INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant

DATE: April 29, 2005

RE: Raybestos Products Company / SSM 107-20094-00007

FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

(1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
(2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
(3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

(1) the name and address of the person making the request;
(2) the interest of the person making the request;
(3) identification of any persons represented by the person making the request;
(4) the reasons, with particularity, for the request;
(5) the issues, with particularity, proposed for considerations at any hearing; and
(6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FNPER.dot 1/10/05

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April 29, 2005

Mr. Robert L. Clark
Raybestos Products Company.
1204 Darlington Avenue
Crawfordsville, Indiana 46975

Re: 107-20094
Third Significant Source Modification to
Part 70 Permit No.: 107-6836-00007

Dear Mr. Clark:

Raybestos Products Company. was issued a Part 70 permit on April 14, 1999, for the operation of stationary automotive parts manufacturing operation. Applications to modify the source were received by the Office of Air Quality (OAQ) on November 22, 2004 and March 11, 2004. Pursuant to the provisions of 326 IAC 2-7-10.5, a significant source modification to this permit is hereby approved as described in the attached Technical Support Document.

The modifications are as follows:

(a) Modification of an existing unit P012 by the addition of a RG adhesive rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly and a 0.5 MMBtu/hr natural gas fired cure oven, with VOC emissions controlled by an existing Regenerative Thermal Oxidizer RTO-1 and a new thermal oxidizer RGO-1, and miscellaneous solvent usage.

(b) Descriptive changes to the permit as follows:
I. Removal of five (5) wafer presses in powder mixing operation P010;
II. Re-route one (1) of wafer presses exhaust in graphic spray operation from stack 14100 to stack 14101, and remove the remaining units that exhaust to stack 14100.
III. Re-route exhausts of various insignificant activities to different baghouses.

All other conditions of the permit shall remain unchanged and in effect.

The following construction conditions shall apply:

General Construction Conditions

1. The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Quality (OAQ).

2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.

4. Pursuant to 326 IAC 2-1.1-9 and 326 IAC 2-7-10.5(i), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

6. Pursuant to 326 IAC 2-7-10.5(l) the emission units constructed under this approval shall not be placed into operation prior to revision of the source's Part 70 Operating Permit to incorporate the required operation conditions.

This significant source modification authorizes construction of the one (1) thermal oxidizer RGO-1. Operating conditions shall be incorporated into the Part 70 operating permit as a significant permit modification in accordance with 326 IAC 2-7-10.5(l)(2) and 326 IAC 2-7-12. Operation is not approved until the significant permit modification has been issued.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Rajnish Sharma, c/o OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or at 973-575-2555, extension 3276, or dial 1-800-451-6027, and ask for extension 3-6878.

Sincerely,

Original signed by
Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

Attachments
RS / EVP

cc: File - Montgomery County
U.S. EPA, Region V
Montogomery County Health Department
Air Compliance Section Inspector – Jim Thorpe
Compliance Data Section - Karen Ampil
Administrative and Development
Technical Support and Modeling - Michele Boner

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PART 70 OPERATING PERMIT
OFFICE OF AIR QUALITY

Raybestos Products Company
1204 Darlington Avenue
Crawfordsville, Indiana 47933

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Noncompliance with any provision of this permit, except any provision specifically designated as not federally enforceable, constitutes a violation of the Clean Air Act. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17. This permit also addresses certain new source review requirements for existing equipment and is intended to fulfill the new source review procedures pursuant to 326 IAC 2-2 and 326 IAC 2-7-10.5, applicable to those conditions.

Operation Permit No.: T107-6836-00007	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: April 14, 1999
Third Significant Source Modification 107-20094-00007	Pages Revised: 4,5,6,33,46,47,48,49 Pages Added: 1a,49a
Issued by: Original signed by Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: April 29, 2005

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D.5.3 Monitoring

(A) One (1) etcher, installed in 1986, with an acid gas scrubber as control, exhausting to one (1) stack (13304);

(B) One (1) etcher, installed in 1986, with an acid gas scrubber as control, exhausting to one (1) stack (13305);

(C) Conversion of two (2) phosphoric acid/etch phosphate conversion coating line (P007) into (1) 4-lane conveyorized hydrochloric acid etch/phosphoric acid conversion coating line with a maximum capacity of 2,200 pounds per hour. The acid fumes from these units will be controlled by a packer bed scrubber.

(D) One (1) lime slaking collection, installed in 1983, identified as P015, with one (1) baghouse as control, exhausting to one (1) stack (13203).

(6) One (1) general cleaning with solvents operation, installed in 1952, identified as P008, exhausting through roof vents, exits, and entrances, including the following equipments:

(A) One (1) cold solvent cleaning tank (CSC-1), installed prior to 1974;

(B) One (1) cold solvent cleaning tank (CSC-2), installed in 1984;

(C) One (1) cold solvent cleaning tank (CSC-3), installed in 1984;

(D) One (1) cold solvent cleaning tank (CSC-4), installed in 1984;

(E) One (1) cold solvent cleaning tank (CSC-5), installed in 1984;

(F) One (1) cold solvent cleaning tank (CSC-6), installed in 1988; and

(G) One (1) cold solvent cleaning tank (CSC-7), installed in 1988.

(7) One (1) bonding/flattening process, installed in 1984, identified as P009, with a maximum capacity of 9,560 pounds bonded/flattened products per hour, consisting of the following equipment:

(A) Two (2) electric induction bonding machines, identified as 13073 and 13088, both exhausting to one (1) stack (13318);

(B) Two (2) bonders, identified as 13071 and 13072, both exhausting to one (1) stack (13320);

(C) Two (2) bonders, identified as 13075 and 13076, both exhausting to one (1) stack (13315);

(D) One (1) heavy-duty bonder, identified as 13085, exhausting to one (1) stack (13316);

(E) One (1) bonder, identified as 13074, exhausting to one (1) stack (13074); and

(F) One (1) heavy-duty induction bonder, identified as 13067, exhausting to one (1) stack (13323).

(8) One (1) powder mixing operation, installed in 1952, identified as P010, with a maximum capacity of 1,000 pounds mixed powder per hour, using baghouse(s) as control, consisting of the following equipment:

(A) Eight (8) wafer presses;

(B) Other miscellaneous equipment;

(C) Two (2) pulverizers;

(D) One (1) oven;

(E) Four (4) wafer presses;

(F) Other miscellaneous equipment;

(G) Multiple drum opening vents;

(H) One (1) iron shaker;

(I) One (1) iron blender;

(J) One (1) copper blender;

(K) One (1) dry blender;

(L) One (1) copper shaker;

(M) One (1) pulverizer; and

(N) Other miscellaneous equipment

(9) One (1) graphite spray operation, installed in 1952, identified as P011, with a maximum capacity of 164 sintered metal and graphitics pieces per hour, consisting of the following equipment:

(A) Four (4) wafer press/graphite sprays booths, exhausting to one (1) stack (14101);

(B) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14112);

(C) One (1) graphite spray booth, exhausting to one (1) stack (14113); and

(D) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14116).

(10) One (1) adhesive rollcoating operation, identified as P012, with a maximum capacity of 40,000 steel discs per hour, consisting of the following equipment:

(A) One (1) HD rollercoater and oven, installed prior to 1974;

(B) One (1) HD dual rollercoater and oven, installed prior to 1974;

(C) One (1) AT rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;

(D) One (1) AT dual rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;

(E) One (1) Rayflex rollcoater, installed in 1974, identified as P004;

(F) One (1) sample department rollcoater, installed in 1995;

(G) One (1) rollcoating adhesive application system, identified as an addition to P012, with maximum coating rate of 18,000 steel parts per hour, equipped with a natural gas fired regenerative thermal oxidizer for VOC and HAP control, with maximum heat input capacity no greater than 8 million British thermal units per hour;

(H) One (1) natural gas fired cure oven, rated at 2.5 million British thermal units per hour;

(I) One (1) Mini coater for black resin, constructed prior to 1974

(J) One (1) Union Tool rollcoater, constructed prior to 1974;

(K) Two (2) lane steel core feeders;

(L) One (1) parts cooling tunnel;

(M) Two (2) lane wafer dropper;

(N) Four (4) parts stacker; and

(O) One (1) adhesive rollcoating operation, consisting of the following equipment: One (1) RG Adhesive Rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly and one (1) 0.5 MMBtu/hr natural gas fired RG Cure Oven controlled by both the existing regenerative thermal oxidizer RTO-1 and a new thermal oxidizer RGO-1.

(11) One (1) paper saturation operation, identified as P013, with a maximum capacity of 40,400 paper friction products per hour, following equipment:

(A) One (1) post cure oven, installed in 1988, using a thermal oxidizer as control, exhausting to one (1) stack (16101);

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]:

(F) One (1) induction bonder, identified as P015, using one (1) baghouse as control, exhausting to one (1) stack (13203).

(8) One (1) powder mixing operation, installed in 1952, identified as P010, with a maximum capacity of 1,000 pounds mixed powder per hour, using baghouse(s) as control, consisting of the following equipment:
- (A) Eight (8) wafer presses;
- (B) Other miscellaneous equipment;
- (C) Two (2) pulverizers;
- (D) One (1) oven;
- (E) Four (4) wafer presses;
- (F) Other miscellaneous equipment;
- (G) Multiple drum opening vents;
- (H) One (1) iron shaker;
- (I) One (1) iron blender;
- (J) One (1) copper blender;
- (K) One (1) dry blender;
- (L) One (1) copper shaker;
- (M) One (1) pulverizer; and
- (N) Other miscellaneous equipment;

(9) One (1) graphite spray operation, installed in 1952, identified as P011, equipped with five (5) air atomization spray guns, for metal wafer coating, with a maximum capacity of 164 sintered metal and graphitics pieces per hour, controlled by dry filters, consisting of the following equipment:
- (A) Four (4) wafer press/graphite sprays booths, exhausting to one (1) stack (14101);
- (B) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14112);
- (C) One (1) graphite spray booth, exhausting to one (1) stack (14113); and
- (D) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14116).

(12) One (1) paper grinding and grooving operation, installed in 1989, identified as P015, with a maximum capacity of 4,278 ground and grooved wafers per hour, using baghouse(s) as control, consisting of the following equipment:
- (A) Four (4) wafer grinders;
- (B) Three (3) grinders;
- (C) One (1) groover;
- (D) One (1) brush unit;
- (E) One (1) auto control;
- (F) One (1) conveyor;
- (G) Other miscellaneous equipment;
- (H) One (1) boring machine;
- (I) Seven (7) wafer grinders;
- (J) Five (5) bore and turn;
- (K) One (1) grinder;
- (L) Other miscellaneous equipment;
- (M) Multiple inspection tables;
- (N) One (1) parts sorter;
- (O) Two (2) grinders;
- (P) Three (3) brush units;
- (Q) Three (3) packermatics;
- (R) Three (3) press in groovers (PIG);
- (S) Two (2) chamfer machines;
- (T) Six (6) grinders;
- (U) Six (6) groovers;
- (V) One (1) oil coater;

(W) One (1) transfer line:

SECTION D.3 FACILITY CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(6) One (1) general cleaning with solvents operation, installed in 1952, identified as P008, exhausting through roof vents, exits, and entrances, including the following equipments:
- (A) One (1) cold solvent cleaning tank (CSC-1) installed prior to 1974;
- (B) One (1) cold solvent cleaning tank (CSC-2) installed in 1984.
- (C) One (1) cold solvent cleaning tank (CSC-3), installed in 1984;
- (D) One (1) cold solvent cleaning tank (CSC-4), installed in 1984;
- (E) One (1) cold solvent cleaning tank (CSC-5), installed in 1984;
- (F) One (1) cold solvent cleaning tank (CSC-6), installed in 1988; and
- (G) One (1) cold solvent cleaning tank (CSC-7), installed in 1988.

