIPTION (MODEL, I.D. #): Polysilicate Resin Mixing, Storage and Coating Operation

Town No: 172      Premises No: 0091      Permit No: 0156      Stack No: 12

ORIGINAL

**PERMIT FOR PROCESS EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

**Appendix C: Schedule for Stack Emissions Testing required under Part II.B.4 of this Permit, continued:**

The determination of total inlet VOC concentration to the oxidizer, the total outlet concentration of VOC from the oxidizer and the determination of destruction efficiency shall be obtained from data measured in accordance with USEPA Reference Method 25A, as may be amended from time to time.

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FIRM NAME: Spartech Polycast, Inc.  
EQUIPMENT LOCATION: 69 Southfield Avenue, Stamford, CT 06903  
EQUIPMENT DESCRIPTION (MODEL, I.D. #): Polysilicate Resin Mixing,  
Storage and Coating Operation

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Town No: 172      Premises No: 0091      Permit No: 0156      Stack No: 12

**ORIGINAL**