



## AIR POLLUTION CONTROL GENERAL CONSTRUCTION PERMIT (GCP) FOR SCREEN PRINTING UNITS

In accordance with the provisions of Chapter 285, Wis. Stats., and Chapters NR 400 to 499, Wis. Adm. Code, the owner/operator identified below is hereby granted coverage under this permit and is authorized to construct and operate screen printing units within a direct stationary source in conformity with the conditions herein until such time that the units are granted coverage under an Operation Permit or a General Operation Permit.

FACILITY IDENTIFICATION NUMBER (FID) [XXXXXXXXXX]

XXXXXXXXXX-GCP08b, where the nine letters of X represent the Facility Identification Number (FID) for the applicant and -08b represents the Screen Printing Minor Source General Construction Permit issued in the State of Wisconsin for Minor Facilities.

PERMIT NUMBER. This is a General Construction Permit. This General Construction Permit is not issued to an individual facility. This General Construction Permit will be issued once for use by sources that demonstrate that the source qualifies for coverage under this General Construction Permit. Therefore there is no source specific FID or Permit Number for this General Construction Permit. Instead, this permit will be released for coverage to an individual applicant as Permit Number

STACK NUMBER(S): <As provided by the permit application >

EMISSIONS UNIT NUMBER(S): <As provided by the permit application >

Facility Name: <As provided by permit application >

Street Address:

Responsible Official, & Title:

This authorization requires compliance by the permit holder with the emission limitations, monitoring requirements and other terms and conditions set forth in this permit. The authority for the permit holder to construct, modify, replace and/or reconstruct any printing unit covered under this general construction permit expires eighteen (18) months from the date this permit is released to the facility. This approved period to construct, modify, replace and/or reconstruct may be extended for up to 18 months upon request for cause, prior to expiration, unless otherwise specified by this general construction permit. The conditions of this general construction permit are permanent and may only be revised through revocation of coverage under the general construction permit, through revision of the general construction permit, or through issuance and release for coverage of a new general construction permit.

Dated at Madison, Wisconsin, June 15, 2007

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES  
For the Secretary

By

  
Jeffrey C. Hanson

Permits and Stationary Source Modeling Section Chief

### Applicability

This permit applies to screen printing units and associated operations (i.e. "the project") identified on the cover page to this permit and that meet the following criteria:

- The new or modified printing units, taken together, will not have a potential-to-emit that exceeds 100 tons of volatile organic compounds per year under this permit.
- The facility, prior to construction, is classified as a minor source under chs. NR 405 and NR 408, Wis. Adm. Code.
- The facility will not be required, as a result of the proposed project, to obtain a construction permit for one or more new or existing emissions units at the facility, including printing units, under ch. NR 405 or 408.
- The printing units will be located at a facility that will not have the potential-to-emit Federal Hazardous Air Pollutants (HAPs) greater than 10 TPY for each individual and individual category of Federal HAP or greater than 25 TPY for all Federal HAPs combined.
- The facility does not claim any exemptions under s. NR 422.03(4)(m), Wis. Adm. Code, for which it might be qualified.

A "Federal Hazardous Air Pollutant (HAP)" means any pollutant that is listed as a hazardous air pollutant under section 112 (b) of the Clean Air Act (42 USC 7412 (b)).

"Associated operations" means operations that, in addition to operation of a printing unit to print on a substrate during production, are necessary in order to create final printed products or to maintain the ability of a printing unit to operate.

### Previously Established Emission Limitations

#### Previously Issued Construction Permits

This construction permit may be used to provide coverage of groups of sources (e.g. screen printing units) that are in the same source category (e.g. screen printing) and that have been permitted under a construction permit which contained restrictions on potential-to-emit VOCs based on a five-year window netting analysis under ch. NR 408, Wis. Adm. Code. In these cases, a separate general construction permit must be used for each group of sources, and the original construction permit restrictions on PTE from each group of sources shall still apply, in addition to any restrictions on PTE contained in this construction permit.

#### Previously Issued Permits

To qualify for coverage under this general construction permit, the permittee shall submit an application to the Department for each existing permit that contains conditions that apply to one or more sources covered under this general construction permit. These applications shall request the Department to revise the variant conditions in those permits to be consistent with the conditions in this general construction permit.

### Source Elections

The screen printing units and associated operations covered by this permit are subject to s. NR 424.03, Wis. Adm. Code, and the Department considers each press (including its associated operations) to be part of a separate process line. Under s. NR 424.03(2)(b) and (c), Wis. Adm. Code, 85% emissions control of organic compound emissions is required, or, where 85% control is demonstrated to be technologically infeasible, the permittee must use the latest available control techniques (LACT) and operation practices demonstrating best current technology, as approved by the Department [s. NR 424.03(2)(c), Wis. Adm. Code]. As an alternative to the 85% control requirement, the owner or operator can elect under s. NR 424.03(3), Wis. Adm. Code, to meet the RACT requirements in s. NR 422.145, Wis. Adm. Code. By submitting an application for this permit, the owner or operator is informing the Department of this election, and the Department is approving the request by granting coverage under this permit. This permit requires that each screen printing process line (including screen printing and reclamation) comply with the RACT requirements in s. NR 422.145, Wis. Adm. Code.

Facilities and associated industrial cleaning operations for which coverage under this general construction permit is granted are potentially subject to the requirements of s. NR 423.035, Wis. Adm. Code, the Industrial Cleaning Operations Rule. If applicable, requirements of this regulation will be stated in the operation permit that covers industrial solvent cleaning equipment and equipment not granted coverage under this permit that may exist at the facility.

**PART I****A. OPERATIONAL REQUIREMENTS**

(1) For each screen printing unit covered by this permit and its associated screen reclamation operations the permittee shall meet all of the following requirements:

- (a) for all inks and coatings, except "special purpose inks and coatings"<sup>1</sup> and inks and coatings used for "roll coating", the permittee may not cause, allow or permit the emission of any VOCs in excess of 3.3 pounds per gallon of as-applied ink or coating, excluding water,
- (b) the permittee may not cause, allow, or permit the emission of any VOCs in excess of 6.7 pounds per gallon of as-applied special purpose ink or coating, excluding water,
- (c) the permittee may not cause, allow, or permit the emission of any VOCs in excess of 6.7 pounds per gallon of ink or coating, excluding water, that is delivered to a roll coating<sup>2</sup> applicator associated with screen printing, and
- (d) the permittee may not cause, allow, or permit the emission of any VOCs in excess of .050 pounds per square foot of screen reclaimed, calculated on a daily average basis for each day of operation.

[ss. NR 424.03(3), NR 422.145(2)(a) - (d), NR 419.03(1), Wis. Adm. Code.]

(2) In order to receive credit for retention of VOC-containing materials in shop towels, wipes, pads and other media used for manual cleaning operations, the permittee shall handle the soiled media in a manner that minimizes solvent evaporation and spills and shall meet one or more of the following requirements to receive corresponding credit:

- (a) 50% VOC retention (50% emitted as VOCs) may be applied for a cleaning solution if it contains less than 30% VOC by weight or a has a VOC composite vapor pressure of no more than 10 mm Hg at 68°F, or
- (b) 40% VOC retention (60% emitted as VOCs) may be applied for a cleaning solution if its VOC composite vapor pressure is greater than 10 mm Hg but less than 25 mm Hg at 68°F, or contains more than 30% VOC by weight.

[s. 285.65(7), Wis. Stats.]

(3) No person may cause, allow or permit organic compounds to be used or handled without using good operating practices and taking reasonable precautions to prevent the spillage, escape or emission of organic compounds (including VOCs), solvents or mixtures. Such precautions shall include, but are not limited to,

- (a) use of caution to prevent spillage or leakage when filling tanks
- (b) use of caution when performing the disposal of any VOC containing materials. The permittee shall perform the disposal by a method approved by the Department, such as incineration, recovery for reuse, or transfer in closed containers to an acceptable disposal facility
- (c) keep each VOC-containing material in a closed container, except when in use at the facility, when handled during solvent recovery or during transfer to another container, or when filling, draining, or performing cleanup operations. VOC-containing materials include but are not limited to as-received materials, as-applied materials, shop towels, wipes, pads and other media used for manual cleaning operations
- (d) use measures such as written plans, work instructions, training documents, signage, or verbal instructions to establish operating practices that prevent the spillage, escape or emission of organic compounds from the handling, transfer, storage and disposal of VOC-containing materials.

[ss. NR 419.03(2), NR 419.04(2), and NR 439.04(1)(d), Wis. Adm. Code, and s. 285.65(7), Wis. Stats.]

<sup>1</sup> Defined under s. NR 422.02(88), Wis. Adm. Code, as "inks and coatings used in screen printing which are conductive inks, are used to print ink transfers, or are designed to resist or withstand any of the following: (a) more than 2 years of outdoor exposure, (b) exposure to chemicals, solvents, acids, detergents, oil products or cosmetics, (c) temperatures in excess of 170°F, (d) vacuum forming, (e) embossing, (f) molding."

<sup>2</sup> Defined under s. NR 422.02(77), Wis. Adm. Code, as "the application of a coating material to a substrate by means of hard rubber or steel rolls."

