

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 112012-012 Project Number: 2012-09-049
 Installation Number: 219-0038

Parent Company: Cascades SPG Holding Inc.
 Parent Company Address: 494 Marie Victorin, Kingsley Falls
 Quebec, Canada JOA1B
 Installation Name: Cascades Plastics, Inc.
 Installation Address: 7501 South Spoeede Lane, Warrenton, MO 63383
 Location Information: Warren County, S27, T 47N, R 2W

Application for Authority to Construct was made for:
 An additional extruder, thermoforming press, two flake silos, as well as increased storage capacity in both intermediate and padding storage. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

NOV 26 2012

EFFECTIVE DATE

Kyra L Moore
 DIRECTOR OR DESIGNEE
 DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Cascades Plastics, Inc.
Warren County, S27, T 47N, R 2W

1. VOC Emission Limitations
 - A. Cascades Plastics, Inc. shall emit less than 250.0 tons of VOCs in any consecutive 12-month period from isobutane emissions associated with the new extruder (EU-011).
 - B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 1.A
2. Control Device Requirement - Cartridge Filtration System
 - A. Cascades Plastics, Inc. shall control emissions from the scrap storage silos as well as the cutting and pelletizing process (See Table 2) using a cartridge filtration system as specified in the permit application.

Table 1: Particulate Matter Emission Points Controlled by Cartridge Filter

Emission Unit	Description
EU-040	Flake Silo
EU-041	Flake Silo
EU-042	Flake Silo
EU-043	Flake Silo
EU-044	Flake Silo
EU-045	Pelletizer Feed Hopper

- B. The cartridge filtration system shall be operated and maintained in accordance with the manufacturer's specifications. The cartridge filtration system shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the Department of Natural Resources' employees may easily observe them.
 - C. Replacement filters for the cartridge filtration system shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

- D. Cascades Plastics, Inc. shall monitor and record the operating pressure drop across the filtration system at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - E. Cascades Plastics, Inc. shall maintain an operating and maintenance log for the filtration system which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
3. Operational Requirement – Cleaning Solution Cloths
- A. Cascades Plastics, Inc. shall keep the cleaning solutions in sealed containers whenever the materials are not in use. Cascades Plastics, Inc. shall provide and maintain suitable, easily read, permanent markings on all inks, solvent and cleaning solution containers used with this equipment.
4. Record Keeping and Reporting Requirements
- A. Cascades Plastics, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include MSDS for all materials used
 - B. Cascades Plastics, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2012-09-049
Installation ID Number: 219-0038
Permit Number:

Cascades Plastics, Inc.
7501 South Spoede Lane
Warrenton, MO 63383

Complete: September 17, 2012

Parent Company:
Cascades SPG Holding Inc.
494 Marie Victorin
Kingsley Falls, QC JOA1B, Canada

Warren County, S27, T 47N, R 2W

REVIEW SUMMARY

- Cascades Plastics, Inc. has applied for authority to increase production through the addition of an extruder, two thermoforming presses, two padding machines, two flake storage silos, expansion of the roll warehouse, and the expansion of finished goods warehouse and shipping facilities.
- HAP emissions are not expected from the proposed equipment.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- Cartridge filters are the only control devices that will be associated with the permitted equipment.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOC are above de minimis levels but conditioned below major source level.
- This installation is located in Warren County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed for this review. No model is currently available which can accurately predict ambient ozone concentrations

caused by this installation's VOC emissions.

- Emissions testing is not required for the equipment.
- A Part 70 Operating Permit application is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Cascades Plastics, Incorporated operates an installation in Warrenton, Missouri that produces polystyrene products for food packaging. This is an existing minor source under construction permitting and an existing Part 70 source under operating permits. However, the mass balance approach previously used to estimate VOC emissions at the facility may have been an over-estimation. Cascades Plastics, Inc. conducted a sampling and analysis program in August, 2012. The results show that 64% of the isobutane incorporated within the polystyrene sheets is emitted pre-shipment. The previous estimated value of pre-shipment VOC emission was 80%. The overestimation of VOC emission did not affect the previous permits. The original construction permit for the facility was written according to 10 CSR 10-6.060 Section (6) because the PTE (197 tpy) was above the de minimis level. Although the original PTE calculation was an overestimation, the reevaluated PTE calculation (113 tpy) still requires a Section (6) permit as well as a Part 70 operating permit. Therefore, the previous permits are not affected by the new emissions estimation.

