INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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April 17, 2007

Mr. Charles Cadwell
Dynamic Composites, LLC
2672 South County Road East
Columbia City, IN 46725

Dear Mr. Charles Cadwell:

Re: Exempt Construction and Operation Status,
183-24236-00041

The application from Dynamic Composites, LLC, received on January 19, 2007, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following stationary plastics products plant used for the manufacture of polycoated steel/cement railroad and landscape ties, to be located at 2672 South County Road East, Columbia City, Indiana, is classified as exempt from air pollution permit requirements:

(a) One (1) tie production operation having a maximum capacity of 60 ties per hour and including the following emission units.

(1) One (1) polyethylene grinder, approved for construction in 2007, with a maximum capacity of 1,140 lbs/hr.

(2) One (1) paint/polyethylene mixer, approved for construction in 2007, with a batch capacity of 38.0 lbs/tie, using paint containing no VOCs or HAPs.

(3) One (1) plastic insert extruder, approved for construction in 2007.

(4) One (1) plastic saw, approved for construction in 2007.

(5) One (1) TIG welder, approved for construction in 2007, using less than 625 pounds of rod and wire per day.

(6) One (1) pneumatic cement loading system, approved for construction in 2007.

(7) One (1) aggregate hopper, approved for construction in 2007.

(8) One (1) rubber extruder and tooling operation, approved for construction in 2007.

(9) One (1) rubber saw, approved for construction in 2007.

(b) Two (2) open aggregate piles for sand and pea gravel, approved for construction in 2007.

(c) One (1) natural gas-fired air rotation unit, approved for construction in 2007, with a maximum heat input capacity of 3.375 MMBtu/hr.

(d) Two (2) natural gas fired space heaters, approved for construction in 2007, with a combined maximum heat input capacity of 0.25 MMBtu/hr.

(e) Paved and unpaved roads and parking lots with public access [326 IAC 6-4].

The following conditions shall be applicable:

(1) 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:

(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.

(2) Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions) the Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

(3) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes) the allowable particulate emission rate from the polyethylene grinder shall not exceed 2.81 lbs/hr when operating at a process weight rate of 0.57 tons/hr. The pneumatic cement Loader shall not exceed 2.91 lbs/hr when operating at a process weight rate of 0.60 tons/hr.

Interpolation of the data for process weight rates up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the following equation:

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

This exemption is the first air approval issued to this source.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Pursuant to Contract No. A305-5-65, IDEM, OAQ has assigned the processing of this application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Bryan Lange, ERG, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560, or call (919) 468-7854 to speak directly to Mr. Bryan Lange. Questions may also be directed to Duane Van Laningham at IDEM, OAQ, 100 North Senate Avenue, Indianapolis, Indiana, 46204-2251 or call (800) 451-6027, ask for Duane Van Laningham, or extension 3-6878, or dial (317) 233-6878.

Sincerely,

Nisha Sizemore, Chief
Permits Branch
Office of Air Quality

ERG/BL

cc: File - Whitley County
Whitley County Health Department
Air Compliance - Ryan Hillman
Northern Regional Office
Permit Tracking
Compliance Data Section
Program Planning and Policy – Scott Delaney
Billing, Licensing, and Training Section - Dan Stamatkin

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for an Exemption

Source Background and Description

Source Name:	Dynamic Composites, LLC
Source Location:	2672 South County Road East, Columbia City, IN 46725
County:	Whitley
SIC Code:	3089
Operation Permit No.:	183-24236-00041
Permit Reviewer:	ERG/BL

The Office of Air Quality (OAQ) has reviewed an application from Dynamic Composites, LLC relating to the construction and operation of stationary plastics products plant used for the manufacture of polycoated steel/cement railroad and landscape ties.

New Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

(a) One (1) tie production operation having a maximum capacity of 60 ties per hour and including the following emission units.

(1) One (1) polyethylene grinder, approved for construction in 2007, with a maximum capacity of 1,140 lbs/hr.

(2) One (1) paint/polyethylene mixer, approved for construction in 2007, with a batch capacity of 38.0 lbs/tie, using paint containing no VOCs or HAPs.

(3) One (1) plastic insert extruder, approved for construction in 2007.

(4) One (1) plastic saw, approved for construction in 2007.