(10) One (1) adhesive rollcoating operation, identified as P012, with a maximum capacity of 40,000 steel discs per hour, consisting of the following equipment:
- (A) One (1) HD rollercoater and oven, installed prior to 1974;
- (B) One (1) HD dual rollercoater and oven, installed prior to 1974;
- (C) One (1) AT rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;
- (D) One (1) AT dual rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;
- (E) One (1) Rayflex rollcoater, installed in 1974, identified as P004;
- (F) One (1) sample department rollcoater, installed in 1995;
- (G) One (1) rollcoating adhesive application system, identified as an addition to P012, with maximum coating rate of 18,000 steel parts per hour, equipped with a natural gas fired regenerative thermal oxidizer for VOC and HAP control, with maximum heat input capacity no greater than 8 million British thermal units per hour;
- (H) One (1) natural gas fired cure oven, rated at 2.5 million British thermal units per hour;
- (I) One (1) Mini coater for black resin, constructed prior to 1974;
- (J) One (1) Union Tool rollcoater, constructed prior to 1974;
- (K) Two (2) lane steel core feeders;
- (L) One (1) parts cooling tunnel;
- (M) Two (2) lane wafer dropper;
- (N) Four (4) parts stacker; and
- (O) One adhesive rollcoating operation, consisting of the following equipment:
  One (1) RG Adhesive Rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly and one (1) 0.5 MMBtu/hr natural gas fired RG Cure Oven controlled by both the existing regenerative thermal oxidizer RTO-1 and a new thermal oxidizer RGO-1.

(13) One (1) adhesive/saturant formulation and mixing operation, installed in 1988, identified as P017, with a maximum capacity of 2,000 phenolic adhesives gallons per hour, consisting of the following equipment:
- (A) One (1) adhesive process kettle, exhausting to one (1) stack (16201);
- (B) One (1) adhesive process kettle, exhausting to one (1) stack (16202);
- (C) One (1) adhesive process kettle, exhausting to one (1) stack (16203);
- (D) One (1) adhesive process kettle, exhausting to one (1) stack (16204);
- (E) One (1) adhesive process kettle, exhausting to one (1) stack (16205);
- (F) One (1) adhesive process kettle, exhausting to one (1) stack (16206);
- (G) One (1) adhesive process kettle, exhausting to one (1) stack (16207);
- (H) One (1) storage tank, identified as MEK (near rollcoaters), with a maximum capacity of 1,000 gallons of MEK;
- (I) One (1) storage tank, identified as Ethanol (near rollcoaters), with a maximum capacity

of 8,000 gallons of ethanol;

(J) One (1) bulk storage tank T-1, containing ethanol, with maximum storage capacity of 12,000 gallons, exhausting to one (1) stack (16159);

(K) One (1) bulk storage tank T-2, containing resin, with maximum storage capacity of 13,000 gallons, exhausting to one (1) stack (16160);

(L) One (1) bulk storage tank T-3, containing resin, with maximum storage capacity of 11,000 gallons, exhausting to one (1) stack (16161);

(M) One (1) bulk storage tank T-4, containing resin, with maximum storage capacity of 4,200 gallons, exhausting to one (1) stack (16162);

(N) One (1) bulk storage tank T-5, containing MEK, with maximum storage capacity of 4,500 gallons, exhausting to one (1) stack (16163);

(O) One (1) bulk storage tank T-7, containing resin, with maximum storage capacity of 4,500 gallons, exhausting to one (1) stack (16164);

(P) One (1) bulk storage tank T-6, containing resin, with maximum storage capacity of 4,500 gallons, exhausting to one (1) stack (16165);

(Q) One (1) day tank T-14, containing blended resin, with maximum storage capacity of 1,000 gallons, exhausting to one (1) stack (16153);

(R) One (1) day tank T-13, containing blended resin, with maximum storage capacity of 1,000 gallons, exhausting to one (1) stack (16154);

(S) One (1) day tank T-12, containing blended resin, with maximum storage capacity of 1,500 gallons, exhausting to one (1) stack (16155);

(T) One (1) day tank T-10, containing blended resin, with maximum storage capacity of 1,500 gallons, exhausting to one (1) stack (16156);

(U) One (1) day tank T-9, containing blended resin, with maximum storage capacity of 1,000 gallons, exhausting to one (1) stack (16157);

(V) One (1) day tank T-8, containing blended resin, with maximum storage capacity of 1,000 gallons, exhausting to one (1) stack (16158);

(W) One (1) day tank T-16, identified as wash out bed 2, with maximum storage capacity of 1,000 gallons, exhausting to one (1) stack (16170); and

(X) One (1) day tank T-17, identified as wash out bed 1, with maximum storage capacity of 1,000 gallons, exhausting to one (1) stack (16171).

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.3.1 Volatile Organic Compounds [326 IAC 8-2-9]

(a) Pursuant to 326 IAC 8-2-9 (Miscellaneous Metal Coating Operations), no owner or operator of a facility (the rollcoating adhesive application system (the addition to P012)) engaged in the surface coating of steel parts may cause, allow, or permit the discharge into the atmosphere of any volatile organic compounds in excess of 3.5 pounds of VOC per gallon of coating, excluding water, as applied by the coating applicator for a forced warm air dried system.

(b) When operating the thermal oxidizer to achieve the limit for 326 IAC 8-2-9, 3.5 pounds of VOC emitted to the atmosphere per gallon of coating less water delivered to the applicator, the thermal oxidizer shall maintain a minimum 95% capture efficiency and 95% destruction efficiency. These efficiencies and the use of the thermal oxidizer are required by 326 IAC 8-1-2(a)(2). Based upon 326 IAC 8-1-2(c) and the overall control efficiency of 90%, the VOC content of the coating shall not exceed 67 pounds per gallon of coating solids delivered to the applicator.

(c) Pursuant 326 IAC 8-1-2(a)(9), an equivalent emission limit for 326 IAC 8-2-9 may be established based on an actual measured transfer efficiency using EPA approved test

methods. This condition must be amended to state any such equivalent limit.

D.3.2 Volatile Organic Compounds (VOC) [326 IAC 8]

Any change or modification to any of these facilities except the rollcoating adhesive application system (the addition to P012) that would lead to an increase in volatile organic compound (VOC) emissions above twenty-five (25) tons per year must be approved by the Office of Air Management (OAM) before such change or modification can occur.

D.3.3 Hazardous Air Pollutant (HAP) Limit [326 IAC 2-4.1]

Single hazardous air pollutant (HAP) input usage to the one (1) rollcoating adhesive application system, identified as an addition to P012, shall be limited to less than ten (10) tons per twelve (12) consecutive month period, and total combined HAP input usage shall be limited to less than twenty-five (25) tons per twelve (12) consecutive month period, with compliance determined at the end of each month.

D.3.4 New Facilities; General Reduction Requirements for Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6, the source is required to use BACT for controlling VOC emissions from the RG rollcoating operation. BACT for the RG rollcoating operation is determined to be the use of the Regenerative Thermal Oxidizer RTO-1 for controlling the adhesive rollcoating room and the use of thermal oxidizer RGO-1 for controlling the RG cure oven, both with a minimum capture efficiency of 97.5% and a minimum destruction efficiency of 97.5%, and both thermal oxidizers shall be in operation at all times the RG adhesive rollcoater and cure oven are in operation.

D.3.5 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the adhesive rollcoating operations and the control devices.

Compliance Determination Requirements

D.3.6 Testing Requirements [326 IAC 2-7-6(1), (6)] [326 IAC 2-1.1-11]

The Permitee is not required to test the general cleaning with solvents operation and the adhesive/saturant formulation by this permit. However, IDEM may require compliance testing when necessary to determine if the facility is in compliance. If testing is required by IDEM, compliance with the volatile organic compound (VOC) limit specified in Condition D.3.1 shall be determined by a performance test conducted in accordance with Section C -Performance Testing.

D.3.7 Testing Requirements [326 IAC 2-7-6(1), (6)] [326 IAC 2-1.1-11]

Within 60 days after achieving maximum capacity but no later than 180 days after the startup of the RG Adhesive Rollcoating operation, to show compliance with Conditions D.3.1 and D.3.4, the Permitee shall conduct VOC testing for the Regenerative thermal oxidizer RTO-1 and thermal oxidizer RGO-1 utilizing methods as approved by the Commissioner. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C- Performance Testing.

D.3.8 Monitoring

Monitoring of the general cleaning with solvents operation and the adhesive/saturant formulation operation is not required by this permit. However, any change or modification to this facility as specified in 326 IAC 2-1 would require this facility to have monitoring requirements.

D.3.9 Thermal Oxidizer and Volatile Organic Compounds (VOC)

In order to comply with Conditions D.3.1 and D.3.4 the Regenerative Thermal Oxidizer RTO-1 and the thermal oxidizer RGO-1 shall be in operation and control emissions from the rollcoating adhesive application system, the RG adhesive rollcoater, and the RG cure oven at all times when the rollcoating adhesive application system, the RG adhesive rollcoater, and the RG cure oven are in operation.

D.3.10 Thermal Oxidizer Temperature [40 CFR Part 64]

(a) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizer for measuring operating temperature. For the purpose of this condition, continuous shall mean no less than once per minute. The output of this system shall be recorded as a three (3) hour average. From the date of issuance of this permit until the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the three (3) hour average temperatures of 1500°F for RTO-1 and 1400 ^{o}F for RGO-1.

(b) The Permittee shall determine the three (3) hour average average temperatures from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.1 and D.3.4, as approved by IDEM.

(c) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the three (3) hour average temperature as observed during the compliant stack test.

Compliance with the above monitoring conditions shall also satisfy the requirements of 40 CFR 64, Compliance Assurance Monitoring for the rollcoating adhesive application system and RG adhesive rollcoating operation.

D.3.11 Parametric Monitoring

(a) The Permittee shall determine the appropriate duct pressures or fan amperages from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.1 and D.3.4, as approved by IDEM.

(b) The duct pressures or fan amperages shall be observed at least once per day when the thermal oxidizers are in operation. On and after the date the approved stack test results are available, the duct pressures or fan amperages shall be maintained within the normal ranges as established in most recent compliant stack test.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.3.12 Record Keeping Requirements

(a) To document compliance with conditions D.3.1, D.3.2, D.3.3 and D.3.4, the Permittee shall maintain records in accordance with (1) through (8) below. Records maintained for (1) through (8) shall be taken as stated below and shall be complete and sufficient to establish compliance with the VOC and HAP usage limits established in conditions D.3.1, D.3.2, D.3.3 and D.3.4.

(1) The VOC and HAP contents of each coating material and solvent used less water.

(2) The amount of coating material and solvent used on a monthly basis.

(A) Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used.

(B) Solvent usage records shall differentiate between those added to coatings and those used as cleanup solvents;

(3) The volume weighed VOC and HAP content of the coatings and solvents used for each day when the adhesive rollcoating operation of P012 engages in the surface coating of steel parts. If at any time a coating with VOC content greater than 3.5 pounds per gallon less water is used, compliance with this rule shall be shown by the use of the following equation to calculate daily volume weighed average:

lb VOC / gallon less water = 3 coatings [Dc * O * Q / [1 - W * Dc / Dw]] / 3C

Dc = density of coating, lb/gal
Dw = density of water, lb/gal
O = weight percent organics, %
Q = quantity of coating, gal/unit
W = percent volume water, %
C = total of coatings used, gal/unit;

(4) The monthly cleanup solvent usage; and

(5) The total VOC and HAP usages for each month

(6) The weight of VOC and HAP emitted for each compliance period.

(7) The continuous temperature records (on a three (3) hour average basis) for the thermal oxidizers and the three (3) hour average temperatures used to demonstrate compliance during the most recent compliant stack test.

(8) Daily records of the duct pressures or fan amperages.

(b) To document compliance with Condition D.3.5, the Permittee shall maintain of records of any additional inspections prescribed by the Preventive Maintenance Plan.

(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.3.13 Reporting Requirements

A quarterly summary of the information to document compliance with condition D.3.3 shall be submitted to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Significant Source Modification and Significant Permit Modification to a Part 70 Operating Permit

Source Background and Description

Source Name:	Raybestos Products Company
Source Location:	1204 Darlington Avenue, Crawfordsville, Indiana 47933
County:	Montgomery
SIC Code:	3499
Operation Permit No.:	T107-6836-00007
Operation Permit Issuance Date:	April 14, 1999
Source Modification No.:	SSM107-20094-00007
Permit Modification No.:	SPM107-20114-00007
Permit Reviewer:	Rajnish Sharma/EVP

The Office of Air Quality (OAQ) has reviewed a modification application from Raybestos Products Company relating to the operation of stationary automotive parts manufacturing operation.

