

Mr. Dennis G. Yoder
Royal Crown Limited
401 East Syracuse Road
Milford, Indiana 46547

Re: CP-085-10399
Modification to CP-085-9961-00080

Dear Mr. Yoder:

Royal Crown Limited was issued a Construction Permit on September 30, 1998, for a PVC plastic extrusion process. On November 18, 1998, Royal Crown Limited submitted a letter requesting changes to the original configuration of grinding equipment to include two (2) additional grinders (designated #3 and #4) with an additional grinding capacity of 600 pounds per hour. The Office of Air Management (OAM) has determined that the following unit descriptions and operating conditions of the permit (CP-085-9961-00080) shall be modified as follows:

1. The emission unit description in Item (i) of Section A.2 on Page 5 of the permit shall be revised to reflect the addition of the two (2) grinders as follows:

A.2 (i) ~~Two (2)~~ **Four (4)** PVC Grinders identified as # ~~1 and~~, # 2, **#3 and #4** with a maximum capacity of ~~343~~ **943** pounds scrap plastics per hour, transferring to Regrind silos identified as RS₁ through RS₆, particulate matter (PM) emissions are controlled by a bag filter identified as RSF₁.
2. The grinding operations emission units descriptions in Item (i) at the beginning of Section D.1 on Page 14 of the permit shall be revised to be consistent with the changes outlined in Item 1, above.
3. Item (c) of Condition D.1.1 (Particulate Matter (PM)) on Page 14 of the permit shall be revised as follows to reflect the change in the 326 IAC 6-3 allowable emissions based on the increased maximum capacity of the grinding operations:

D.1.1 (c) ~~Two (2)~~ **Four (4)** PVC Grinders identified as # ~~1 and~~, # 2, **#3 and #4** shall not exceed ~~1.25~~ **2.48** pounds per hour when operating at a process weight rate of ~~343~~ **943** pounds per hour;
4. Items (d) and (e) of Condition D.1.1 (Particulate Matter (PM)) on Page 15 of the permit shall be revised as follows to reflect the change in the 326 IAC 6-3 allowable emissions based on the increased maximum throughput of the conveyance systems:

- D.1.1 (d) One (1) Regrind handling operation to Regrind storage silos (RS 1 to 6) shall not exceed ~~4.25~~ **2.48** pounds per hour when operating at a process weight rate of ~~343~~ **943** pounds of Regrind plastic compounds per hour;
- (e) One (1) Regrind material handling operation transferring PVC compounds from Regrind storage silos (RS 1 to 6) to vacuum feed system (VFS) shall not exceed ~~4.25~~ **2.48** pounds when operating at a process weight rate of ~~343~~ **943** pounds per hour.
5. Item (i) of statement No. 4 of the Affidavit of Construction has been revised as follows to reflect the changes to the grinding operations:
4. (i) ~~Two (2)~~ **Four (4)** PVC Grinders identified as # ~~1 and~~, # 2, **#3 and #4** with a maximum capacity of ~~343~~ **943** pounds scrap plastics per hour, transferring to Regrind silos identified as RS₁ through RS₆, particulate matter (PM) emissions are controlled by a bag filter identified as RSF₁.

All other conditions of the permit (CP-085-9961-00080) shall remain unchanged and in effect. Please attach a copy of this modification to the front of the original construction permit.

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 Janusz Johnson, OAM at the above address; or by phone at 317-232-8325 or 1800-451-6027 (dial "0" and ask for ext. 2-8325).

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

JKJ

Attachments: modified permit pages (4 pages)
revised Affidavit of Construction (2 pages)

cc: File - Kosciusko County
Air Compliance Section Inspector - Doyle Houser
Compliance Data Section - Jerri Curless
Administrative and Development - Janet Mobley
Technical Support and Modeling - Nancy Landau

CONSTRUCTION PERMIT OFFICE OF AIR MANAGEMENT

**Royal Crown Limited
401 East Syracuse Road
Milford, Indiana 46547**

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP-085-9961-00080	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date: September 30, 1998
Permit Modification No.: CP-085-10399	
Pages Affected: 5, 14 and 15	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

- (i) Four (4) PVC Grinders identified as # 1, # 2, #3 and #4 with a maximum capacity of 943 pounds scrap plastics per hour, transferring to Regrind silos identified as RS₁ through RS₆, particulate matter (PM) emissions are controlled by a bag filter identified as RSF₁.