(5) One (1) TIG welder, approved for construction in 2007, using less than 625 pounds of rod and wire per day.

(6) One (1) pneumatic cement loading system, approved for construction in 2007.

(7) One (1) aggregate hopper, approved for construction in 2007.

(8) One (1) rubber extruder and tooling operation, approved for construction in 2007.

(9) One (1) rubber saw, approved for construction in 2007.

(b) Two (2) open aggregate piles for sand and pea gravel, approved for construction in 2007.

(c) One (1) natural gas-fired air rotation unit, approved for construction in 2007, with a maximum heat input capacity of 3.375 MMBtu/hr.

(d) Two (2) natural gas fired space heaters, approved for construction in 2007, with a combined maximum heat input capacity of 0.25 MMBtu/hr.

(e) Paved and unpaved roads and parking lots with public access [326 IAC 6-4].

Existing Approvals

There have been no previous approvals issued to this source.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the construction and operation 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.

A complete application for the purposes of this review was received on January 19, 2007.

Emission Calculations

See pages 1 through 14 of Appendix A of this document for detailed emission calculations.

Potential to Emit (of the Source or Revision) Before Controls

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, including 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	4.68
PM-10	2.44
SO_2	0.01
VOC	3.78
CO	1.31
NO_x	1.56

HAPs	Potential to Emit (tons/yr)
Hexane	0.74
Combined HAPs	0.99

(a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of PM, PM-10, SO_2, VOC, CO, and NO_x are less than five (5) tons per year. Therefore, this source is subject to the requirements of 326 IAC 2-1.1-3.

(b) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-1.1-3. An exemption will be issued.

(c) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in Whitley County.

Pollutant	Status
PM-10	Attainment
PM 2.5	Attainment
SO_2	Attainment
NO_2	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

Note: On October 25, 2006, the Indiana Air Pollution Control Board finalized a rule revision to 326 IAC 1-4-1 revoking the one-hour ozone standard in Indiana.

(a) Whitley County has been classified as attainment for PM2.5. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM2.5 emissions. Therefore, until the U.S. EPA adopts specific provisions for PSD review for PM2.5 emissions, it has directed states to regulate PM10 emissions as a surrogate for PM2.5 emissions. See the State Rule Applicability - Entire Source section.

(b) Volatile organic compounds (VOC) and Nitrogen Oxides emissions 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 and NOx emissions are considered when evaluating the rule applicability relating to ozone. Whitley County has been designated as attainment or unclassifiable for the 8-hour ozone standard. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability - Entire Source section.

(c) Whitley County has been classified as attainment in Indiana 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 - Entire Source section.

(d) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 or 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD applicability.

Source Status

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

Pollutant	Emissions (tons/yr)
PM	4.68
PM-10	2.44
SO_2	0.01
VOC	3.78
CO	1.31
NO_x	1.56
Hexane	0.74
Combination HAPs	0.99

(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 greater and it is not in one of the 28 listed source categories.

(b) These emissions were based on the application submitted by the company on January 19, 2007.

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 per year.

This is the first air approval issued to this source.

Federal Rule Applicability

(a) The requirements of the New Source Performance Standard for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry, 40 CFR 60, Subpart DDD (326 IAC 12) are not included in this Exemption for this source. The source does not manufacture polypropylene, polyethylene, polystyrene, or poly (ethylene terephthalate), but purchases polyethylene manufactured by others for the fabrication of railroad ties.

(b) The requirements of the New Source Performance Standard for Polymeric Coating of Supporting Substrates Facilities, 40 CFR 60, Subpart VVV (326 IAC 12) are not included in this Exemption for this source. The use of the polymer is not for a web coating process. The source does not apply polymeric coatings as defined in 40 CFR 60.741.

(c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14, 20 and 40 CFR Part 61, 63) applicable to this source.

(d) The requirements of the National Emission Standards for Hazardous Air Pollutants for Coating of Plastic Parts and Products, 40 CFR 63, Subpart PPPP (326 IAC 20) are not

included in this Exemption, because the HAP emissions for the entire source are less than ten (10) tons per year for a single HAP and less than twenty-five (25) tons per year of a combination of HAPs.

State Rule Applicability – Entire Source

326 IAC 2-2 (Prevention of Significant Deterioration)

This source will be constructed in Whitley in 2007 and is not one of the twenty-eight listed source categories. The potential to emit of each criteria pollutant before control is less than the 250 tons per year PSD threshold. Therefore, the source is a minor source under PSD and the requirements of 326 IAC 2-2 are not applicable.

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

Although constructed after the July 27, 1997 applicability date for this rule, the source will emit less than 10 tons per year of a single HAP and 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 2-6 (Emission Reporting)

This source is located in Whitley County, is not required to operate under a Part 70 permit, and emits less than five (5) tons per year of lead. Therefore, pursuant to 326 IAC 2-6-1(b), the source is only subject to additional information requests as provided in 326 IAC 2-6-5.

326 IAC 5-1 (Visible Emissions 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.

326 IAC 6-4 (Fugitive Dust Emissions)

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)

The source is located in Whitley County and was constructed after December 13, 1985. However, the fugitive particulate emissions from the paved roads and the open aggregate piles are negligible. Pursuant to 326 IAC 6-5-1(b), this source is exempt from the requirements of 326 IAC 6-5.

State Rule Applicability – Extruders

326 IAC 8-1-6 (General Reduction Requirements for VOC Emissions)

Although the two (2) extruders, will be constructed after after January 1, 1980 applicability date for this rule, these units are not subject to the provisions of this rule because the potential VOC emissions from each of the machines are less than twenty-five (25) tons per year.

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

Pursuant to 326 IAC 6-3-1(b)(14), the two (2) extruders are not subject to the requirements of 326 IAC 6-3-2 because they do not have potential particulate emissions in excess of five hundred fifty-one thousandths (0.551) pound per hour.

State Rule Applicability – Cutting and Grinding

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

(a) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the allowable particulate emission rate from the polyethylene grinder shall not exceed 2.81 lbs/hr when operating at a process weight rate of 0.57 tons/hr. The pneumatic cement loader shall not exceed 2.91 lbs/hr when operating at a process weight rate of 0.60 tons/hr.

Interpolation of the data for process weight rates up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the following equation:

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

Emission calculations based on AP-42 factors indicate that each emission unit is able to comply with this limit without using a control device.

(b) Pursuant to 326 IAC 6-3-1(b)(14), the plastic and rubber saws are not subject to the requirements of 326 IAC 6-3-2 because they do not have potential particulate emissions in excess of five hundred fifty-one thousandths (0.551) pound per hour.

State Rule Applicability – Welding, Boilers, and Mixers

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

(a) Pursuant to 326 IAC 6-3-1(b)(9), the welding operations are not subject to the requirements of 326 IAC 6-3-2 because the source consumes less than six hundred twenty-five (625) pounds of rod or wire per day.

(b) The natural gas-fired building heaters and air rotation unit are not subject to the provisions of 326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes) because the particulate emissions from these combustion units are less than 0.551 pounds per hour.

(c) Pursuant to 326 IAC 6-3-1(b)(14), the pea gravel/sand aggregate hopper and the paint/polyethylene mixer are not subject to the requirements of 326 IAC 6-3-2 because they do not have potential particulate emissions in excess of five hundred fifty-one thousandths (0.551) pound per hour.

Conclusion

The construction and operation of this manufacture of polycoated steel/cement railroad and landscape ties shall be subject to the conditions of the Exemption No. 183-24236-00041.

Appendix A: Emission Calculations
Summary

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

	Potential To Emit (tons/year)							
Process/emission unit	**PM**	**PM-10**	**SO_2**	**VOC**	**CO**	**NOx**	**Combined HAPs**	**Hexane**
Polyethylene Grinder	4.53E-03	4.53E-03	-	-	-	-	0.05	-
Paint/Polyethylene Mixer	0.03	0.01	-	-	-	-	-	-
Plastic Inserts Extruder	0.30	0.30	-	0.47	-	-	0.01	-
Plastic Saw	-	-	-	0.06	-	-	-	-
TIG Welder	0.01	0.01	-	-	-	-	3.30E-03	-
Sand and Gravel Ground Pile	0.01	4.62E-03	-	-	-	-	-	-
Pneumatic Cement Loading	1.89	1.21	-	-	-	-	-	-
Aggregate Hopper	0.07	0.03	-	-	-	-	-	-
Polyethylene/Crumb Rubber Extruder	0.36	0.36	-	3.00	-	-	0.90	0.71
Rubber Saw	-	-	-	0.15	-	-	-	-
Natural Gas Combustion Only	0.03	0.12	0.01	0.09	1.31	1.56	0.03	0.03
Paved Roads	1.98	0.39	-	-	-	-	-	-
TOTAL =	**4.68**	**2.44**	**0.01**	**3.78**	**1.31**	**1.56**	**0.99**	**0.74**

Appendix A: Emission Calculations
Polyethylene Grinder

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Unit Production (lbs/yr)
525,000	60.0	1,140

	Material Processed (lbs/tie)	Material Processed (tons/hr)	Material Processed (lbs/yr)	PM/PM10 Emission Factor (lb/lb processed)	Benzene Emission Factor (lb/lb processed)	PTE of PM/PM10 (ton/yr)	PTE of Benzene (ton/yr)	326 IAC 6-3-2 Allowable PM Emissions (lbs/hr)
Grinder	19.0	0.57	9,975,000	9.09E-07	9.96E-06	4.53E-03	0.05	2.81

The polyethylene material has similar characteristics to that of retread rubber.
Emission factors are from AP-42, Chapter 4.12 Manufacture of Rubber Products (June 1999), Table 4.12-12 (Grinding Operations, Retread Tires)

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x Emission Factor (lb /lb processed) x 1 ton/2,000 lbs

Allowable emissions under 326 IAC 6-3-2 are calculated using the following equation for process weight rates up to sixty thousand (60,000) pounds per hour:

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

Appendix A: Emission Calculations
Paint/Polyethylene Mixer

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Unit Production (lbs/yr)
525,000	60.0	2,280

	Material Processed (lbs/tie)	Material Processed (lbs/yr)	PM Emission Factor (lb/ton processed)	PM10 Emission Factor (lb/ton processed)	PTE of PM (ton/yr)	PTE of PM (lbs/yr)	PTE of PM10 (ton/yr)
Mixer	38.0	19,950,000	0.0051	2.40E-03	0.03	0.01	0.01

Mixed in the mixer are 19 lbs/tie of paint and 19 lbs/tie of polyethylene beads (pellets).
The paint used contains no VOCs or HAPs.
It is assumed that the dried paint will be similar to sand. To constitute a realistic upper bound on the amount of PM emissions IDEM has used aggregate hopper emission factors from AP-42, Chapter 11.12 Concrete Batching (June 2006), weigh hopper loading (SCC: 3-05-011-08).

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x 1 ton/2,000 lbs x Emission Factor (lb/ton processed) x 1 ton/2,000 lbs

Appendix A: Emission Calculations
Plastic Inserts Extruder

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Paint and Poly. Production (lbs/yr)
525,000	60.0	19,950,000

	Paint and Poly. Material Processed (lbs/tie)	Poly. Material Processed (lbs/tie)	PM/PM10 Emission Factor (lb/lb processed)	PTE PM/PM10 (lbs/hr)	VOC Emission Factor (lb/lb processed)	Combined HAP Emission Factor (lb/lb processed)	Formaldehyde Emission Factor (lb/lb processed)
Plastic Inserts Extruder	38.0	19.0	3.03E-05	0.07	9.43E-05	1.45E-06	7.40E-07

	PM/PM10	VOC	Combined HAP	Formaldehyde
Potential to Emit (tons/yr)	0.30	0.47	0.01	3.69E-03

Extruded material contains 19 lbs/tie of paint and 19 lbs/tie of polyethylene. Worse case assumption is extrusion occurs at 400 degrees F.
Emission factors are from an article: "Development of Emission Factors for Polypropylene Processing." published in the Journal of Air & Waste Management Association on January, 1999.

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x Emission Factor (lb/lb processed) x 1 ton/2,000 lbs

Appendix A: Emission Calculations
Plastic Saw

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Unit Production (lbs/yr)
525,000	60.0	19,950.00

	Material * Processed (lbs/tie)	Material Processed (lbs/yr)	VOC Emission Factor (lb/ton processed)	PTE of VOC (lbs/hr)	PTE of VOC (ton/yr)
Plastic Saw	0.04	19,950	13.0	0.01	0.06

* The total weight of a tie is assumed identical to weight of its components (19 lbs/tie of paint and 19 lbs/tie of polyethylene). The cut made on each tie is 1/8 - 3/16", this is less than 0.1% of the total weight of ties processed. Material processed is assumed to be 0.1% of the total plant tie production.

Emission factors are from FIRE Version 6.25, October 18, 2004. Rubber and Miscellaneous Plastics Products, Plastics Machining (SCC: 3-08-007-01)

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x 1 ton/2,000 lbs x Emission Factor (lb/ton processed) x 1 ton/2,000 lbs

Appendix A: Emission Calculations
TIG Welder

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Wire Usage (lbs/3,500 ties)
525,000	60.0	44.0

	Wire Usage (lbs/yr)	Wire Usage (lbs/day)	PM/PM10 Emission Factor (lb/1000 lbs wire)	Chromium Emission Factor (lb/1000 lbs wire)	Manganese Emission Factor (lb/1000 lbs wire)	Nickel Emission Factor (lb/1000 lbs wire)
Welder	6,600	18.1	3.20	0.53	0.25	0.23

	PM/PM10	Chromium	Manganese	Nickel	Combined HAP
Potential to Emit (tons/yr)	0.01	1.74E-03	8.09E-04	7.46E-04	3.30E-03

The TIG welder is similar to the GMAW. The TIG welder uses ER316 wire.
Emission factors are from AP-42, Chapter 12.19 Electric Arc Welding (January 1995), Tables 12.19-1 and 12.19-2.

Methodology
Wire Usage (lbs/yr) = Maximum Plant Production (ties/yr) x Wire Usage (lbs/3,500 ties)
Potential to Emit (tons/yr) = Wire Usage (lbs/yr) x Emission Factor (lb/1000 lbs wire) x 1 ton/2,000 lbs

Appendix A: Emission Calculations
Fugitive PM and PM10 Emissions from Ground Piles

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

	Material Transferred (tons/yr)	PM Emission Factor (lbs/ton)	PM10 Emission Factor (lbs/ton)	PTE of PM Emissions (tons/yr)	PTE of PM10 Emissions (tons/yr)
Sand Pile	2,625	1.62E-03	7.65E-04	2.12E-03	1.00E-03
Gravel Pile	2,625	5.83E-03	2.76E-03	7.65E-03	3.62E-03
Total				**0.01**	**4.62E-03**

Each tie will contain 20 lbs of cement, 10 lbs of sand .
Emission factors are from AP 42 Section 13.2.4 Aggregate Handling And Storage Piles - November 2006.
Source moisture was from Table 13.2.4-1 - Stone quarrying and processing.

Methodology
Potential to Emit (tons/yr) = Material Transferred (tons/yr) * Particulate Emission Factor (lbs/ton) * 1 ton / 2,000 lbs

E = k (0.0032) * ((U/5)^1.3)/((M/2)^1.4)

Where:

E =	emission factor (lb particulate per ton of material transferred)	
k =	0.74	particle size multiplier (dimensionless) for PM
	0.35	particle size multiplier (dimensionless) for PM-10
U =	10	mean wind speed, meters per second (m/s) (miles per hour [mph])
M =	5	Sand, material moisture content (%)

Appendix A: Emission Calculations
Pneumatic Cement Loading

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Unit Production (lbs/yr)
525,000	60.0	10,500,000

	Material Processed (lbs/tie)	Material Processed (tons/hr)	Material Processed (lbs/yr)	PM Emission Factor (lb/ton processed)	PM10 Emission Factor (lb/ton processed)	PTE of PM (lbs/hr)	326 IAC 6-3-2 Allowable PM Emissions (lbs/hr)	PTE of PM (ton/yr)	PTE of PM10 (ton/yr)
Cement Loading	20.0	0.60	10,500,000	0.72	0.46	0.43	2.91	1.89	1.21

Each tie will contain 20 lbs of cement.
The paint used contains a negligible amount of VOCs and HAPs, less than or equal to one percent (1%) by weight.
Emission factors are from AP-42, Chapter 11.12 Concrete Batching (June 2006), cement unloading storage silo (SCC: 3-05-011-07)

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x 1 ton/2,000 lbs x Emission Factor (lb/ton processed) x 1 ton/2,000 lbs

Allowable emissions under 326 IAC 6-3-2 are calculated using the following equation for process weight rates up to sixty thousand (60,000) pounds per hour:

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

Appendix A: Emission Calculations
Pea Gravel/Sand Aggregate Hopper

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Unit Production (lbs/yr)
525,000	60.0	54,600,000

	Gravel and Sand Material Processed (lbs/tie)	Material Processed (lbs/yr)	PM Emission Factor (lb/ton processed)	PM10 Emission Factor (lb/ton processed)	PTE of PM (ton/yr)	PTE of PM10 (ton/yr)
Aggregate Hopper	104	54,600,000	0.0051	0.0024	0.07	0.03

The hopper will contain 50 lbs of pea gravel per tie and 54 lbs of sand per tie.
The paint used contains a negligible amount of VOCs and HAPs, less than or equal to one percent (1%) by weight.
Emission factors are from AP-42, Chapter 11.12 Concrete Batching (June 2006), weigh hopper loading (SCC: 3-05-011-08)

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x 1 ton/2,000 lbs x Emission Factor (lb/ton processed) x 1 ton/2,000 lbs

Appendix A: Emission Calculations
Polyethylene/Crumb Rubber Extruder

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Poly. and Rubber Production (lbs/yr)
525,000	60.0	47,250,000

	Material Processed (lbs/tie)	PM/PM10 Emission Factor (lb/lb processed)	PTE PM/PM10 (lbs/hr)	VOC Emission Factor (lb/lb processed)	Combined HAP Emission Factor (lb/lb processed)	Formaldehyde Emission Factor (lb/lb processed)	Hexane Emission Factor (lb/lb processed)	
Polyethylene Material	45.0	3.03E-05	0.08	9.43E-05	1.26E-06	7.40E-07	-	(a)
Rubber Material	45.0	1.12E-07	3.02E-04	1.60E-04	7.52E-05	-	6.05E-05	(b)

	PM/PM10	VOC	Combined HAP	Formaldehyde	Hexane
Polyethylene, PTE (tons/yr)	0.36	1.11	0.01	0.01	-
Rubber, PTE (tons/yr)	1.32E-03	1.89	0.89	-	0.71
Total	**0.36**	**3.00**	**0.90**	**0.01**	**0.71**

Extruded material contains 45 lbs/tie of polyethylene and 45 lbs/tie of rubber. Worse case assumption is extrusion occurs at 400 degrees F.
(a) Polyethylene emission factors are from an article: "Development of Emission Factors for Polypropylene Processing." published in the Journal of Air & Waste Management Association on January, 1999.
(b) Rubber emission factors are from AP-42, Chapter 4.12 Manufacture of Rubber Products (June 1999), Table 4.12-6 (Extruder)
PM emission factor assumes rubber compound #5, VOC and HAP emissions rubber compound #17.

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x Emission Factor (lb/lb processed) x 0.000001 g/ug x 1 ton/2,000 lbs

Appendix A: Emission Calculations
Rubber Saw

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Maximum Plant Production (ties/yr)	Maximum Plant Production (ties/hr)	Maximum Unit Production (lbs/yr)
525,000	60.0	47,250

	Material * Processed (lbs/tie)	Material Processed (lbs/yr)	VOC Emission Factor (lb/ton processed)	PTE of VOC (lbs/hr)	PTE of VOC (ton/yr)
Rubber Saw	0.09	47,250	13.0	0.04	0.15

* The total weight of a tie is assumed identical to weight of its components (45 lbs/tie of of polyethylene and 45 lbs/tie of rubber). The cut made on each tie is 1/8 - 3/16", this is less than 0.1% of the total weight of ties processed. Material processed is assumed to be 0.1% of the total plant tie production.

Emission factors are from FIRE Version 6.25, October 18, 2004. Rubber and Miscellaneous Plastics Products, Plastics Machining (SCC: 3-08-007-01)

Methodology
Material Processed (lbs/yr) = Maximum Plant Production (ties/yr) x Material Processed (lbs/tie)
Potential to Emit (tons/yr) = Material Processed (lbs/yr) x 1 ton/2,000 lbs x Emission Factor (lb/ton processed) x 1 ton/2,000 lbs

Appendix A: Emission Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

Heat Input Capacity MMBtu/hr	Potential Throughput MMSCF/yr
3.63	31.1

	Pollutant					
	PM*	PM10*	SO_2	NOx**	VOC	CO
Emission Factor (lb/MMSCF)	1.90	7.60	0.60	100	5.50	84.0
Potential to Emit (tons/yr)	0.03	0.12	0.01	1.56	0.09	1.31

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM combined.
**Emission factor for NOx (Uncontrolled) = 100 lb/MMSCF

Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1 and 1.4-2; SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (July 1998).