History

On September 22, 2004 Raybestos Products Company submitted an application to the OAQ requesting the following changes to their existing Part 70 Operating Permit:

Modification of an existing unit P012 by the addition of an RG adhesive rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly, a 0.5 MMBtu per hour natural gas fired cure oven, and miscellaneous solvent usage. VOC emissions from the RG adhesive rollcoater will be controlled by an existing Regenerative Thermal Oxidizer RTO-1 and VOC emissions from the cure oven will be controlled by a new thermal oxidizer RGO-1.

On March 11, 2005 Raybestos Products Company submitted a letter requesting the following descriptive changes (these changes will not change PTE at the source and will not trigger any new federal or state requirements):

(a) Removal of five (5) wafer presses in powder mixing operation P010;
(b) Re-route one (1) of the wafer presses exhaust in the graphic spray operation from stack 14100 to stack 14101, and remove the remaining units that exhaust to stack 14100.
(c) Re-route exhausts of various insignificant activities to different baghouses.

Existing Approvals

The source was issued a Part 70 Permit T107-6836-0007 on April 14, 1999. The source has since received the following:

a) First Significant Permit Modification 107-11435-00007, issued on December 7, 1999;

b) Second Significant Permit Modification 107-12810-00007, issued on January 23, 2001;

c) First Significant Source Modification 107-14594-00007, issued on November 19, 2001;

d) Third Significant Permit Modification 107-14857-00007, issued on December 4, 2001;

e) First Reopening No.: R 107-13431-00007, issued on February 7, 2002;

f) First Administrative Amendment 107-16817-00007, issued on January 7, 2003;

g) First Minor Source Modification 107-16568-00007, issued February 6, 2003;

h) Fourth Significant Permit Modification 107-16919-00007, issued on March 10, 2003;

i) Second Administrative Amendment 107-17259-00007, issued on May 1, 2003;

j) Second Significant Source Modification 107-17441-00007, issued on July 17, 2003;

k) Fifth Significant Permit Modification 107-17443-00007, issued on July 30, 2003; and

l) Third Administrative Amendment 107-18217-00007, issued on December 17, 2003.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the Significant Source Modification and Significant Permit Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

Applications for the purposes of this review were received on September 22, 2004 and March 11, 2005.

Emission Calculations

See Appendix A of this document for detailed emission calculations (pages 1 through 4).

Potential to Emit of the Modification

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, inclulding air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential to Emit (tons/yr)
PM	0.00
PM-10	0.10
SO_2	0.00
VOC	320.29
CO	1.0
NO_x	1.2

HAPs	Potential to Emit (tons/yr)
Phenol	4.74
Formaldehyde	0.92
Toluene	0.0
MEK	173.65
O-Cresol	1.86
Acrylonitrile	0.0
Ethyl Acrylate	0.0
Hexane	0.0
Total	181.17

Justification for Modification:

The Title V permit is being modified through a Significant Source Modification and Significant Permit Modification. This modification has a potential to emit greater than 25 tons per year of VOC, ten (10) tons per year of a single hazardous air pollutant and twenty-five (25) tons per year of combined hazardous air pollutants. Therefore, pursuant to 326 IAC 2-7-10.5 (f) (4) and 326 IAC 2-7-10.5 (f) (6) the modification shall be processed in accordance with the procedures of 326 IAC 2-7-10.5 (g).

County Attainment Status

The source is located in Montgomery County.

Pollutant	Status
PM-10	Attainment
SO_2	Attainment
NO_2	Attainment
1-hour Ozone	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC emissions and NOx are considered when evaluating the rule applicability relating to ozone. Montgomery County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions and NOx were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.

(b) Montgomery County has been classified as attainment or unclassifiable in Indiana for for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.

Source Status

Existing Source PSD Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	Less than 250
PM-10	Less than 250
SO_2	Less than 250
VOC	Less than 250
CO	Less than 250
NOx	Less than 250

(a) This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories.

(b) These emissions are based upon the technical support document for Part 70 No. 107-6836-00007.

Potential to Emit After Controls for the Modification

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units for the modification.

	Potential to Emit (tons/year)							
Process/facility	PM	PM-10	SO_2	VOC	CO	NO_X	Single HAP	Total HAPs
Proposed Modification*	0.0	0.10	0.0	16.0(1)	1.0	1.2	8.7(1)	9.1(1)
Total Modification Emissions	0.0	0.10	0.0	16.0	1.0	1.2	8.7	9.1
PSD Significant Level	250	250	250	250	250	250	N/A	N/A

(1) Note: VOC and HAPs emissions after control.

This modification to an existing minor stationary source is not major because the emission increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

Federal Rule Applicability

(a) This significant modification does involve a pollutant-specific emissions unit as defined in 40 CFR 64.1 for VOC

(1) with the potential to emit before controls equal to or greater than the major source threshold for VOC.

(2) that is subject to an emission limitation or standard for VOC and

(3) uses a control device as defined in 40 CFR Part 64.1 to comply with that emission limitation or standard.

The pollutant-specific emission unit is a " large unit" as described in 40 CFR 64.5. Therefore, the requirements of 40 CFR Part 64, Compliance Assurance Monitoring, are applicable to this modification. The emissions from the proposed rollcoater will be controlled by an existing regenerative thermal oxidizer RTO-1 and a new thermal oxidizer RGO-1. The thermal oxidizers shall be subject to the compliance determination requirements in Conditions D.3.9 through D.3.11 of the Part 70 permit. Compliance with these permit conditions shall assure compliance with 40 CFR part 64 requirements.

(b) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) included in this permit review.

(c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14, 20 and 40 CFR Part 61, 63) included in this permit review.

State Rule Applicability – Entire Source

326 IAC 2-2 (Prevention of Significant Deterioration (PSD))

This modification to a PSD minor source is not subject to this rule. The source shall continue to limit source wide VOC emissions to less than 250 tons per 12 consecutive month period. Therefore, the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) do not apply.

326 IAC 1-6-3 (Preventive Maintenance Plan)

The source has submitted a Preventive Maintenance Plan (PMP) on September 28, 2004. This PMP has been verified to fulfill the requirements of 326 IAC 1-6-3 (Preventive Maintenance Plan).

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in the permit:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability – Individual Facilities

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of this rollcoating operation will not emit greater than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs after control. The control device has a 95% overall control efficiency (97.5% capture efficiency and 97.5% destruction efficiency) which limits the individual and combined HAPs below these limits. Therefore, 326 IAC 2-4.1 will not apply.

326 IAC 8-1-6 (New Facilities; general reduction requirements)

This modification is subject to the provisions of 326 IAC 8-1-6. This rule requires all facilities constructed after January 1, 1980, which have potential VOC emission rates of greater than or equal to 25 tons per year, and which are not otherwise regulated by other provisions of 326 IAC 8, to reduce VOC emissions using Best Available Control Technology (BACT). The proposed roll coating operation is not subject to any other article 8 rules and has potential to emit VOC greater than 25 tons per year. Raybestos Products Company submitted a BACT analysis on March 02, 2005 and the determination of BACT is described in Attachment B of this TSD.

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

The rollcoating operation is not subject to the requirements of the 326 IAC 6-3-2, because this operation does not emit particulate matters.

Testing Requirements

The Permitee will perform the following tests to satisfy the testing requirements:

(a) Within 60 to 180 days after initial startup of the RG adhesive rollcoater and cure oven the Permittee shall conduct a performance test to verify VOC capture and destruction efficiencies of RTO-1 and RGO-1.

(b) This test shall be repeated at least once every two and one half (2.5) years from the date of the most recent valid compliance demonstration.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the approporiate corrective actions within a specific time period.

The Compliance Determinaton Requirements for the proposed rollcoating operation are as follows:

(a) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizers for measuring operating temperature. For the purpose of this condition, continuous shall mean no less than once per minute. The output of this system shall be recorded as a three (3) hour average. From the date of issuance of this permit until the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the three (3) hour average temperatures of 1500°F for RTO-1 and 1400 ^{o}F for RGO-1.

(b) The Permittee shall determine the three (3) hour average average temperatures from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.1 and D.3.4, as approved by IDEM.

(c) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the three (3) hour average temperatures as observed during the compliant stack test.

(d) The Permittee shall determine the appropriate duct pressures or fan amperages from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.1 and D.3.4, as approved by IDEM.

(e) The duct pressures or fan amperages shall be observed at least once per day when the thermal oxidizers are in operation. On and after the date the approved stack test results

are available, the duct pressures or fan amperages shall be maintained within the normal ranges as established in most recent compliant stack test.

These monitoring conditions are necessary because the thermal oxidizers RTO-1 and RGO-1 for the RG adhesive rollcoater and cure oven must operate properly to ensure compliance with 326 IAC 8-1-6 (New Facilities; general reduction requirements) and 326 IAC 2-7 (Part 70).

Proposed Changes to the Part 70 Operating Permit

The following changes are made as the Third Significant Source Modification 107-20094-00007 and Sixth Significant Permit Modification 107-20114-00007 to Part 70 Operating Permit No. T107-6836-00007 (new language shown in bold and deleted language shown with a line through it):

(1) The following changes have been made to Section A.2:

(8) One (1) powder mixing operation, installed in 1952, identified as P010, with a maximum capacity of 1,000 pounds mixed powder per hour, using baghouse(s) as control, consisting of the following equipment:

(A) **Eight (8)** ~~Thirteen (13)~~ wafer presses;

(B) Other miscellaneous equipment;

(C) Two (2) pulverizers;

(D) One (1) oven;

(E) Four (4) wafer presses;

(F) Other miscellaneous equipment;

(G) Multiple drum opening vents;

(H) One (1) iron shaker;

(I) One (1) iron blender;

(J) One (1) copper blender;

(K) One (1) dry blender;

(L) One (1) copper shaker;

(M) One (1) pulverizer; and

(N) Other miscellaneous equipment;

(9) One (1) graphite spray operation, installed in 1952, identified as P011, equipped with five (5) air atomization spray guns, for metal wafer coating, with a maximum capacity of 164 sintered metal and graphitics pieces per hour, controlled by dry filters, consisting of the following equipment:

~~(A) Four (4) wafer press/graphite spray booths, exhausting to one (1) stack (14100);~~

(B) **Four (4)** ~~Three (3)~~ wafer press/graphite spray booths, exhausting to one (1) stack (14101);

(C) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14112);

(D) One (1) graphite spray booth, exhausting to one (1) stack (14113); and

(E) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14116);

(10) One (1) adhesive rollcoating operation, identified as P012, with a maximum capacity of 40,000 steel discs per hour, consisting of the following equipment:

(A) One (1) HD rollercoater and oven, installed prior to 1974;

(B) One (1) HD dual rollercoater and oven, installed prior to 1974;

(C) One (1) AT rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;

(D) One (1) AT dual rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;

(E) One (1) Rayflex rollcoater, installed in 1974, identified as P004;

(F) One (1) sample department rollcoater, installed in 1995;

(G) One (1) rollcoating adhesive application system, identified as an addition to P012, with maximum coating rate of 18,000 steel parts per hour, equipped with a natural gas fired regenerative thermal oxidizer for VOC and HAP control, with maximum heat input capacity no greater than 8 million British thermal units per hour;

(H) One (1) natural gas fired cure oven, rated at 2.5 million British thermal units per hour;

(I) One (1) Mini coater for black resin, constructed prior to 1974

(J) One (1) Union Tool rollcoater, constructed prior to 1974;

(K) Two (2) lane steel core feeders;

(L) One (1) parts cooling tunnel;

(M) Two (2) lane wafer dropper;

(N) Four (4) parts stacker; and

(O) One (1) adhesive rollcoating operation, consisting of the following equipment:
One (1) RG Adhesive Rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly and one (1) 0.5 MMBtu/hr natural gas fired RG Cure Oven controlled by both the existing regenerative thermal oxidizer RTO-1 and a new thermal oxidizer RGO-1.

(2) The following changes have been made to the Facility Description of Section D.1:

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]:

(F) One (1) induction bonder, identified as P015, using one (1) baghouse as control, exhausting to one (1) stack (13203).

(8) One (1) powder mixing operation, installed in 1952, identified as P010, with a maximum capacity of 1,000 pounds mixed powder per hour, using baghouse(s) as control, consisting of the following equipment:

(A) **Eight (8)** ~~Thirteen (13)~~ wafer presses;
(B) Other miscellaneous equipment;
(C) Two (2) pulverizers;
(D) One (1) oven;
(E) Four (4) wafer presses;
(F) Other miscellaneous equipment;
(G) Multiple drum opening vents;
(H) One (1) iron shaker;
(I) One (1) iron blender;
(J) One (1) copper blender;
(K) One (1) dry blender;
(L) One (1) copper shaker;
(M) One (1) pulverizer; and
(N) Other miscellaneous equipment;

(9) One (1) graphite spray operation, installed in 1952, identified as P011, equipped with five (5) air atomization spray guns, for metal wafer coating, with a maximum capacity of 164 sintered metal and graphitics pieces per hour, controlled by dry filters, consisting of the following equipment:

~~(A) Four (4) wafer press/graphite spray booths, exhausting to one (1) stack (14100);~~
(B) **Four (4)**~~Three (3)~~ wafer press/graphite spray booths, exhausting to one (1) stack (14101);
(C) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14112);
(D) One (1) graphite spray booth, exhausting to one (1) stack (14113); and
(E) Two (2) wafer press/graphite spray booths, exhausting to one (1) stack (14116).

(12) One (1) paper grinding and grooving operation, installed in 1989, identified as P015, with a maximum capacity of 4,278 ground and grooved wafers per hour, using baghouse(s) as control, consisting of the following equipment:

(A) Four (4) wafer grinders;
(B) Three (3) grinders;
(C) One (1) groover;
(D) One (1) brush unit;
(E) One (1) auto control;
(F) One (1) conveyor;
(G) Other miscellaneous equipment;
(H) One (1) boring machine;
(I) Seven (7) wafer grinders;
(J) Five (5) bore and turn;
(K) One (1) grinder;
(L) Other miscellaneous equipment;
(M) Multiple inspection tables;
(N) One (1) parts sorter;
(O) Two (2) grinders;
(P) Three (3) brush units;
(Q) Three (3) packermatics;
(R) Three (3) press in groovers (PIG);

(S) Two (2) chamfer machines;
(T) Six (6) grinders;
(U) Six (6) groovers;
(V) One (1) oil coater;
(W) One (1) transfer line;
(X) One (1) sander;
(Y) One (1) auto control;
(Z) Other miscellaneous equipment; and
(AA) One (1) groover, identified as P018, using a baghouse as control, exhausting to one (1) stack (14015);

(3) The following changes have been made to Section D.3:

Facility Description [326 IAC 2-7-5(15)]

(6) One (1) general cleaning with solvents operation, installed in 1952, identified as P008, exhausting through roof vents, exits, and entrances, including the following equipments:
- (A) One (1) cold solvent cleaning tank (CSC-1) installed prior to 1974;
- (B) One (1) cold solvent cleaning tank (CSC-2) installed in 1984.
- (C) One (1) cold solvent cleaning tank (CSC-3), installed in 1984;
- (D) One (1) cold solvent cleaning tank (CSC-4), installed in 1984;
- (E) One (1) cold solvent cleaning tank (CSC-5), installed in 1984;
- (F) One (1) cold solvent cleaning tank (CSC-6), installed in 1988; and
- (G) One (1) cold solvent cleaning tank (CSC-7), installed in 1988.

(10) One (1) adhesive rollcoating operation, identified as P012, with a maximum capacity of 40,000 steel discs per hour, consisting of the following equipment:
- (A) One (1) HD rollercoater and oven, installed prior to 1974;
- (B) One (1) HD dual rollercoater and oven, installed prior to 1974;
- (C) One (1) AT rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;
- (D) One (1) AT dual rollercoater and oven, installed in 1976, using a natural gas fired regenerative thermal oxidizer as control;
- (E) One (1) Rayflex rollcoater, installed in 1974, identified as P004;
- (F) One (1) sample department rollcoater, installed in 1995;
- (G) One (1) rollcoating adhesive application system, identified as an addition to P012, with maximum coating rate of 18,000 steel parts per hour, equipped with a natural gas fired regenerative thermal oxidizer for VOC and HAP control, with maximum heat input capacity no greater than 8 million British thermal units per hour;
- (H) One (1) natural gas fired cure oven, rated at 2.5 million British thermal units per hour;
- (I) One (1) Mini coater for black resin, constructed prior to 1974;
- (J) One (1) Union Tool rollcoater, constructed prior to 1974;
- (K) Two (2) lane steel core feeders;
- (L) One (1) parts cooling tunnel;
- (M) Two (2) lane wafer dropper;
- (N) Four (4) parts stacker; and
- **(O) One adhesive rollcoating operation, consisting of the following equipment: One (1) RG Adhesive Rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly and one (1) 0.5 MMBtu/hr natural gas fired RG Cure Oven controlled by both the existing regenerative thermal oxidizer RTO-1 and a new thermal oxidizer RGO-1.**

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.3.4 New Facilities; General Reduction Requirements for Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6, the source is required to use BACT for controlling VOC emissions from the RG rollcoating operation. BACT for the RG rollcoating operation is determined to be the use of the Regenerative Thermal Oxidizer RTO-1 for controlling the adhesive rollcoating room and the use of thermal oxidizer RGO-1 for controlling the RG cure oven, both with a minimum capture efficiency of 97.5% and a minimum destruction efficiency of 97.5%, and both thermal oxidizers shall be in operation at all times the RG adhesive rollcoater and cure oven are in operation.

D.3.~~4~~ **5** Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the ~~one (1)~~ adhesive rollcoating **operations** and the control devices.

Compliance Determination Requirements

D.3.~~5~~ **6** Testing Requirements [326 IAC 2-7-6(1), (6)] [326 IAC 2-1.1-11]

The Permitee is not required to test the general cleaning with solvents operation and the adhesive/saturant formulation by this permit. However, IDEM may require compliance testing when necessary to determine if the facility is in compliance. If testing is required by IDEM, compliance with the volatile organic compound (VOC) limit specified in Condition D.3.1 shall be determined by a performance test conducted in accordance with Section C -Performance Testing.

D.3.~~6~~ **7** Testing **Requirements [326 IAC 2-7-6(1), (6)] [326 IAC 2-1.1-11]**

Within 60 days after achieving maximum capacity but no later than 180 days after the startup of the RG Adhesive Rollcoating operation, to show compliance with Conditions D.3.1 and D.3.4, the Permitee shall conduct VOC testing for the Regenerative thermal oxidizer RTO-1 and thermal oxidizer RGO-1 utilizing methods as approved by the Commissioner. This test shall be repeated at least once every two and one half (2.5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C- Performance Testing.

(The previous testing requirements have been replaced because the existing regenerative thermal oxidizer RTO-1 and the new thermal oxidizer RGO-1 are both part of the proposed BACT.)

D.3.9 Thermal Oxidizer and Volatile Organic Compounds (VOC)

In order to comply with Conditions D.3.1 and D.3.4 the Regenerative Thermal Oxidizer RTO-1 and the thermal oxidizer RGO-1 shall be in operation and control emissions from the rollcoating adhesive application system the RG adhesive rollcoater, and the RG cure oven at all times when the rollcoating adhesive application system, the RG adhesive rollcoater, and the RG cure oven are in operation.

D.3.10 Thermal Oxidizer Temperature [40 CFR Part 64]

(a) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizer for measuring operating temperature. For the purpose of this condition, continuous shall mean no less than once per minute. The output of this system shall be recorded as a three (3) hour average. From the date of issuance of this permit until the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the three (3) hour average temperatures of 1500°F for RTO-1 and 1400 ^{o}F for RGO-1.

(b) The Permittee shall determine the three (3) hour average average temperatures from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.1 and D.3.4, as approved by IDEM.

(c) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the three (3) hour average temperature as observed during the compliant stack test.

Compliance with the above monitoring conditions shall also satisfy the requirements of 40 CFR 64, Compliance Assurance Monitoring for the rollcoating adhesive application system and RG adhesive rollcoating operation.

D.3.11 Parametric Monitoring

(a) The Permittee shall determine the appropriate duct pressures or fan amperages from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.1 and D.3.4, as approved by IDEM.

(b) The duct pressures or fan amperages shall be observed at least once per day when the thermal oxidizers are in operation. On and after the date the approved stack test results are available, the duct pressures or fan amperages shall be maintained within the normal ranges as established in most recent compliant stack test.

Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.3.~~9~~**12** Record Keeping Requirements

(a) To document compliance with conditions D.3.1, D.3.2, D.3.3 **and D.3.4**, the Permittee shall maintain records in accordance with (1) through **(8)** below. Records maintained for (1) through **(8)** shall be taken as stated below and shall be complete and sufficient to establish compliance with the VOC and HAP usage limits established in conditions D.3.1, D.3.2, D.3.3 **and D.3.4.**

(1) The VOC and HAP contents of each coating material and solvent used less water.

(2) The amount of coating material and solvent used on a monthly basis.

(A) Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used.

(B) Solvent usage records shall differentiate between those added to coatings and those used as cleanup solvents;

(~~2~~)(3) The volume weighed VOC and HAP content of the coatings and solvents used for each day when the adhesive rollcoating operation of P012 engages in the surface coating of steel parts. If at any time a coating with VOC content greater than 3.5 pounds per gallon less water is used, compliance with this rule shall be shown by the use of the following equation to calculate daily volume weighed average:

lb VOC / gallon less water = 3 coatings [Dc * O * Q / [1 - W * Dc / Dw]] / 3C

Dc = density of coating, lb/gal Dw = density of water, lb/gal
O = weight percent organics, % Q = quantity of coating, gal/unit
W = percent volume water, % C = total of coatings used, gal/unit;

(4) The monthly cleanup solvent usage; and

(5) The total VOC and HAP usages for each month

(6) The weight of VOC and HAP emitted for each compliance period.

(7) The continuous temperature records (on a three (3) hour average basis) for the thermal oxidizers and the three (3) hour average temperatures used to demonstrate compliance during the most recent compliant stack test.

(8) Daily records of the duct pressures or fan amperages.

(b) To document compliance with Condition ~~D.3.8~~ **D.3.5**, the Permittee shall maintain of records of any additional inspections prescribed by the Preventive Maintenance Plan.

(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.3.~~11~~**13**Reporting Requirements

A quarterly summary of the information to document compliance with condition D.3.3 shall be submitted to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

Conclusion

The construction and operation of the RG adhesive rollcoating unit shall be subject to the conditions of the attached proposed Significant Source Modification No.:107-20094-00007 and Significant Permit Modification No.: 107-20114-00007.

Indiana Department of Environmental Management
Office of Air Quality

Addendum to the Technical Support Document (TSD) for a Significant Source Modification and Significant Permit Modification to a Part 70 Operating Permit

Source Background and Description

Source Name:	**Raybestos Products Company**
Source Location:	**1204 Darlington Avenue, Crawfordsville, Indiana 47933**
County:	**Montgomery**
SIC Code:	**3499**
Operation Permit No.:	**T107-6836-00007**
Operation Permit Issuance Date:	**April 14, 1999**
Source Modification No.:	**SSM107-20094-00007**
Permit Modification No.:	**SPM107-20114-00007**
Permit Reviewer:	**Rajnish Sharma/EVP**

On March 25, 2005, the Office of Air Quality (OAQ) had a notice published in the Journal Review, Crawfordsville, IN stating that Raybestos Products Company had applied for a significant source and significant permit modification to Part 70 permit no. T107-6836-00007 for modification of an existing unit P012 by the addition of an RG adhesive rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly, a 0.5 MMBtu per hour natural gas fired cure oven, and miscellaneous solvent usage. VOC emissions from the RG adhesive rollcoater will be controlled by an existing Regenerative Thermal Oxidizer RTO-1 and VOC emissions from the cure oven will be controlled by a new thermal oxidizer RGO-1. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On April 27, 2005, OAQ received comments from Raybestos Products Company on the proposed source and permit modifications. The summary of the comments and corresponding responses is shown below. Changes made to the permit as a result of the comments are shown in bold and deleted permit language is shown with a line through it. Any permit changes affecting the permit's Table of Contents are also revised without replication herein.