**B. RECORDKEEPING REQUIREMENTS**

- (1) If a material received from an off-site supplier is intended for use by one or more screen printing units or by an associated operation and if the material contains greater than 1% VOC by weight, then at or before the time of application or use the permittee shall
- (a) identify and record the material or the class of similar materials to which it belongs, using a unique name or identification code, and determine and record whether the material is used as a special purpose ink or coating, a roll coating, or a general ink or coating for its current application.
  - (b) determine and record by specification or by calculation:
    - (i) the VOC content, in pounds of VOC per gallon, excluding water, of the material or class, or
    - (ii) the density, in pounds per gallon, and the percent VOC content by weight, excluding water, of the material or class.
  - (c) when determining the VOC content or other property for each material in a class of similar materials, use the specifications for the material which has the highest VOC content in that class.
  - (d) to determine VOC content or density, the permittee may use one or more of the following specification documents: testing results, the Material Safety Data Sheet from the supplier or manufacturer, general chemical literature, or a compositional analysis (formulation) of the material. When a document states a range of values for a specification, the permittee shall use the value that results in the worst-case VOC content. The permittee may elect to use a VOC content of 100% for materials lacking documentation.
  - (e) record the calculations, supplier formulation, and other data used to determine the VOC content of each material and class of similar materials.
- [ss. NR 439.04(5)(a), and NR 422.145(4), Wis. Adm. Code]

(2) For inks and coatings that are prepared from a formulation of two or more materials the permittee shall use the following methods to determine and record the quantity of VOC emissions per volume of as-applied ink or coating, excluding water, delivered to the applicator, and the permittee shall record the calculations and data used for that determination:

- (a) If the original batch is used as prepared (i.e., no supplemental material is added), then use the following formula:

$$\hat{E} = V_{OriginalBatch} = \left[ \frac{\sum_1^n (V_i Q_i)}{\sum_1^n Q_i} \right]$$

- (b) Whenever a quantity of material (e.g. thinner) is subsequently added to the original batch after the initial mixture (e.g. "original batch") was prepared<sup>3</sup>, then use the following formula to recalculate the VOC emissions per volume of the as-applied material:

$$\hat{E} = V_{OriginalBatch} + \left( \frac{\sum_1^x (V_i Q_i)}{Q_{applied}} \right)$$

where:

<sup>3</sup> If no supplemental material is added to a batch mixture, then  $Q_i = 0$  and  $E = V_{OriginalBatch}$ . It is only necessary to calculate the first term ( $=V_{OriginalBatch}$ ) once when the original batch is first mixed. Once a quantity from the batch is delivered to the printing unit, all subsequent re-calculations of E use the  $V_{OriginalBatch}$  that was first calculated in addition to the second term, which accounts for the quantity and VOC content of supplemental material that was added. However, to calculate the second term, it is necessary to monitor the amounts ( $Q_i$ ) from the original batch that were added to the coating applicator supply well, including the first quantity from the batch that was added.

$$\text{in general, } Q_{\text{applied}} = \sum_1^m Q_k ;$$

$$\text{and in cases where all of a batch is delivered to the press, } Q_{\text{applied}} = \sum_1^n Q_i$$

and where:

- $\hat{E}$  =the VOC emissions per volume of as-applied ink or coating, excluding water, delivered to the applicator, in units of pounds VOC per gallon;
- n =the number of materials, including but not limited to coatings, inks, and thinners, that were mixed together to make the original batch of an as-applied ink or coating;
- m =the number of separate deliveries of quantities from the ink or coating's batch mixture to the applicator;
- x =the number of separate additions of thinners or other supplemental materials added to the batch mixture at some time after the original batch was prepared;
- $V_i$  =the VOC content of the *i*th material from the *n* materials, in units of pounds VOC per gallon, excluding water, that was added to form the original batch of an as-applied ink or coating;
- $Q_i$  =the amount of the *i*th material from the *n* materials that was added to form the original batch of an as-applied ink or coating, in units of gallons excluding water;
- $Q_k$  =an amount of ink or coating transferred from a given batch of as-applied ink or coating and delivered to a coating applicator, in units of gallons, excluding water. Note that each time an amount is taken from the batch mixture and delivered to the applicator this constitutes another  $Q_k$  quantity where  $k = k + 1$  ;
- $V_t$  =the VOC content of the *t*th supplemental material (e.g. thinner), in pounds VOC per gallon, excluding water, that was added batch mixture;
- $Q_t$  =the *t*th amount of a supplemental material (e.g. thinner) added to the batch mixture, in units of gallons excluding water.

(c) The permittee may elect to test a batch of material for VOC content at any time using U.S. EPA Test Method 24 in accordance with I.C.(1) and keep a record of the test results, in order to consider the batch from that time forward to be the "original batch" of as-applied material under this condition.

[s. NR 406(16)(1)(d), Wis. Adm. Code]

(3) For each day of operation the permittee shall determine and record, for each screen reclamation chemical identified under I.B.(1)(a), the total volume, in gallons, of that chemical used by all screen reclamation at the facility during that day and shall determine and record for each as-received screen reclamation chemical the total volume, in gallons, that was directed, after use for screen reclamation, into a container that prevents evaporation of VOCs. [ss. NR 422.145(4), and NR 406(16)(1)(d), Wis. Adm. Code]

(4) For each day of operation the permittee shall determine and record the total surface area, in square feet, of all screens reclaimed at the facility during that day. [ss. NR 422.145(4)(c), and NR 406.16(1)(d), Wis. Adm. Code]

(5) To comply with the limitation in I.A.(1)(d), at the end of each day of operation the permittee shall calculate and record that day's average VOC emission rate from screen reclamation, using the following equation:

$$C = \frac{\sum_1^x [V_w (Q_w - r_w)]}{B}$$

where,

- C =the daily average VOC emission rate, in pounds VOC per square foot, from all screen reclamation at the facility,
- x =the total number of uniquely-identified screen reclamation chemicals used that day at the facility
- $V_w$  =the VOC content of the *w*th screen reclamation chemical, in pounds VOC per gallon
- $Q_w$  =the amount of the *w*th screen reclamation chemical used that day at the facility, in gallons
- $r_w$  =the amount of the *w*th screen reclamation chemical that was directed, after use for screen reclamation that day, into a container that prevents evaporation of VOCs, and
- B =the surface area of all screens reclaimed during a day, in square feet.

[ss. NR 406.16(1)(d), and NR 422.145(2)(d), Wis. Adm. Code]

(6) If the permittee claims credit for retention under I.A.(2)(a) or (b), then the permittee shall determine and record the VOC composite vapor pressure, as applied, of each material (e.g. solvent) used for manual cleaning operations. To

determine this quantity, the permittee may use the VOC composite vapor pressure reported on the material's MSDS or other supplier specification document. The permittee may derive VOC composite vapor pressure mathematically by using the following formula with data for the vapor pressure of each component in the material, as reported on an MSDS or in another supplier specification document that reports vapor pressure test results:

$$P_c = \sum_{i=1}^n \left[ \frac{\frac{W_i P_i}{M_i}}{\frac{W_w}{M_w} + \frac{W_e}{M_e} + \sum_{i=1}^n \left( \frac{W_i}{M_i} \right)} \right]$$

Where:

- $W_i$  =Weight of the "i"th VOC compound, in grams
- $W_w$  =Weight of water, in grams
- $W_e$  =Weight of exempt compound (includes all non-VOC compounds), in grams
- $M_i$  =Molecular weight of the "i"th VOC compound, in g/g-mole
- $M_w$  =Molecular weight of water, in g/g-mole
- $M_e$  =Molecular weight of exempt compound (includes all non-VOC compounds), in g/g-mole
- $P_c$  =VOC composite partial pressure at 20°C, in mm Hg
- $P_i$  =Vapor pressure of the "i"th VOC compound at 20°C, in mm Hg

[s. NR NR 406.16(1)(d), Wis. Adm. Code]

**C. METHODS FOR DETERMINING VOC CONTENTS**

(1) Whenever the Department requires compliance testing of an ink or coating that is not thin-film-radiation-cured, in order to determine the VOC content or density of the material, the permittee shall use U.S. EPA Method 24 in 40 CFR part 60, Appendix A, to determine organic solvent content, unless the Department has approved the permittee to use an alternative method. For thin-film-radiation-cured coatings and inks the permittee may determine VOC content by specification or calculation, using a document allowed under I.B.(1)(c).