All emission factors are based on normal firing.

Methodology
Potential Throughput (MMSCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMSCF/1,020 MMBtu
Potential to Emit (tons/yr) = Potential Throughput (MMSCF/yr) x Emission Factor (lb/MMSCF) x 1 ton/2,000 lbs

Appendix A: Emission Calculations
HAPs Emissions from Natural Gas Combustion
MM BTU/HR <100

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: January 31, 2007

HAPs - Organics

	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor (lb/MMSCF)	2.10E-03	1.20E-03	7.50E-02	1.80E+00	3.40E-03
Potential to Emit (tons/yr)	3.27E-05	1.87E-05	1.17E-03	2.80E-02	5.29E-05

HAPs - Metals

	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor (lb/MMSCF)	5.00E-04	1.10E-03	1.40E-03	3.80E-04	2.10E-03
Potential to Emit (tons/yr)	7.78E-06	1.71E-05	2.18E-05	5.92E-06	3.27E-05

Methodology is the same as page 13.

The five highest organic and metal HAPs emission factors provided above are from AP-42, Chapter 1.4, Tables 1.4-2, 1.4-3 and 1.4-4 (July, 1998). Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emissions Calculations
Particulate Matter from Fugitive Sources

Company Name: Dynamic Composites, LLC
Address: 2670 South County Road East, Columbia City, IN 46725
Registration: 183-24236-00041
Reviewer: ERG/BL
Date: 39113.00

Paved Roads (see AP-42 for more information)

Vehicle Type	Required Mat. Usage (lbs/tie)	Worst Case Mat. Usage (lbs/day)	Daily Truck Needs	Round Trip Distance (mile/trip)	Vehicle Mile * Traveled (VMT) (miles/day)	Vehicle Mile Traveled (VMT) (miles/yr)	PTE of PM (tons/yr)	PTE of PM10 (tons/yr)
Paint	19	27,329	0.68	0.25	-	-	-	-
Polyethylene	19	27,329	0.68	0.25	-	-	-	-
Metal feedstock	57	81,986	2.05	0.25	-	-	-	-
Pea gravel	50	71,918	1.80	0.25	-	-	-	-
Sand	54	77,671	1.94	0.25	-	-	-	-
Concrete	20	28,767	0.72	0.25	-	-	-	-
Polyethylene 2	45	64,726	1.62	0.25	-	-	-	-
Crumb Rubber	45	64,726	1.62	0.25	-	-	-	-
Polyethylene Drums	-	917	0.03	0.25				
Total			11		3.00	1,095	1.98	0.39

PM, Emission factor = 3.62 lbs/VMT
PM-10, Emission factor = 0.71 lbs/VMT

source: AP-42, chapter 13.2.1, p. 13.2.1-6.
* Nine products are required to manufacture a tie. IDEM has assumed 12 truck are needed per day to constitute a realistic upper bound on daily traffic.

Methodology

$$E = [(k(sL/2)^{0.65}) * ((W/3)^{1.5})-C] * (1-P/4N)$$

E =	Emission factor (lbs/vehicle miles traveled(VMT))	
k =	0.082	particle size multiplier for PM (lb/VMT)
	0.016	particle size multiplier for PM-10 (lb/VMT)
sL =	9.7	road surface silt content (g/m^2) -- AP-42, Table 13.2.1-4 (Iron and steel production)
C =	0.00047	Exhaust emission factor (lb/VMT)
W =	20	weighted average vehicle weight (tons)
P =	120	number of days in a year with at least 0.254 mm (0.01 in) of precipitation
N =	365	number of days in the averaging period

Worst Case Mat. Usage (lbs/day) = Annual Production (ties/yr) x 1 yr/365 days x Required Mat. Usage (lbs/tie)
Vehicle Mile Traveled (miles/yr) = Trip Number (trips/yr) x Round Trip Distance (mile/trip)
PTE of PM/PM10 (tons/yr) = VMT (miles/yr) x PM/PM10 Emission Factors x 1 ton/2,000 lbs