SECTION D.1 FACILITY OPERATION CONDITIONS

- (a) Six (6) natural gas fired unit heaters identified as UH₁₋₁ through UH₁₋₆, each rated at 0.165 million British thermal units per hour (MMBtu/hr);
- (b) Three (3) natural gas fired unit heaters identified as UH₂₋₁ through UH₂₋₃, each rated at 0.05 million British thermal units per hour (MMBtu/hr);
- (c) Three (3) natural gas fired unit heaters identified as UH₃₋₁ through UH₃₋₃, each rated at 0.025 million British thermal units per hour (MMBtu/hr);
- (d) Four (4) natural gas fired make-up air heating units identified as MUA₁₋₁ through MUA₁₋₄, each rated at 2.60 million British thermal units per hour (MMBtu/hr);
- (e) One (1) Poly Vinyl Chloride (PVC) Compounds loading operation, with a maximum capacity of 6850 pounds per hour to storage silos identified as S₁ to S₆, particulate matter controlled by their separate bag filters identified as SF₁ through SF₆;
- (f) One (1) vacuum feed system identified as VFS, receives PVC compound from Regrind storage silos identified as RS₁ through RS₆ and storage silos identified as S₁ to S₆, with a maximum capacity of 6850 pounds per hour and transfers to the extruder lines identified as A through L;
- (g) Twelve (12) Extruder Lines identified as A through L, each with a maximum capacity of 571 pounds of PVC compounds per hour;
- (h) Twelve (12) PVC pipe cutting saws identified as SAW₁ through SAW₁₂;
- (i) Four (4) PVC Grinders identified as # 1, # 2, #3 and #4 with a maximum capacity of 943 pounds scrap plastics per hour, transferring to Regrind silos identified as RS₁ through RS₆, particulate matter (PM) emissions are controlled by a bag filter identified as RSF₁.

Emission Limitations and Standards

D.1.1 Particulate Matter (PM) [326 IAC 6-3]

Pursuant to 326 IAC 6-3 (Process Operations), the allowable PM emission rate from:

- (a) One (1) PVC Compound loading operation to storage silos (S₁ through S₆) shall not exceed 9.35 pounds per hour when operating at a process weight rate of 6850 pounds per hour.
- (b) One (1) vacuum feed system identified as VFS (receives PVC compound from Regrind storage silos identified as RS₁ through RS₆ and storage silos identified as S₁ to S₆ and transfers to the extruder lines identified as A through L) shall not exceed 9.35 pounds per hour when operating at a process weight rate of 6850 pounds per hour;
- (c) Four (4) PVC Grinders identified as # 1, # 2, #3 and #4 shall not exceed 2.48 pounds per hour when operating at a process weight rate of 943 pounds per hour;

- (d) One (1) Regrind handling operation to Regrind storage silos (RS 1 to 6) shall not exceed 2.48 pounds per hour when operating at a process weight rate of 943 pounds of Regrind plastic compounds per hour;
- (e) One (1) Regrind material handling operation transferring PVC compounds from Regrind storage silos (RS 1 to 6) to vacuum feed system (VFS) shall not exceed 2.48 pounds when operating at a process weight rate of 943 pounds per hour.

The pound per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate up to 60,000 pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

Compliance Determination Requirements

D.1.2 Testing Requirements

The Permittee is not required to test the facility identified as One (1) vacuum feed system (VFS) by this permit. However, IDEM may require compliance testing at any specific time when necessary to determine if the facility is in compliance. If testing is required by IDEM, compliance with the PM limit specified in Condition D.1.1(b) shall be determined by a performance test conducted in accordance with Section C - Performance Testing.

D.1.3 Particulate Matter (PM)

- (a) The bag filters identified as SF₁ through SF₆ for PM control shall be in operation at all times when the PVC compounds loading operation into silos identified as S₁ through S₆ are in operation and exhausting to the outside atmosphere.
- (b) The closed loop vacuum feed system (VFS) for PM control shall be in operation at all time when PVC compounds transferring to extruders identified as A through L is in operation and exhausting to the outside atmosphere.
- (c) The bag filter identified as RSF₁ for PM control shall be in operation at all times when transferring Regrind scrap PVC compounds into Regrind storage silos identified as RS₁ through RS₆ and exhausting to the outside atmosphere.

Compliance Monitoring Requirements

D.1.4 Visible Emissions Notations

- (a) Daily visible emission notations of the bag filters (SF₁ through SF₆) and bag filter RSF₁ stack exhaust shall be performed during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for Construction Permit Modification

Source Background and Description

Source Name: Royal Crown Limited
 Source Location: 401 East Syracuse Road, Milford, Indiana 46547
 County: Kosciusko
 Permit Modification No.: CP-085-10399
 SIC Code: 3089
 Permit Reviewer: Janusz Johnson

The Office of Air Management (OAM) has reviewed letter from Royal Crown Limited relating to changes to the original configuration of grinding equipment for the PVC plastic extrusion process permitted under CP-085-9961-00080, issued on September 30, 1998. Royal Crown Limited had planned for two (2) grinders to be installed for recycling of off spec products at a maximum rate of 343 pounds per hour. Royal Crown Limited has requested to modify the permit to reflect a total of four (4) grinders with a total maximum capacity of 943 pounds per hour. This review is intended to evaluate the emissions increase associated with the two (2) new presses and modify the original permit conditions appropriately. The new emission units being added under this modification are as follows:

- (a) Two (2) PVC Grinders identified as # 3 and # 4, with a maximum capacity of 600 pounds scrap plastics per hour, transferring to regrind silos identified as RS₁ through RS₆, particulate matter (PM) emissions are controlled by a bag filter identified as RSF₁.

Stack Summary

There are no new stacks associated with the new emission units. The emissions from the two (2) grinders (#3 and #4) will be routed to one of six existing storage silos and may eventually be exhausted from the following existing RSF stack:

Stack*	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
RSF	Regrind Storage Silos (RS ₁ through RS ₆)	--	--	710	ambient

* - Vertical duct originating within the facility.

Recommendation

The staff recommends to the Commissioner that the permit modification be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application submitted for CP-085-9961-00080 and additional information submitted by the applicant.

An letter for the purposes of this review was received on November 18, 1998.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations of the change to the grinding operations.

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definitions (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity) for the additional grinders, and the revised total project are summarized below.

- Potential and allowable emissions from the two (2) additional grinders (#3 and #4):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	16.1	2.4
Particulate Matter (PM10)	-	2.4
Sulfur Dioxide (SO ₂)	-	0
Volatile Organic Compounds (VOC)	-	0
Carbon Monoxide (CO)	-	0
Nitrogen Oxides (NO _x)	-	0
Single Hazardous Air Pollutant (HAP)	-	0
Combination of HAPs	-	0

- Allowable PM emissions are determined from the applicability of rule 326 IAC 6-3. See Appendix A of this TSD for detailed calculations.
- The new grinding units do not require additional new source review because the potential emissions (which in this case are lower than the allowable emissions) are less than exemption levels.

- The revised potential and allowable emissions from the whole project covered in CP-085-9961-00080, including the two (2) additional grinders, is as follows:

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	114.6	52.2
Particulate Matter (PM10)	52.2	52.2
Sulfur Dioxide (SO ₂)	0.03	0.03
Volatile Organic Compounds (VOC)	14.9	14.9
Carbon Monoxide (CO)	4.3	4.3
Nitrogen Oxides (NO _x)	5.1	5.1
Single Hazardous Air Pollutant (HAP)	0.09	0.09
Combination of HAPs	0.09	0.09

- (a) The potential emissions before control are less than the allowable emissions, therefore, the potential emissions before control are used for the permitting determination.
- (b) Allowable emissions (as defined in the Indiana Rule) of VOC and PM are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.
- (c) There is no change to the level of approval required for the project as a result of the changes made to the grinding operations. Therefore, the original permit (CP-085-9961-00080) shall be modified to include the new emission units and revised operating conditions.

County Attainment Status

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Kosciusko County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Kosciusko County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

The revised New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited) for the whole project covered in CP-085-9961-00080, including the two (2) additional grinders is as follows:

Pollutant	Emissions (tons/yr)
PM	28.4
PM10	27.6
SO ₂	0.03
VOC	14.9
CO	4.3
NO _x	5.1
Single HAP	0.09
Combination HAPs	0.09

- (a) This new source is **not** a major stationary source because no attainment pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.
- (b) There is no change to the source PSD status as a result of the changes to the grinding operations.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons/year.

Federal Rule Applicability

There is no change to the federal rule applicabilities as a result of the changes to the grinding operations.

State Rule Applicability

The following State rule applicabilities have changed due to the addition of the two (2) grinders to the grinding operations:

326 IAC 6-3 (Process Operations)

Pursuant to 326 IAC 6-3 (Process Operations), the allowable PM emission rate from the Grinders (#1, #2, #3 & #4), the conveying regrind material to silos 1 through 6, and the conveying regrind material from silos 1 through 6 to the vacuum feed system shall not exceed 2.48 pounds per hour, each when operating at a process weight rate of 0.47 tons per hour.