Polystyrene pellets are melted in the primary extruder (4-½ inch). Isobutane is dissolved into the melt as a blowing agent. After passing through a screen pack, the melted blend then enters the secondary extruder (6 inch) to be cooled and extruded into a tube form through a circle die. The tubes are then cut to form two polystyrene foam sheets and stored for aging. The sheets are mold pressed in an electric oven and trimmed into the finished trays. The trays are then bagged, packaged and shipped to customers.

Table 2: Emission Units

Emission Point	Emission Unit	Description
EP-001	EU-010	Extruder (old)
EP-001	EU-011	Extruder (new)
EP-002	EU-020	Roll Warehouse (old)
EP-002	EU-021	Roll Warehouse (new)
EP-003	EU-030	Thermoformer (old)
EP-003	EU-031	Thermoformer (old)
EP-003	EU-032	Thermoformer(new)
EP-003	EU-033	Thermoformer(new)
EP-003	EU-034	Padding Machine (old)
EP-003	EU-035	Padding Machine (old)
EP-003	EU-036	Padding Machine (new)
EP-003	EU-037	Padding Machine (new)
EP-004	EU-040	Flake Silo (old)

EP-004	EU-041	Flake Silo (old)
EP-004	EU-042	Flake Silo (old)
EP-004	EU-043	Flake Silo (new)
EP-004	EU-044	Flake Silo (new)
EP-006	EU-060	Pelletizer (old)
EP-008	EU-080	Virgin Polystyrene Silo (old)
EP-008	EU-081	Virgin Polystyrene Silo (old)
EP-011	EU-110	Storage/Shipping Ventilation (old)
EP-011	EU-111	Storage/Shipping Ventilation (new)

Material trimmed from the trays, material generated during extruder startup, shutdown, and upset and trays that do not meet quality control standards are sent through the recycling process where they are ground and blown by a pneumatic system to different silos. Each silo exhaust is connected to a dust collector.

The following New Source Review permits have been issued to Cascades Plastics, Inc. from the Air Pollution Control Program.

Table 3: Permit History

Permit Number	Description
OP2008-017	Part 70 Operating Permit Renewal
122002-004	Increase Production by replacing extruder screws
052000-10A	Amend Name
052000-10	Foam container manufacturing

PROJECT DESCRIPTION

Cascades Plastics, Inc. has proposed construction of an additional extruder, two thermoforming presses, two padding machines, two flake silos, and additional space within intermediate and finished goods storage at the facility located in Warrenton, Missouri. The new project will increase the facility's maximum production from 1,500 pounds of expanded polystyrene per hour to approximately 3,500 pounds per hour. Table 4 includes the new equipment that will be installed for the project. The process will remain the same, but the production will be increased with the new equipment. Emissions of VOC are uncontrolled.

Table 4: Project Emission Units

Emission Point	Emission Unit	Description
EP-001	EU-011	Extruder (new)
EP-002	EU-021	Roll Warehouse (new)
EP-003	EU-033	Thermoformer (new)
EP-003	EU-034	Thermoformer (new)
EP-003	EU-037	Padding Machine (new)
EP-003	EU-038	Padding Machine (new)
EP-004	EU-043	Flake Silo (new)
EP-004	EU-044	Flake Silo (new)
EP-011	EU-111	Storage/Shipping Ventilation (new)