Comment 1:

Condition D.3.7 Testing Requirements:

Section D.3.7 requires Raybestos Products Company (Raybestos) to do an initial compliance stack test and then to repeat that stack test every two and one half years (2.5) after that. Raybestos feels that the every 2.5 years requirement to repeat the stack test is not needed to ensure compliance. A stack test every five years would be acceptable.

The regenerative thermal oxidizer (RTO) that controls those sources is designed to be robust, reliable and trouble free. That, coupled with the requirements in Conditions D.3.10 and D.3.11 to continually monitor oxidizer temperature and either duct pressure or fan amperage daily should provide enough assurance that VOC destruction is occurring.

The RTO has been tested two times, once on completion of construction and a second time when another process was added to it. Both times the destruction efficiency was greater than 98%. This demonstrates reliability.

Also, Crown Cork and Seal, a Crawfordsville neighbor and a source that applies solvent-laden, organic coatings to metal recently was given a Title V permit renewal (T 107-18226-00004, issued 12/30/04). Crown Cork and Seal uses a RTO to control emissions from their processes. In section D.4.2 of the permit they were required to repeat the stack test every five years.

Response to Comment 1:

After reviewing the facts presented by the source, IDEM agreed with the source and Condition D.3.7 is revised as follows:

D.3.7 Testing Requirements [326 IAC 2-7-6(1), (6)] [326 IAC 2-1.1-11]

Within 60 days after achieving maximum capacity but no later than 180 days after the startup of the RG Adhesive Rollcoating operation, to show compliance with Conditions D.3.1 and D.3.4, the Permitee shall conduct VOC testing for the Regenerative thermal oxidizer RTO-1 and thermal oxidizer RGO-1 utilizing methods as approved by the Commissioner. This test shall be repeated at least once every ~~two and a half years~~ **five (5)** years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C- Performance Testing.

ATTACHMENT A to
APPENDIX B (BACT)

COST/ECONOMIC IMPACT ANALYSIS

Complete this form for each BACT option in which cost and economic impacts are to be considered. On this form, do not include costs that would be incurred regardless of whether the BACT option is chosen. Attach a copy of the cost estimates in a format such that IDEM, OAM staff can easily reproduce the cost estimates. If the particular item is not applicable to the BACT option being evaluated, indicate "Not Applicable" (N/A) in the appropriate blanks. Add additional lines and/or copy the forms as necessary.

Source Information			
Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	1 & 2.) Thermal Oxidizer (cure oven)	**Pollutant:**	VOC

TOTAL CAPITAL INVESTMENT

Total Capital Investment (TCI) is the total direct and indirect capital costs associated with implementation of a BACT option. Use Tables A and B to indicate the direct and indirect capital costs that would be incurred above the baseline project costs. Summarize the total capital costs in Table C. Attach vendor quotes and additional sheets as necessary.

A. Direct Capital Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Purchased Equipment Costs		
1. Equipment Costs (Itemize below)		
Straight Thermal Oxidizer	$ 30,988	EPA Air Compliance Advisor
500 SCFM capacity	$	
(dedicated to cure oven exhaust)	$	
	$	
2. Instrumentation	$ included	
3. Sales Tax	$ 930	OAQPS Control Cost Manual
4. Freight	$ 1,549	OAQPS Control Cost Manual
5. Other (please specify)		
	$	

A. Direct Capital Costs		
6. **Purchased Equipment Subtotal** (Sum of Items 1, 2, 3, 4, and 5)	**$ 33,468**	OAQPS Control Cost Manual

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	Unit ID:	P012RG
BACT Option:	Thermal Oxidizer (cure oven Emissions)	Pollutant:	VOC

A. Direct Capital Costs (continued)		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Direct Installation Costs		
7. Foundations and Supports	$ 2,677	OAQPS Control Cost Manual
8. Auxiliaries (duct work, fittings - include only the equipment which would not be necessary if the facility was not controlled)	$included	OAQPS Control Cost Manual
9. Handling and Erection	$ 4,685	OAQPS Control Cost Manual
10. Piping	$ 669	OAQPS Control Cost Manual
11. Insulation and Painting	$ 669	OAQPS Control Cost Manual
12. Electrical	$ 1,339	OAQPS Control Cost Manual
13. Site Preparation	$included	OAQPS Control Cost Manual
14. Other (please specify)		
	$	
15. **Direct Installation Costs Subtotal** (Sum of Items 7, 8, 9, 10, 11, 12, 13, and 14)	**$ 10,040**	OAQPS Control Cost Manual
16. DIRECT CAPITAL COSTS SUBTOTAL (Sum of Items 6 and 15)	**$ 43,508**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Thermal Oxidizer (cure oven Emissions)	**Pollutant:**	VOC

B. Indirect Installation Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Engineering and Supervision	$ 3,347	OAQPS Control Cost Manual
2. Lost Production (for retrofit situations only)	$ N/A	
3. Construction and Field Expenses	$ 1,673	OAQPS Control Cost Manual
4. Contractor Fees	$ 3,347	OAQPS Control Cost Manual
5. Start-up and Performance Tests	$ 1,004	OAQPS Control Cost Manual
6. Over-all Contingencies	$ 1,004	OAQPS Control Cost Manual
7. Working Capital (if applicable)	$ N/A	
8. Other (please specify)		
	$	
9. **INDIRECT INSTALLATION COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, 7, and 8)	**$ 10,375**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Thermal Oxidizer (cure oven Emissions)	**Pollutant:**	VOC

C. Capital Cost Summary		
1.	**Total Capital Investment Subtotal** (Sum of Table A, Item 16 and Table B, Item 9)	**$ 53,883**
2.	**Capital Recovery Factor**	0.167
	a. Interest Rate	10%
	b. Economic Lifetime	10 years
3.	**CAPITAL RECOVERY COST**	**$ 8,655**

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	Unit ID:	P012RG
BACT Option:	Thermal Oxidizer (cure oven Emissions)	Pollutant:	VOC

TOTAL ANNUAL COST

Total Annual Cost includes the direct and indirect costs and recovery credits associated with implementation of a BACT option. Use Tables D and E to indicate the annual costs that would be incurred above the baseline project costs. Use Table F to indicate the recovery credits that would be realized after implementation of the BACT option. Summarize the total annual costs in Table G. Attach vendor quotes and additional sheets as necessary.

D. Direct Annual Costs

Item*	Cost Estimate	Reference/Source of Cost Estimate
1. Operating Labor (Itemize below)		
Operations	$ 4,377	OAQPS Control Cost Manual
Supervisory	$ 657	
2. Maintenance Labor (Itemize below)		
Scheduled/ Preventative Maintenance	$ 4,924	OAQPS Control Cost Manual
	$	
3. Materials (Itemize below)		
Maintenance Materials	$ 4,924	OAQPS Control Cost Manual
4. Utilities (Itemize below)		
Natural Gas	$ 3,937	OAQPS Control Cost Manual
Electricity	$ 1,484	OAQPS Control Cost Manual
5. Waste Treatment and Disposal (Itemize below)		
	$ N/A	
	$	
6. Replacement Parts (Itemize below)		
Replacement Parts	$ 437	OAQPS Control Cost Manual
	$	
7. Other (please specify)		
	$	
8. **DIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, and 7)	**$ 20,740**	OAQPS Control Cost Manual

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Thermal Oxidizer (cure oven Emissions)	**Pollutant:**	VOC

Comments/Explanation (Regarding Table D)
Due to the very small size of this unit, took only 50% of OAQPS estimate for operation and maintenance.

*Add lines as necessary

E. Indirect Annual Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Overhead	$ 8,929	OAQPS Control Cost Manual
2. Property Taxes, Insurance, and Administrative Charges	$ 2,156	OAQPS Control Cost Manual
3. Other (please specify)		
4. **INDIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ 11,085**	OAQPS Control Cost Manual

Comments/Explanation
Due to the very small size of this unit, took only 50% of OAQPS estimate for overhead.

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Thermal Oxidizer (cure oven Emissions)	**Pollutant:**	VOC

F. Recovery Credits		
Item*	**Credit Estimate**	**Reference/Source of Credit Estimate**
1. Materials Recovered		
	$ N/A	
2. Energy Recovered		
	$ N/A	
3. Other (please specify)		
	$	
4. **RECOVERY CREDITS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ N/A**	

Comments/Explanation

*Add lines as necessary

G. Total Annual Cost Summary	
1. Direct Annual Costs Subtotal from Table D, Item 8	**$ 20,740**
2. Indirect Annual Costs Subtotal from Table E, Item 4	**$ 11,085**
3. Recovery Credits Subtotal from Table F, Item 4	**$ N/A**
4. TOTAL ANNUAL COST SUBTOTAL (Item 1 plus Item 2 Minus Item 3)	**$ 31,825**

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Thermal Oxidizer (cure oven Emissions)	**Pollutant:**	VOC

TOTAL ANNUALIZED COST SUMMARY

H. Total Annualized Cost Summary	
1. **Capital Recovery Cost** from Table C, Item 3	**$ 8,655**
2. **Total Annual Cost Subtotal** from Table G, Item 4	**$ 31,825**
3. **TOTAL ANNUALIZED COST**(TAC)(Sum of Items 1 and 2)	**$ 40,480**

I. Cost Effectiveness	
1. Baseline Emissions Rate (tons per year)	48 ton/yr
2. Post-BACT Emissions Rate (tons per year)	2.4 ton/yr
3. Total Pollutant Removed (tons per year) (Difference of Item 1 and Item 2)	45.6 ton/yr
4. **AVERAGE COST EFFECTIVENESS OF BACT OPTION** ($/ton of pollutant removed) (Divide Table H, Item 3 by Table I, Item 3)	$888/ton reduced

Comments/Explanation

Cost effectiveness is calculated on the portion of VOC that will be emitted from

the RG coater cure oven. (15% of process emissions) See other forms for cost

effectiveness of coater room emissions control device.

Attachments: List attachments in the space below.

COST/ECONOMIC IMPACT ANALYSIS

Complete this form for each BACT option in which cost and economic impacts are to be considered. On this form, do not include costs that would be incurred regardless of whether the BACT option is chosen. Attach a copy of the cost estimates in a format such that IDEM, OAM staff can easily reproduce the cost estimates. If the particular item is not applicable to the BACT option being evaluated, indicate "Not Applicable" (N/A) in the appropriate blanks. Add additional lines and/or copy the forms as necessary.

Source Information			
Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	1.) Recuperative Thermal Oxidizer	**Pollutant:**	VOC

TOTAL CAPITAL INVESTMENT

Total Capital Investment (TCI) is the total direct and indirect capital costs associated with implementation of a BACT option. Use Tables A and B to indicate the direct and indirect capital costs that would be incurred above the baseline project costs. Summarize the total capital costs in Table C. Attach vendor quotes and additional sheets as necessary.

A. Direct Capital Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Purchased Equipment Costs		
1. Equipment Costs (Itemize below)		
Catalytic Incinerator	$ 239,382	EPA Air Compliance Advisor
~15,000 SCFM Capacity	$	
	$	
	$	
2. Instrumentation	$ included	
3. Sales Tax	$ 7,181	OAQPS Control Cost Manual
4. Freight	$ 11,969	OAQPS Control Cost Manual
5. Other (please specify)		
	$	
6. **Purchased Equipment Subtotal** (Sum of Items 1, 2, 3, 4, and 5)	**$ 258,533**	OAQPS Control Cost Manual

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Recuperative Thermal Oxidizer	**Pollutant:**	VOC

A. Direct Capital Costs (continued)		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Direct Installation Costs		
7. Foundations and Supports	$ 20,683	OAQPS Control Cost Manual
8. Auxiliaries (duct work, fittings - include only the equipment which would not be necessary if the facility was not controlled)	$included	OAQPS Control Cost Manual
9. Handling and Erection	$ 36,195	OAQPS Control Cost Manual
10. Piping	$ 5,171	OAQPS Control Cost Manual
11. Insulation and Painting	$ 5,171	OAQPS Control Cost Manual
12. Electrical	$ 10,341	OAQPS Control Cost Manual
13. Site Preparation	$included	OAQPS Control Cost Manual
14. Other (please specify)		
	$	
15. **Direct Installation Costs Subtotal** (Sum of Items 7, 8, 9, 10, 11, 12, 13, and 14)	**$ 77,560**	OAQPS Control Cost Manual
16. DIRECT CAPITAL COSTS SUBTOTAL (Sum of Items 6 and 15)	**$ 336,093**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Recuperative Thermal Oxidizer	**Pollutant:**	VOC

B. Indirect Installation Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Engineering and Supervision	$ 35,853	OAQPS Control Cost Manual
2. Lost Production (for retrofit situations only)	$ N/A	
3. Construction and Field Expenses	$ 12,927	OAQPS Control Cost Manual
4. Contractor Fees	$ 25,853	OAQPS Control Cost Manual
5. Start-up and Performance Tests	$ 7,756	OAQPS Control Cost Manual
6. Over-all Contingencies	$ 7,756	OAQPS Control Cost Manual
7. Working Capital (if applicable)	$ N/A	
8. Other (please specify)		
	$	
9. **INDIRECT INSTALLATION COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, 7, and 8)	**$ 80,145**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Recuperative Thermal Oxidizer	**Pollutant:**	VOC

C. Capital Cost Summary	
1. **Total Capital Investment Subtotal** (Sum of Table A, Item 16 and Table B, Item 9)	**$ 416,238**
2. **Capital Recovery Factor**	0.167
a. Interest Rate	10%
b. Economic Lifetime	10 years
3. **CAPITAL RECOVERY COST**	**$ 67,741**

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG

BACT Option:	Recuperative Thermal Oxidizer	Pollutant:	VOC

TOTAL ANNUAL COST

Total Annual Cost includes the direct and indirect costs and recovery credits associated with implementation of a BACT option. Use Tables D and E to indicate the annual costs that would be incurred above the baseline project costs. Use Table F to indicate the recovery credits that would be realized after implementation of the BACT option. Summarize the total annual costs in Table G. Attach vendor quotes and additional sheets as necessary.

D. Direct Annual Costs

Item*	Cost Estimate	Reference/Source of Cost Estimate
1. Operating Labor (Itemize below)		
Operations	$ 8,754	OAQPS Control Cost Manual
Supervisory	$ 1,313	
2. Maintenance Labor (Itemize below)		
Scheduled/ Preventative Maintenance	$ 9,848	OAQPS Control Cost Manual
	$	
3. Materials (Itemize below)		
Maintenance Materials	$ 9,848	OAQPS Control Cost Manual
4. Utilities (Itemize below)		
Natural Gas	$ 556,781	OAQPS Control Cost Manual
Electricity	$ 36,767	OAQPS Control Cost Manual
5. Waste Treatment and Disposal (Itemize below)		
	$ N/A	
	$	
6. Replacement Parts (Itemize below)		
Replacement Parts	$ 0	OAQPS Control Cost Manual
	$	
7. Other (please specify)		
	$	
8. **DIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, and 7)	**$ 586,544**	OAQPS Control Cost Manual

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Recuperative Thermal Oxidizer	**Pollutant:**	VOC

Comments/Explanation (Regarding Table D)

*Add lines as necessary

E. Indirect Annual Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Overhead	$ 17,858	OAQPS Control Cost Manual
2. Property Taxes, Insurance, and Administrative Charges	$ 16,649	OAQPS Control Cost Manual
3. Other (please specify)		
	$	
4. **INDIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ 34,507**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Recuperative Thermal Oxidizer	**Pollutant:**	VOC

F. Recovery Credits		
Item*	**Credit Estimate**	**Reference/Source of Credit Estimate**
1. Materials Recovered		
	$ N/A	
2. Energy Recovered		
	$ N/A	
3. Other (please specify)		
	$	
5. **RECOVERY CREDITS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ N/A**	

Comments/Explanation

*Add lines as necessary

G. Total Annual Cost Summary	
1. **Direct Annual Costs Subtotal** from Table D, Item 8	**$ 586,544**
2. **Indirect Annual Costs Subtotal** from Table E, Item 4	**$ 34,507**
3. **Recovery Credits Subtotal** from Table F, Item 4	**$ N/A**
4. **TOTAL ANNUAL COST SUBTOTAL** (Item 1 plus Item 2 Minus Item 3)	**$ 621,051**

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Recuperative Thermal Oxidizer	**Pollutant:**	VOC

TOTAL ANNUALIZED COST SUMMARY

H. Total Annualized Cost Summary	
1. **Capital Recovery Cost** from Table C, Item 3	**$ 67,741**
2. **Total Annual Cost Subtotal** from Table G, Item 4	**$ 621,051**
3. **TOTAL ANNUALIZED COST**(TAC)(Sum of Items 1 and 2)	**$ 688,792**

I. Cost Effectiveness	
1. Baseline Emissions Rate (tons per year)	272 tons/yr
3. Post-BACT Emissions Rate (tons per year)	13.6 tons/yr
4. Total Pollutant Removed (tons per year) (Difference of Item 1 and Item 2)	258.4 tons/yr
4. **AVERAGE COST EFFECTIVENESS OF BACT OPTION** ($/ton of pollutant removed) (Divide Table H, Item 3 by Table I, Item 3)	$2,665/ton reduced

Comments/Explanation
This estimate of cost does not include heat exchanger maintenance that would be
required to remove the anticipated build-up of resin solids that would occur.
Cost effectiveness is calculated on the portion of VOC that will be emitted from
the rollcoater room. (85% of process emissions) Cure oven emissions will be
routed to a dedicated, 95% efficient cure oven afterburner control device.

Attachments: List attachments in the space below.	

COST/ECONOMIC IMPACT ANALYSIS

Complete this form for each BACT option in which cost and economic impacts are to be considered. On this form, do not include costs that would be incurred regardless of whether the BACT option is chosen. Attach a copy of the cost estimates in a format such that IDEM, OAM staff can easily reproduce the cost estimates. If the particular item is not applicable to the BACT option being evaluated, indicate "Not Applicable" (N/A) in the appropriate blanks. Add additional lines and/or copy the forms as necessary.

Source Information			
Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	2.) Regenerative Thermal Oxidizer	**Pollutant:**	VOC

TOTAL CAPITAL INVESTMENT

Total Capital Investment (TCI) is the total direct and indirect capital costs associated with implementation of a BACT option. Use Tables A and B to indicate the direct and indirect capital costs that would be incurred above the baseline project costs. Summarize the total capital costs in Table C. Attach vendor quotes and additional sheets as necessary.

A. Direct Capital Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Purchased Equipment Costs		
1. Equipment Costs (Itemize below)		
Regenerative Thermal Oxidizer	$ 297,746	EPA Air Compliance Advisor
~15,000 SCFM Capacity	$	
	$	
	$	
2. Instrumentation	$ included	
3. Sales Tax	$ 8,932	OAQPS Control Cost Manual
4. Freight	$ 14,887	OAQPS Control Cost Manual
5. Other (please specify)		
	$	
6. **Purchased Equipment Subtotal** (Sum of Items 1, 2, 3, 4, and 5)	**$ 321,566**	OAQPS Control Cost Manual

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	Unit ID:	P012RG
BACT Option:	Regenerative Thermal Oxidizer	Pollutant:	VOC

A. Direct Capital Costs (continued)		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Direct Installation Costs		
7. Foundations and Supports	$ 25,725	OAQPS Control Cost Manual
8. Auxiliaries (duct work, fittings - include only the equipment which would not be necessary if the facility was not controlled)	$included	OAQPS Control Cost Manual
9. Handling and Erection	$ 45,019	OAQPS Control Cost Manual
10. Piping	$ 6,431	OAQPS Control Cost Manual
11. Insulation and Painting	$ 6,431	OAQPS Control Cost Manual
12. Electrical	$ 12,863	OAQPS Control Cost Manual
13. Site Preparation	$included	OAQPS Control Cost Manual
14. Other (please specify)		
	$	
15. **Direct Installation Costs Subtotal** (Sum of Items 7, 8, 9, 10, 11, 12, 13, and 14)	**$ 96,470**	OAQPS Control Cost Manual
16. DIRECT CAPITAL COSTS SUBTOTAL (Sum of Items 6 and 15)	**$ 418,036**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Regenerative Thermal Oxidizer	**Pollutant:**	VOC

B. Indirect Installation Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Engineering and Supervision	$ 32,157	OAQPS Control Cost Manual
2. Lost Production (for retrofit situations only)	$ N/A	
3. Construction and Field Expenses	$ 16,078	OAQPS Control Cost Manual
4. Contractor Fees	$ 32,157	OAQPS Control Cost Manual
5. Start-up and Performance Tests	$ 9,647	OAQPS Control Cost Manual
6. Over-all Contingencies	$ 9,647	OAQPS Control Cost Manual
7. Working Capital (if applicable)	$ N/A	
8. Other (please specify)		
	$	
9. **INDIRECT INSTALLATION COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, 7, and 8)	**$ 99,685**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Regenerative Thermal Oxidizer	**Pollutant:**	VOC

C. Capital Cost Summary		
1.	**Total Capital Investment Subtotal** (Sum of Table A, Item 16 and Table B, Item 9)	**$ 517,721**
2.	**Capital Recovery Factor**	0.167
	a. Interest Rate	10%
	b. Economic Lifetime	10 years
3.	**CAPITAL RECOVERY COST**	**$ 84,257**

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG

BACT Option:	Regenerative Thermal Oxidizer	Pollutant:	VOC

TOTAL ANNUAL COST

Total Annual Cost includes the direct and indirect costs and recovery credits associated with implementation of a BACT option. Use Tables D and E to indicate the annual costs that would be incurred above the baseline project costs. Use Table F to indicate the recovery credits that would be realized after implementation of the BACT option. Summarize the total annual costs in Table G. Attach vendor quotes and additional sheets as necessary.

D. Direct Annual Costs

Item*	Cost Estimate	Reference/Source of Cost Estimate
1. Operating Labor (Itemize below)		
Operations	$ 8,754	OAQPS Control Cost Manual
Supervisory	$ 1,313	
2. Maintenance Labor (Itemize below)		
Scheduled/ Preventative Maintenance	$ 9,848	OAQPS Control Cost Manual
	$	
3. Materials (Itemize below)		
Maintenance Materials	$ 9,848	OAQPS Control Cost Manual
4. Utilities (Itemize below)		
Natural Gas	$ 109,466	OAQPS Control Cost Manual
Electricity	$ 38,702	OAQPS Control Cost Manual
5. Waste Treatment and Disposal (Itemize below)		
	$ N/A	
	$	
6. Replacement Parts (Itemize below)		
Replacement Parts	$ 0	OAQPS Control Cost Manual
	$	
7. Other (please specify)		
	$	
8. **DIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, and 7)	**$ 139,229**	OAQPS Control Cost Manual

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Regenerative Thermal Oxidizer	**Pollutant:**	VOC

Comments/Explanation (Regarding Table D)

*Add lines as necessary

E. Indirect Annual Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Overhead	$ 17,858	OAQPS Control Cost Manual
2. Property Taxes, Insurance, and Administrative Charges	$ 20,708	OAQPS Control Cost Manual
3. Other (please specify)		
4. **INDIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ 38,566**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Regenerative Thermal Oxidizer	**Pollutant:**	VOC

F. Recovery Credits		
Item*	**Credit Estimate**	**Reference/Source of Credit Estimate**
1. Materials Recovered		
	$ N/A	
2. Energy Recovered		
	$ N/A	
3. Other (please specify)		
	$	
6. **RECOVERY CREDITS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ N/A**	

Comments/Explanation

*Add lines as necessary

G. Total Annual Cost Summary	
1. **Direct Annual Costs Subtotal** from Table D, Item 8	**$ 139,229**
2. **Indirect Annual Costs Subtotal** from Table E, Item 4	**$ 38,566**
3. **Recovery Credits Subtotal** from Table F, Item 4	**$ N/A**
4. **TOTAL ANNUAL COST SUBTOTAL** (Item 1 plus Item 2 Minus Item 3)	**$ 177,795**

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Regenerative Thermal Oxidizer	**Pollutant:**	VOC

TOTAL ANNUALIZED COST SUMMARY

H. Total Annualized Cost Summary	
1. **Capital Recovery Cost** from Table C, Item 3	**$ 84,257**
2. **Total Annual Cost Subtotal** from Table G, Item 4	**$ 177,795**
3. **TOTAL ANNUALIZED COST**(TAC)(Sum of Items 1 and 2)	**$ 262,052**

I. Cost Effectiveness	
1. Baseline Emissions Rate (tons per year)	272 ton/yr
4. Post-BACT Emissions Rate (tons per year)	13.6 ton/yr
5. Total Pollutant Removed (tons per year) (Difference of Item 1 and Item 2)	258.4 ton/yr
4. **AVERAGE COST EFFECTIVENESS OF BACT OPTION** ($/ton of pollutant removed) (Divide Table H, Item 3 by Table I, Item 3)	$1,014/ton reduced

Comments/Explanation
This estimate of cost does not include the cost of periodic closed loop clean-
out cycles that will be required to remove condensed resin build-up from the
ceramic media.
Cost effectiveness is calculated on the portion of VOC that will be emitted from
the rollcoater room. (~85% of process emissions) Cure oven emissions will be
routed to a dedicated, 95% efficient cure oven afterburner control device.

Attachments: List attachments in the space below.	

COST/ECONOMIC IMPACT ANALYSIS

Complete this form for each BACT option in which cost and economic impacts are to be considered. On this form, do not include costs that would be incurred regardless of whether the BACT option is chosen. Attach a copy of the cost estimates in a format such that IDEM, OAM staff can easily reproduce the cost estimates. If the particular item is not applicable to the BACT option being evaluated, indicate "Not Applicable" (N/A) in the appropriate blanks. Add additional lines and/or copy the forms as necessary.

Source Information			
Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Large Regen. Thermal Oxidizer + PTE	**Pollutant:**	VOC

TOTAL CAPITAL INVESTMENT

Total Capital Investment (TCI) is the total direct and indirect capital costs associated with implementation of a BACT option. Use Tables A and B to indicate the direct and indirect capital costs that would be incurred above the baseline project costs. Summarize the total capital costs in Table C. Attach vendor quotes and additional sheets as necessary.

A. Direct Capital Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Purchased Equipment Costs		
1. Equipment Costs (Itemize below)		
Regenerative Thermal Oxidizer	$ 603,806	EPA Air Compliance Advisor
50,000 CFM, 97.5% destruction eff.	$	
	$	
	$	
2. Instrumentation	$ 60,381	OAQPS Control Cost Manual
3. Sales Tax	$ 18,114	OAQPS Control Cost Manual
4. Freight	$ 30,190	OAQPS Control Cost Manual
5. Other (please specify)		
	$	
6. **Purchased Equipment Subtotal** (Sum of Items 1, 2, 3, 4, and 5)	**$ 712,491**	OAQPS Control Cost Manual

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	Unit ID:	P012RG
BACT Option:	Large Regen. Thermal Oxidizer + PTE	Pollutant:	VOC

A. Direct Capital Costs (continued)		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
Direct Installation Costs		
7. Foundations and Supports	$ 56,999	OAQPS Control Cost Manual
8. Auxiliaries (duct work, fittings - include only the equipment which would not be necessary if the facility was not controlled)	$included	OAQPS Control Cost Manual
9. Handling and Erection	$ 99,749	OAQPS Control Cost Manual
10. Piping	$ 14,250	OAQPS Control Cost Manual
11. Insulation and Painting	$ 14,250	OAQPS Control Cost Manual
12. Electrical	$ 28,500	OAQPS Control Cost Manual
13. Site Preparation	$included	OAQPS Control Cost Manual
14. Other (please specify)		
	$	
15. **Direct Installation Costs Subtotal** (Sum of Items 7, 8, 9, 10, 11, 12, 13, and 14)	**$ 213,747**	OAQPS Control Cost Manual
16. DIRECT CAPITAL COSTS SUBTOTAL (Sum of Items 6 and 15)	**$ 926,238**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Large Regen. Thermal Oxidizer + PTE	**Pollutant:**	VOC

B. Indirect Installation Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Engineering and Supervision	$ 71,249	OAQPS Control Cost Manual
2. Lost Production (for retrofit situations only)	$ N/A	
3. Construction and Field Expenses	$ 35,625	OAQPS Control Cost Manual
4. Contractor Fees	$ 71,249	OAQPS Control Cost Manual
5. Start-up and Performance Tests	$ 21,375	OAQPS Control Cost Manual
6. Over-all Contingencies	$ 21,375	OAQPS Control Cost Manual
7. Working Capital (if applicable)	$ N/A	
8. Other (please specify)		
	$	
9. **INDIRECT INSTALLATION COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, 7, and 8)	**$ 220,872**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Large Regen. Thermal Oxidizer + PTE	**Pollutant:**	VOC

C. Capital Cost Summary	
1. **Total Capital Investment Subtotal** (Sum of Table A, Item 16 and Table B, Item 9)	**$ 1,147,110**
2. **Capital Recovery Factor**	0.167
a. Interest Rate	10%
b. Economic Lifetime	10 years
3. **CAPITAL RECOVERY COST**	**$ 191,567**

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG

BACT Option:	3. Large Regen. Thermal Oxidizer + PTE	Pollutant:	VOC

TOTAL ANNUAL COST

Total Annual Cost includes the direct and indirect costs and recovery credits associated with implementation of a BACT option. Use Tables D and E to indicate the annual costs that would be incurred above the baseline project costs. Use Table F to indicate the recovery credits that would be realized after implementation of the BACT option. Summarize the total annual costs in Table G. Attach vendor quotes and additional sheets as necessary.

D. Direct Annual Costs

Item*	Cost Estimate	Reference/Source of Cost Estimate
1. Operating Labor (Itemize below)		
Operations	$ 8,754	OAQPS Control Cost Manual
Supervisory	$ 1,313	
2. Maintenance Labor (Itemize below)		
Scheduled/ Preventative Maintenance	$ 9,848	OAQPS Control Cost Manual
	$	
3. Materials (Itemize below)		
Maintenance Materials	$ 9,848	OAQPS Control Cost Manual
4. Utilities (Itemize below)		
Natural Gas	$ 367,878	OAQPS Control Cost Manual
Electricity	$ 129,007	OAQPS Control Cost Manual
5. Waste Treatment and Disposal (Itemize below)		
	$ N/A	
	$	
6. Replacement Parts (Itemize below)		
Replacement Parts	$ 0	OAQPS Control Cost Manual
	$	
7. Other (please specify)		
	$	
8. **DIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, and 7)	**$ 526,648**	OAQPS Control Cost Manual

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Large Regen. Thermal Oxidizer + PTE	**Pollutant:**	VOC

Comments/Explanation (Regarding Table D)

*Add lines as necessary

E. Indirect Annual Costs		
Item*	**Cost Estimate**	**Reference/Source of Cost Estimate**
1. Overhead	$ 17,858	OAQPS Control Cost Manual
2. Property Taxes, Insurance, and Administrative Charges	$ 22,942	OAQPS Control Cost Manual
3. Other (please specify)		
4. **INDIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ 40,800**	OAQPS Control Cost Manual

Comments/Explanation

*Add lines as necessary

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Large Regen. Thermal Oxidizer + PTE	**Pollutant:**	VOC

F. Recovery Credits		
Item*	**Credit Estimate**	**Reference/Source of Credit Estimate**
1. Materials Recovered		
	$ N/A	
2. Energy Recovered		
	$ N/A	
3. Other (please specify)		
	$	
7. **RECOVERY CREDITS SUBTOTAL** (Sum of Items 1, 2, and 3)	**$ N/A**	

Comments/Explanation

*Add lines as necessary

G. Total Annual Cost Summary	
1. Direct Annual Costs Subtotal from Table D, Item 8	**$ 526,648**
2. Indirect Annual Costs Subtotal from Table E, Item 4	**$ 40,800**
3. Recovery Credits Subtotal from Table F, Item 4	**$ N/A**
4. TOTAL ANNUAL COST SUBTOTAL (Item 1 plus Item 2 Minus Item 3)	**$ 567,448**

Facility:	Raybestos Products Company RG Coater	**Unit ID:**	P012RG
BACT Option:	Large Regen. Thermal Oxidizer + PTE	**Pollutant:**	VOC

TOTAL ANNUALIZED COST SUMMARY

H. Total Annualized Cost Summary	
1. **Capital Recovery Cost** from Table C, Item 3	**$ 191,567**
2. **Total Annual Cost Subtotal** from Table G, Item 4	**$ 567,448**
3. **TOTAL ANNUALIZED COST**(TAC)(Sum of Items 1 and 2)	**$ 759,015**

I. Cost Effectiveness	
1. Baseline Emissions Rate (tons per year)	320 ton/yr
5. Post-BACT Emissions Rate (tons per year)	8 ton/yr
6. Total Pollutant Removed (tons per year) (Difference of Item 1 and Item 2)	312 ton/yr
4. **AVERAGE COST EFFECTIVENESS OF BACT OPTION** ($/ton of pollutant removed) (Divide Table H, Item 3 by Table I, Item 3)	$2,433/ton reduced

Comments/Explanation
This estimate of cost does not include the cost of periodic closed loop clean-
out cycles that will be required to remove condensed resin build-up from the
ceramic media.
Cost effectiveness is calculated on the total of VOC that will be emitted from
the process. (100% capture of process emissions)

Attachments: List attachments in the space below.	

Appendix B
Best Available Control Technology (BACT) Determination

Source Name: Raybestos Products Company
Source Location: 1204 Darlington Avenue, Crawfordsville, Indiana 47933
County: Montgomery
SIC Code: 3499
Operation Permit No.: T107-6836-00007
Operation Permit Issuance Date: April 14, 1999
Source Modification No.: SSM107-20094-00007
Permit Modification No.: SPM107-20114-00007
Permit Reviewer: Rajnish Sharma/EVP

Raybestos Products Company has performed a BACT analysis for a major modification to an existing stationary automotive parts manufacturing operation. This modification involves the modification of an existing unit P012 by adding a RG adhesive rollcoater to apply adhesive coating to paper based friction rings used in a torque converter assembly, a 0.5 MMBtu/hr natural gas fired cure oven, a new thermal oxidizer RGO-1 and miscellaneous solvent usage.

The source is located in Montgomery County which is designated as attainment for all criteria pollutants. Based upon emission calculations completed by IDEM and the source, the modification shall result in a net increase of uncontrolled potential volatile organic compound (VOC) emissions of greater than twenty-five (25) tons per year. Therefore, pursuant to 326 IAC 8-1-6 the source shall reduce VOC emissions from the new facilities, which are not regulated by other provisions of 326 IAC 8, using best available control technology (BACT). The purpose of this BACT Analysis is to evaluate the level of control that constitutes BACT for the affected facilities.

IDEM conducts BACT analyses in accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, which outlines the steps for conducting a top-down BACT analysis. The steps are discussed as follows:

1. Identify all potentially available control options

The first step in evaluating potential applicable control technologies involved a review of control technology determinations made for surface coating sources. The USEPA's RACT /BACT /LAER clearinghouse (RBLC) database was searched for the purpose of identifying comparable sources that have implemented BACT for the affected facilities.

EPA's RBLC was queried for the existence of control technology determinations for surface coating operations containing the keyword "adhesive" within the past 10 years. The results of this query were reviewed for relevance to the Raybestos RG rollcoating process (bonding of friction material), the range of control technology utilized, and the extent of control efficiency achieved. The five most relevant of these entries are included in the form of a table, and are summarized on page 2 of this BACT analysis.