[s. NR 439.06(3)(b), Wis. Adm. Code]

(2) Whenever compliance testing of a clean-up solvent, thinner, or other material (except an ink or coating) is required in order to determine the VOC content or density of the material, the permittee shall use a method to determine organic solvent content and density that has been approved by the Department. The permittee may use U.S. EPA Method 24 in 40 CFR part 60, Appendix A, to determine VOC content and density of these materials. [s. NR 439.06(3)(b), Wis. Adm. Code]

(3) Whenever compliance testing is required in order to determine the composite vapor pressure of a material or to determine the vapor pressure of each component in a material, the permittee shall use method ASTM D2879-97 in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.10(39m), unless the Department has approved the permittee to use an alternative method. [s. NR 439.06(3)(a), Wis. Adm. Code]

**D. HAZARDOUS AIR POLLUTANT REQUIREMENTS**

- (1) The permittee may emit to ambient air a hazardous air contaminant that is listed under Table A of chapter NR 445, Wis. Adm. Code, and that does not have a control requirement listed under column (i) of Table A, only if the facility emissions of the contaminant meet at least one of the following conditions (a), (b), (c), or (d):
- (a) the contaminant is released to ambient air by general building ventilation sources and all applicable thresholds in column (h) of Table A for the contaminant are stated either in 1-hour or 24-hour average time periods
  - (b) the contaminant is released to ambient air by general building ventilation sources and all of the following requirements are met for the contaminant:
    - (i) at least one applicable threshold in column (h) of Table A for the contaminant is stated in terms of an annual time period
    - (ii) the contaminant has a threshold limit value established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 2000
    - (iii) the permittee demonstrates to the department that it is in compliance with applicable occupational safety and health administration requirements
  - (c) the contaminant is released in quantities that do not exceed the appropriate threshold level in columns (c) to (f) of Table A, provided that the stack that vents the emissions meets the following criteria:
    - (i) the emissions are from an unobstructed discharge point and
    - (ii) the stack is oriented in an upward direction within 10 degrees of vertical
  - (d) the owner or operator limits emissions so as not to cause an ambient air quality concentration off property that exceeds column (g) of Table A, where applicable
- [ss. NR 445.07(1), NR 445.07(5)(d)1, Wis. Adm. Code]
- (2) The permittee may emit to ambient air a hazardous air contaminant that is listed under Table A of chapter NR 445, Wis. Adm. Code, that does have a control requirement listed under column (i) of Table A, only if the contaminant has a unit risk factor established by either the USEPA or the California Air Resources Board and if the facility emissions of the contaminant meet at least one of the following conditions (a) or (b), where inhalation impact is defined under s. NR 445.08(2)(c), Wis. Adm. Code:
- (a) the inhalation impact off property from each individual contaminant with a control requirement in column (i) does not exceed 1 in  $10^{-6}$  (1 in a million), or
  - (b) the inhalation impact from all contaminants with a control requirement in column (i) does not exceed 1 in  $10^{-5}$  (1 in 100,000)
- [ss. NR 445.07(1), NR 445.08(2)(c), Wis. Adm. Code]
- (3) The permittee may not cause, allow, or permit from the facility at which the printing unit(s) covered by this general permit are located the emission of Federal Hazardous Air Pollutants (HAPs) greater than 10 tons per year for each individual and individual category of Federal HAP or greater than 25 tons per year for all Federal HAPs combined. Federal HAP emissions shall be calculated no less frequently than monthly as the cumulative total over the most recent period of twelve consecutive calendar months. [s. 285.65(7), Wis. Stats.]



**E. REPORTING REQUIREMENTS**

(1) Unless otherwise specified in an operation permit covering the facility, the permittee shall submit an annual certification of compliance with the terms and conditions of this permit, along with an annual monitoring summary report containing the monitoring results required in this permit, to the Wisconsin Department of Natural Resources, Bureau of Air Management (AM/7), Compliance Team Leader, P.O. Box 7921, Madison, WI 53707-7921, or to the attention of Air Program Compliance at the address of the Department's Service Center that is located nearest to the facility. Compliance certifications and monitoring summary reports made to the Department shall cover all equipment covered by air pollution control operation permits, including those granted coverage under this general construction permit.

- (a) The time period to be addressed by the report is the January 1 to December 31 period which precedes the report, or the time period for the report required by an existing permit, if any. However, the report does not need to address any calendar month during which the permittee was not subject to this permit for at least part of the month.
- (b) The reports shall be submitted to the Service Center Office (or Central Office) within 60 days after the end of each reporting period.
- (c) The information included in the reports shall comply with the requirements of Part II Section N of this permit, including but not limited to the information required under s. NR 439.03(8), Wis. Adm. Code.
- (d) Each report shall be certified by the responsible official as to the truth, accuracy and completeness of the report.
- (e) The methods used to determine the permittee's compliance status shall be the same methods which are required under s. NR 407.09(1)(c)1.

[ss. NR 439.03(1)(c), NR 439.03(8), and NR 439.03(10), Wis. Adm. Code]

(2) All records required under this construction permit shall be retained and maintained for at least five (5) years and shall be made available to Department personnel upon request during normal business hours. [s. NR 439.04, and s. NR 439.05, Wis. Adm. Code]