- (a) Grinders (1, 2, 3 & 4): (P = 0.47 ton/hr)

$$\begin{aligned} E &= 4.10 P^{0.67} \\ &= 4.10 (0.47)^{0.67} \\ &= 2.48 \text{ lb./hr} \\ &= 10.85 \text{ tons/year} \end{aligned}$$

Potential PM emissions are less than the allowable emissions. So, grinders (1, 2, 3 & 4) comply with 326 IAC 6-3-2.

- (b) Material Handling to Regrind Silos (RS₁ through RS₆): (P = 0.47 ton/hr)

$$\begin{aligned} E &= 4.10 P^{0.67} \\ &= 4.10 (0.47)^{0.67} \\ &= 2.48 \text{ lb/hr} \\ &= 10.85 \text{ tons/year} \end{aligned}$$

Potential PM emissions are less than the allowable emissions. So, Material Handling to Regrind Silos (RS₁ through RS₆) complies with 326 IAC 6-3-2.

(c) PVC Regrind Compound from Regrind Silos to VFS: (P = 0.47 ton/hr)

$$\begin{aligned} E &= 4.10 P^{0.67} \\ &= 4.10 (0.47)^{0.67} \\ &= 2.48 \text{ lb/hr} \\ &= 10.85 \text{ tons/year} \end{aligned}$$

Potential PM emissions are less than the allowable emissions. So, PVC Regrind Compound from Regrind Silos to VFS complies with 326 IAC 6-3-2.

Air Toxic Emissions

There is no change in the air toxic emissions as a result of the modification to the grinding operations.

Conclusion

The modification of the grinding operations of this PVC extrusion process will be subject to the conditions of the attached proposed **Permit Modification No. CP-085-10399-00080**.

Appendix A: Emission Calculations

Company Name: Royal Crown Limited
Address City IN Zip: 401 East Syracuse Road, Milford, Indiana 46547
CP: 085-10399
Plt ID: 085-00080
Reviewer: Janusz Johnson
Date: 1/28/99

Process	SCC	Throughput in ton/hr	Emissions Factor in lb./ton Product			Potential emissions (tons/year)			C.E. for PM	Controlled Emissions in tons / year		PM Allowable Emissions	
			PM	PM10	VOC	PM	PM10	VOC		PM	PM10	lbs./hr	tons/year
<i>Emission units prior to modification</i>													
Grinding Operation (#1 and #2)	30501222	0.17	0.2	0.2		0.15	0.15		0.00%	0.15	0.15	1.25	5.48
Conveying Material to Re grind Storage (RS 1 to 6)	30101811	0.17	0.8	0.8		0.60	0.60		99.00%	0.01	0.01	1.25	5.48
PVC Re grind Storage to Vacuum Feed System (VFS)	30101811	0.17	0.8	0.8		0.60	0.60		50.00%	0.30	0.30	1.25	5.48
Total						1.34	1.34			0.45	0.45	3.75	16.44
<i>Emission units after proposed modification</i>													
Grinding Operation (#1,#2,#3,#4)	30501222	0.47	0.2	0.2		0.41	0.41		0.00%	0.41	0.41	2.48	10.85
Conveying Material to Re grind Storage (RS 1 to 6)	30101811	0.47	0.8	0.8		1.65	1.65		99.00%	0.02	0.00	2.48	10.85
PVC Re grind Storage to Vacuum Feed System (VFS)	30101811	0.47	0.8	0.8		1.65	1.65		50.00%	0.83	0.83	2.48	10.85
Total						3.72	3.72			1.26	1.24	7.43	32.55
Emission increase associated with proposed modification						2.38	2.38			0.80	0.79	3.68	16.12

Methodology:

All Emission Factors are taken from similar processes.

Potential Emissions = (E.F. in lb./ton)* (throughput in ton/hour) * 4.38

Controlled Emissions = Potential Emissions * (1-controlled efficiency)

Grinding Operation E.F. are taken same as Raw material Unloading.

Plastic Storage to Silo, E.F. are based on SCC: 30101811, Plastic Operation.

PM Allowable emissions (lbs./hour) = 4.10 (P)^{0.67}, P = Process weight Rate in tons per hour as 326 IAC 6-3 (Process Operations)

PM Allowable Emissions (tons/year) = PM Allowable Emissions in lbs./hr * 4.38