Source	Affected Facility	BACT Determination	Reference
A. Dynax America Corp, Botetourt County, VA	BASE PAPER SATURATION #2, ADHESIVE COATER, BONDING	97.1% overall control efficiency using thermal incineration on a resin and adhesive coating operation – 8/18/2000	EPA RACT/ BACT/ LAER clearinghouse
B. John Deal Coatings, Inc., Wilson County, TN	Pressure sensitive adhesive Coater	90% overall control efficiency using thermal incineration controlling adhesives coating line – 6/21/91	EPA RACT/ BACT/ LAER clearinghouse
C. Dynax America Corp, Botetourt County, VA	RESIN & ADHESIVE SATURATION, COATING, BONDING, #1	86.7% overall control efficiency using thermal incineration on a resin and adhesive coating operation – 8/18/2000	EPA RACT/ BACT/ LAER clearinghouse
D. Toyota Motor Services, Gibson County, IN	Coating, Sealer and Adhesive Application	Use of a 3.5 lb VOC per gallon less water adhesive coating – 8/9/1996	EPA RACT/ BACT/ LAER clearinghouse
E. Thyssen Rupp Elevator Systems, Hardeman County, TN	Adhesive spray booth	Use of a 5.3 lb VOC per gallon adhesive coating within a 67.5 ton per year adhesive spray booth – 06/26/2000	EPA RACT/ BACT/ LAER clearinghouse

The entire range of control technologies included in the RBLC for adhesive surface coating operations, which includes utilizing thermal incineration and the use of low VOC adhesive, was evaluated for technical feasibility in regard to the Raybestos RG Adhesive Roll Coater process.

In addition to the technologies listed in the RBLC, catalytic oxidation and carbon adsorption were also considered for analysis.

The control technologies considered in the BACT analysis were:

1) Recuperative Thermal Incineration
2) Regeneration Thermal Incineration
3) Thermal Incineration
4) Lower VOC or Water based Adhesive
5) Catalytic Thermal Incineration
6) Carbon Adsorption Systems

Out of these options the first three were considered feasible for the adhesive rollcoating operation.

1) Recuperative Thermal Incineration is technically feasible, but there are concerns about condensable resin build-up in the heat exchanger inlet

2) Regenerative Thermal Incineration is technically feasible, and has been proven in practice to control the emissions from this process

3) Thermal Incineration is technically feasible and has been proven in practice to control the emissions from this process.

2. Eliminate technically infeasible control options

The other three options were not considered feasible because:

1) The required adhesive resins are only soluble in solvents and cannot be used with water base adhesive, and the solids content of the adhesive has been optimized for a roll coating operation. Rollcoating has excellent transfer efficiency. The Raybestos coating has 5.6 lb VOC/gal, very close to the 5.3 lb VOC/gal spray adhesive coating determined to be BACT without control at THYSSEN ELEVATOR SYSTEMS in June of 2000.
2) Semi-Volatile organic compounds (phenol, cresol) in the resin tend to condense and coat the catalyst, rendering the catalyst ineffective. Therefore, catalytic incineration is not feasible.
3) Semi-Volatile organic compounds (phenol, cresol) are not efficiently desorbed from carbon, which quickly degrades absorption capacity, and renders the system ineffective. Therefore carbon adsorption technology is deemed not feasible.

A cost analysis was performed to determine the economic feasibility of each of the technically feasible control technologies.

3. Rank remaining control technologies by control effectiveness

Raybestos first evaluated its plan to achieve a high degree of capture and control efficiency using a capture and control system similar to its existing adhesive roll coating operation. This system is anticipated to achieve greater than 95% overall control of VOC and HAP emissions (~97.5% capture and ~97.5% destruction) through a combination of coating room and oven capture and control systems using thermal oxidation and minimal air flow. Using this method, concentrations of VOC to the oxidizer are high, and the majority of VOC can be captured. However, air flow is not sufficient to maintain a permanent total enclosure at all times, and the concentration of solvent vapors inside the coating room could periodically exceed permissible 8-hour exposure limits. This scenario was the basis for BACT options 1 and 2, as summarized in the table on page 4 and uses a combination of controls, including a 15,000 CFM Regenerative or Recuperative Thermal Oxidizer for control of coating room emissions and a straight thermal oxidizer for control of cure oven emissions.

Raybestos next evaluated a the use of a permanent total enclosure that would provide for 100% capture of coating room and cure oven emissions, while maintaining adequate air flow through the permanent enclosure so as not to exceed permissible exposure limits for any solvent constituent within the enclosure. This scenario was the basis for BACT option 3, as summarized in the table below, and uses a single 50,000 CFM Regenerative Thermal Oxidizer for control of coating room and cure oven emissions. 50,000 CFM was the minimum air flow needed to maintain solvent concentrations within the permanent enclosure beneath the applicable 8-hour permissible exposure limits.

The technically feasible approaches for controlling VOC emissions from the Raybestos operations are considered below:

Baseline Emissions : 320 tons/ year			
BACT Option	Controlled Emissions Rate (tpy)	Emissions Reduction (tpy)	Overall System Pollution Reduction Efficiency (%)
1.) Recuperative TO control of roll coater room emissions with direct Thermal Oxidation of cure oven emissions	16	304	Capture 97.5% Destruction 97.5%, Overall > 95%
2.) Regenerative TO control of roll coater room emissions with direct Thermal Oxidation of cure oven emissions	16	304	Capture 97.5% Destruction 97.5%, Overall > 95%
3.) Permanent Total Enclosure of Roll Coater room and Regenerative Thermal Oxidizer control of Coater Room and Cure Oven Emissions	8	312	Capture 100% Destruction 97.5%, Overall > 97.5%

4. Evaluate the most effective controls and document results

Raybestos Products Company provided IDEM with a thorough economic analysis of the three (3) control options considered. The analysis estimated the cost of the VOC control equipment, including the estimated annual operating costs. The estimated total capital cost was calculated with the use of a factoring method of determining direct and indirect installation costs. The basic equipment costs were obtained from vendor's quoted prices. Annualized costs were developed based on information from the vendors and a literature review. The analysis assumed an interest rate of 10 % and an equipment life of 10 years. A summary of the cost figures determined in the analysis is provided in the table below:

(C) Evaluation

Option	Total Annual * Operating Costs	Emissions Removed (tons/yr)	Overall Control Efficiency (%)	$/ton Removed
Recuperative Thermal Oxidizer plus Thermal Oxidizer	729,272	304	95	2,399
Regenerative Thermal Oxidizer plus Thermal Oxidizer	302,532	304	95	995
Large Thermal Oxidizer plus permanent total enclosure	567,448	312	97.5	2,433

* The annualized cost ($/ton removed) was obtained from the cost estimations of the source's BACT analysis which was reviewed by IDEM and was determined to be accurate. The cost estimations provided by source are included in Attachment A.

As indicated in the cost evaluation table, while all options appear to be cost effective on an average $/ton reduced basis, option 3 was considered to require a very significant capital investment and to be extremely cost prohibitive on an incremental cost basis as the cost increased by $33115/ton when compared to option 2. For all of its additional capital cost, Option 3 only results in a net reduction of 8 additional tons per year, while using significantly more resources than option 2. Therefore, since option 2 achieves the same control efficiency as option 1, but at lower cost and with less adverse impact than option 1, Raybestos proposes to implement option 2 as BACT for this process.

Raybestos Products Company will use a combination of controls, including using the existing Regenerative Thermal oxidizer RTO-1 for controlling RG adhesive rollcoating room emissions and a new thermal oxidizer RGO-1 for control of the cure oven emissions as the BACT for the proposed RG adhesive rollcoating operation. RTO-1 and RGO-1 shall be maintained in good working order and utilize best management work practices to minimize VOC emissions from the proposed units. Also the existing Regenerative thermal oxidizer (RTO-1) and the proposed thermal oxidizer RGO-1 shall be in operation at all the times when the rollcoating operation is in use to satisfy the requirements of 326 IAC 8-1-6.

Appendix A: Emission Calculations
HAP Emission Calculations

Company Name: Raybestos Products Company
Address City IN Zip: 1204 Darlington Ave., Crawfordsville, IN 47933
Permit Number: 107-20094-00007
Permit Reviewer: RS/EVP
Date: 3/9/2005

Material	Density (Lb/Gal)	Gallons of Material (gal/unit)	Maximum (unit/hour)	Weight % MEK	Weight % Phenol	Weight % Formaldehyde	Weight % o-Cresol	Weight % Hexane	Weight % Glycol Ethers	Weight % Methanol	MEK Emissions (ton/yr)	Phenol Emissions (ton/yr)	Formaldehyde Emissions (ton/yr)	o-Cresol Emissions (ton/yr)	Hexane Emissions (ton/yr)	Glycol Ethers Emissions (ton/yr)	Methanol Emissions (ton/yr)
Adhesive	7.8	0.006400	1444.00	55.00%	1.50%	0.29%	0.59%	0.00%	0.00%	0.00%	173.65	4.74	0.92	1.86	0.00	0.00	0.00
Reducer	7.31	0.001990	1444.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total State Potential Emissions											**173.65**	**4.74**	**0.92**	**1.86**	**0.00**	**0.00**	**0.00**

METHODOLOGY

HAPS emission rate (tons/yr) = Density (lb/gal) * Gal of Material (gal/unit) * Maximum (unit/hr) * Weight % HAP * 8760 hrs/yr * 1 ton/2000 lbs

The facility will use a combination of thermal oxidizers to control VOC/HAP emissions by 90% overall, and will additionally limit its federally enforceable potential to emit by restricting individual HAP emissions, prior to control, to 95 tons/12 mo.

Federally Enforceable HAP Emission Limitations

	12-mos Input Usage Limit (HAP)	12-mos Total Emissions (HAP)	Control Efficiency (HAP)	Controlled HAP tons per Year
Total Individual HAP Controlled/Limited Potential to Emit (MEK):	--	173.7	95.0%	**8.7**
Total Combined HAP Controlled/Limited Potential to Emit:	--	181.2	95.0%	**9.1**

Appendix A: Emissions Calculations
VOC and Particulate
From Surface Coating Operations

Company Name: Raybestos Products Company
Address City IN Zip: 1204 Darlington Ave., Crawfordsville, IN 47933
Permit Number: 107-20094-00007
Permit Reviewer: RS/EVP
Date: 3/9/2005

Material	Density (Lb/Gal)	Weight % Volatile (H20 & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential (ton/yr)	lb VOC/gal solids	Transfer Efficiency
Worst Case Adhesive	7.8	72.66%	0.37%	72.29%	0.35%	29.00%	0.00640	1444.000	5.66	5.64	52.11	1250.64	228.24	0.00	19.44	100%
Viscosity Reducer	7.3	100.00%	0.15%	99.85%	0.13%	0.00%	0.00199	1444.000	7.31	7.31	20.99	503.79	91.94	0.00	NA	NA
State Potential Emissions			**Add worst case coating to all solvents**								**73.10**	**1754.43**	**320.18**	**0.00**		

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)
Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)
Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)
Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)
Total = Worst Coating + Sum of all solvents used

The facility will use a combination of thermal oxidizers to control VOC emissions by 90% overall, and will additionally limit its federally enforceable potential to emit by restricting VOC emissions, prior to control, to 240 tons/12 mo.

Federally Enforceable VOC Emission Limitation

	12-mos Input Usage Limit (VOC)	Control Efficiency (VOC)	Controlled VOC lbs per Hour	Controlled VOC lbs per Day	Controlled VOC tons per Year
Total Controlled/Limited Potential to Emit:	**--**	95.0%	3.66	87.72	**16.0**

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: Raybestos Products Company
Address City IN Zip: 1204 Darlington Ave., Crawfordsville, IN 47933
Permit Number: 107-20094-00007
Permit Reviewer: RS/EVP
Date: 3/9/2005

Heat Input Capacity MMBtu/hr		Potential Throughput MMCF/yr
0.5	Drying Oven	
2.2	RGO Oxidizer	
2.7	Total	23.7

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.0	0.1	0.0	1.2	0.1	1.0

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note to Reviewer: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).
See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler
HAPs Emissions

Company Name: Raybestos Products Company
Address City IN Zip: 1204 Darlington Ave., Crawfordsville, IN 47933
Permit Number:
Plt ID: 107-0007
Reviewer:
Date:

	HAPs - Organics				
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	2.483E-05	1.419E-05	8.870E-04	2.129E-02	4.021E-05

	HAPs - Metals				
	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	5.913E-06	1.301E-05	1.656E-05	4.494E-06	2.483E-05

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.