EMISSIONS/CONTROLS EVALUATION

All VOC emissions from this project are from isobutane. Cascades Plastics, Inc. uses isobutane as a blowing agent for the extrusion process. The blowing agent is the source of all VOC emissions associated with the facility. Isobutane is emitted at various points throughout the production process. 64% emission of total isobutane extruded (EU-111) is assumed to be emitted within the facility for tracking purposes. Table 5 gives a conservative estimate of how much as well as when the isobutane is emitted from the expanded polystyrene throughout the production process. EPA does not have emission factors for the expanded polystyrene tray industry. Therefore, previous permits for Cascades Plastics, Inc. were written using emission assumptions without any test results. Prior to the permitting process, Cascades Plastics, Inc. reevaluated the emissions during the production of expanded polystyrene trays. A mass balance was used at various points throughout the production process in order to produce an accurate emission factor. Testing consisted of melting a sample of expanded polystyrene in a 280°F muffle furnace for two hours. The sample was then cooled for one hour at room temperature. All mass lost is assumed to be isobutane because 280°F is only 10°F higher than the melting point for polystyrene indicating a very small loss from polystyrene volatilization. By dividing the mass lost by the original sample mass, an accurate isobutane loss percentage was found for each process throughout production. The emission estimate was replaced because the previous estimate did not have scientific data to verify the assumptions.

Table 5: Isobutane Loss

Emission Point	Process Description	Isobutane Loss	Old Loss Estimate
EP-001	Extruder	34%	60%
EP-002	Intermediate Storage	5%	8%
EP-003	Thermoforming Press	5%	5%
EP-004	Flake Silos	17%	0%
EP-006	Pelletizer	3%	7%
Facility	Total Manufacturing Loss	64%	80%
Non-facility	Post-shipment Loss	36%	20%

The following table provides an emissions summary for this project. Existing potential VOC emissions were calculated using the new isobutane loss test results, an assumed 4.5 lb of isobutane per 100 lb of polystyrene foam produced, and previous production capacity. Actual isobutane usage is closer to 4.0% annually, but 4.5% was used in emissions calculations in order to remain conservative. Existing potential and project potential particulate matter emissions were calculated using EPA *WebFIRE* emission factor for polystyrene bead storage and test results for recycling processes obtained by Cascades Plastics. Existing actual emissions were calculated using the installation's production throughput from their 2011 EIQ and the isobutane loss test results. Existing potential PM₁₀ emissions were taken from permit number 122002-004. Potential emissions of the application represent the potential of the new extrusion line, assuming continuous operation (8760 hours per year). No control devices are in place for VOC emissions. Particulate matter emissions will be controlled by a cartridge filter.

Table 6: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2011 EIQ)	Conditioned Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	7.5	N/A	0.819	8.319
PM ₁₀	15.0	7.5	1.52	0.819	8.319
PM _{2.5}	10.0	7.5	N/A	0.819	8.319
SO _x	40.0	N/A	N/A	N/A	N/A
NO _x	40.0	N/A	N/A	N/A	N/A
VOC	40.0	189.2	155.77	<250.0	439.2
CO	100.0	N/A	N/A	N/A	N/A
GHG (CO ₂ e)	75,000 / 100,000	N/A	N/A	N/A	N/A
GHG (mass)	0.0 / 100.0 / 250.0	N/A	N/A	N/A	N/A
HAPs	10.0/25.0	N/A	N/A	N/A	N/A

N/A = Not Applicable

PERMIT RULE APPLICABILITY

- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOC are above de minimis levels but conditioned below major source level.

APPLICABLE REQUIREMENTS

Cascades Plastics, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220

- *Restriction of Emission of Odors*, 10 CSR 10-6.165

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

J Luebbert
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated September 17, 2012, received September 17, 2012, designating Cascades SPG Holding Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Cascades Isobutane Loss Test, August 2012

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SIC	Standard Industrial Classification
GHG	Greenhouse Gas	SIP	State Implementation Plan
gpm	gallons per minute	SMAL	Screening Model Action Levels
gr	grains	SO_x	sulfur oxides
GWP	Global Warming Potential	SO₂	sulfur dioxide
HAP	Hazardous Air Pollutant	tph	tons per hour
hr	hour	tpy	tons per year
hp	horsepower	VMT	vehicle miles traveled
lb	pound	VOC	Volatile Organic Compound
lbs/hr	pounds per hour		
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Ron Kaminski
Plant Manager
Cascades Plastics, Inc.
7501 South Spoede Lane
Warrenton, MO 63383

RE: New Source Review Permit - Project Number: 2012-09-049

Dear Mr. Kaminski:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact J Luebbert, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:jl

Enclosures

c: St. Louis Regional Office
PAMS File: 2012-09-049

Permit Number: