

**AIR EMISSION PERMIT NO. 13100005- 003**

**IS ISSUED TO**

**MULTEK FLEXIBLE CIRCUITS INC**

Multek Flexible Circuits Inc.-Sheldahl Road  
**East and West Buildings**  
1150 Sheldahl Road and 805 North Highway 3  
Northfield, Dakota County, MN 55057-0170

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date
Total Facility Operating Permit	06/15/1995
Major Amendment (MPCA-initiated)	10/28/2003
Administrative Amendment	12/10/2004

This permit authorizes the Permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

**Permit Type:** Federal; Pt 70/Limits to Avoid NSR

**Issue Date:** November 22, 2002

**Expiration:** November 22, 2007

Title I Conditions do not expire.

**Administrative Amendment:**

**Issue Date:** January 12, 2005

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Richard J. Sandberg, Manager  
Air Quality Permits Section  
Industrial Division

for Sheryl A. Corrigan  
Commissioner  
Minnesota Pollution Control Agency

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**NOTICE TO THE PERMITTEE:**

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(651) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(651) 282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

**PERMIT SHIELD:**

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

## **FACILITY DESCRIPTION:**

The Permittee owns and operates a flexible printed circuit fabrication facility and manufactures specialty electronic products such as flexible printed circuitry, flexible composite laminates, and specialty engineering products. The stationary source consists of two buildings on either side of a county road called the East and West facilities. They are considered one stationary source under all air regulations. The types of emissions units include mixing, laminating, screen printing, plating, etching, stripping, material handling, and combustion of propane, natural gas and no. 2 fuel oil.

The main emissions are Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP), with lesser amounts of Particulate Matter and Particulate Matter less than 10 microns (PM/PM<sub>10</sub>) and various other pollutants from the combustion of propane, natural gas, and No. 2 fuel oil. The Facility currently has two scrubbers for controlling ammonia and a catalytic oxidizer for controlling VOC emissions from the laminators.

The Facility received several air emissions permits from the MPCA starting in 1985. In 1996, the total facility permit was amended to allow for several new units. This amendment (No. 6 to 884-91-OT-2) also established a total facility emissions cap on VOCs that allowed the Facility to avoid major source classification for NSR. Those limits are carried forward in this permit. The Facility is a major source under the federal operation permits program (40 CFR pt. 70) and the National Emissions Standards for Hazardous Air Pollutants (NESHAPs, 40 CFR pt. 63).

The permit contains requirements that limit emissions of VOCs, HAPs, and PM/PM<sub>10</sub> and authorizes certain changes that can take place during the permit term.

## **PERMIT APPLICATION**

The Permittee's Part 70 permit application was received on June 15, 1995. Supplemental submittals were received on the following dates: 1/11/2002, 2/12/2002, 2/21/2002, 3/18/2002, 5/01/2002, 6/04/2002, 6/05/2002, 6/10/2002, 6/17/2002, and 7/08/2002.

### **PERMIT ACTION 002 (Major Amendment):**

This permit amendment is an MPCA-initiated amendment under Minn. R. 7007.1600, subp. 1(D). It incorporates minimum temperature requirements and testing frequency requirements for CE002, Catalytic Afterburner imposed on the facility under performance testing rules Minn. R. 7017.2025, subp. 3 and Minn. R. 7017.2020, subp. 1 respectively.

### **PERMIT ACTION 003 (Administrative Amendment):**

This permit action is for a name change of the facility in accordance with Minn. R. 7007.1400, subp. 1(B). The facility changed its name from Northfield Acquisition Co. to Multek Flexible Circuits, Inc.

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.**

**Subject Item:****Total Facility**

<b>What to do</b>	<b>Why to do it</b>
<b>SOURCE-SPECIFIC REQUIREMENTS</b>	hdr
This permit establishes limits on the facility to keep it a minor source under New Source Review. The Permittee cannot make any change at the source that would make the source a major source under New Source Review until a permit amendment has been issued. This includes changes that might otherwise qualify as insignificant modifications and minor or moderate amendments.	Title I Condition: Limit to avoid classification as major source or modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
The Permittee shall not begin construction of any single project or projects that are connected or phased which will cause a total increase in actual emissions of greater than 99 tons per year for any criteria pollutant without first getting a permit amendment to authorize the project. Connected and phased have meanings as defined in Minn. R. 4410.0200 subps. 9b and 60. The Permittee shall not begin construction of any other project which is listed in Minn. R. 4410.4300 or Minn. R. 4410.4400 without first getting a permit amendment to authorize the project. Such projects may require the completion of an Environmental Assessment Worksheet or an Environmental Impact Statement prior to the amendment being issued. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 4410.4300 and Minn. R. 4410.4400
The Permittee shall not emit thiourea. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2
The Permittee shall not emit methylene chloride. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2
The facility currently uses ozone-depleting substances as defined in 40 CFR pt. 82. Sections 601-618 of the 1990 Clean Air Act Amendments and 40 CFR pt. 82 may apply to your facility. Read Sections 601-618 and 40 CFR pt. 82 to determine all the requirements that apply to your facility.	40 CFR pt. 82
Potential to Emit from Insignificant Activities, Volatile Organic Compounds: less than or equal to 40 tons/year	Title I Condition: Limit to avoid classification as major source or modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Insignificant Activity Evaluation: Prior to installing, changing, or modifying any Insignificant Activity, the Permittee shall update the Emissions Calculations - Insignificant Sources spreadsheet to show the revised combined PTE of all insignificant activities. For VOC emissions, the total must be less than the Insignificant Activities limit given above. Any change or activity that would make the total greater than this number cannot be made without first applying for and obtaining a major permit amendment.	Title I Condition: Limit to avoid classification as major source or modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
<b>OPERATIONAL REQUIREMENTS</b>	hdr
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and shall include a preventative maintenance program for that equipment, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

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Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080
Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
<b>PERFORMANCE TESTING</b>	hdr
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Performance Test Notifications and Submittals:  Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements.  Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test  The Notification, Test Plan, and Microfiche Copy of the Test Report may be submitted in an alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2030, subp. 1-4 and Minn. R. 7017.2035, subp. 1-2
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
<b>MONITORING REQUIREMENTS</b>	hdr
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
<b>RECORDKEEPING</b>	hdr
Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007. 1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007. 0800, subp. 5(B)
<b>REPORTING/SUBMITTALS</b>	hdr
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3.  At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

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Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2.  At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Emission Inventory Report: due 91 days after end of each calendar year following permit issuance (April 1). To be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000 through Minn. R. 7019.3010
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095
By May 15, 2004, submit to the MPCA a Part 2 MACT Hammer notification meeting the requirements of 40 CFR Section 63.53(b).	40 CFR Section 63.52(e)

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item: GP 001 Total Facility VOC Limit**

What to do	Why to do it
<p>GP 001 consists of the following emissions units: 001-003, 006, 008, 012, 014-018, 020-027, 031, 036, 038, 042-054, 057-062, 065-071, 074-085, 087-089, 091, 092, 098-105, 110, and 116-120.</p> <p>Within GP 001, the following units are currently part of the Laminating Area: 015, 016, 017, 020, 023, 024, 025, 026, 027, 080, 081, 082, 083, 084, 087, 088, 089, 091, and 119.</p> <p>Within GP 001, the following units are currently Wet Processes: 031, 036, 038, 042, 043, 044, 045, 046, 092, 098, 099, 100, 101, 102, and 120.</p>	Associated Items
<b>A. EMISSIONS AND OPERATING LIMITS</b>	hdr
<p>Volatile Organic Compounds: less than or equal to 205 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period as described later in this permit.</p> <p>All emission units as listed in GP 001 shall be included in this calculation. VOC contents for each VOC-containing material shall be determined as described under the Material Content requirement in GP 001. The calculation of VOCs used may take into account recovered/recycled VOCs as described under the Waste Credit requirement in GP 001.</p>	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
<p>For the first 11 months after permit issuance, the VOC limit shall be as follows, calculated as a cumulative sum:</p> <p>Month 1: 25 tons  Month 2: 40 tons  Month 3: 55 tons  Month 4: 70 tons  Month 5: 85 tons  Month 6: 100 tons  Month 7: 115 tons  Month 8: 130 tons  Month 9: 145 tons  Month 10: 160 tons  Month 11: 175 tons</p>	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
<p>The Permittee is pre-authorized to make the following changes over the life of the permit:</p> <p>1). Move or modify emissions units listed in GP 001; and  2). Replace emission units listed in GP 001 with similar units.</p> <p>Provided the following conditions are met:</p> <p>1). The proposed change does not trigger the requirements of 40 CFR pt. 63, subp. B (i.e., 112(g));  2). All replacement units have equal or lesser hourly potential emissions than those they are replacing;  3). VOC emissions are tracked and calculated as specified in this permit; and  4). All equipment meets the requirements for GP 001.</p> <p>If a proposed change triggers an applicable requirement that is not contained in this permit, the change must be permitted using the appropriate procedure in Minn. R. ch. 7007.</p>	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735. This applies separately to each piece of industrial process equipment in GP 001 that is not subject to a different Minn. R. ch. 7011 standard listed elsewhere in this permit.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity . This applies separately to each piece of industrial process equipment in GP 001 that is not subject to a different Minn. R. ch. 7011 standard listed elsewhere in this permit.	Minn. R. 7011.0715, subp. 1(B)
<b>B. MONITORING AND RECORDKEEPING</b>	hdr



**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

Recordkeeping of Changes: Prior to making any pre-authorized change, the Permittee shall document that the proposed change meets the criteria listed in this permit and is therefore pre-authorized. The Permittee shall maintain this documentation on site.  For modified and replacement units, the Permittee shall update the necessary MPCA permit application forms (e.g., GI-05B) with the necessary revisions (e.g., manufacturer, date of installation/modification, capacity, etc.). In addition, the Permittee shall also maintain a listing of which emissions units are Laminating and Wet Processes. The Permittee shall maintain this documentation on site and include it in the Annual Report listed in Table B of this permit.	Minn. R. 7007.0800, subp. 4 and 5
Material Usage Recordkeeping  1). Laminating: On each operating day, the Permittee shall record and maintain the quantity of each material mixed, based on mixing, dispensing, or usage logs. For cleaners and thinners that are not mixed, on each operating day, the Permittee shall record and maintain the quantity of each material dispensed. The records shall include the material specification number and the mass or volume of material.  2). Wet Processes: Each time a container of VOC-containing materials is taken out of chemical storage, the Permittee shall record the size (mass or volume) of the container and the product name or number.  3). For all other VOC-containing materials: The Permittee shall calculate, record, and maintain monthly usage records showing the quantity of each material used. This shall be based on written usage or dispensing logs, or purchase/delivery records. The record shall include the material specification number and the mass or volume of material.	Title I Condition: Monitoring for Limit to avoid classification as major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
Fuel Records.  1). The Permittee shall keep records of fuel purchases for the Facility on a monthly basis.  2). The Permittee shall obtain and maintain a certification from the fuel supplier for each No. 2 Fuel Oil delivery specifying the sulfur content of the fuel oil, in weight percent.	Minn. R. 7007.0800, subp. 5
Records of Materials Mixed for Off-site Use: On a monthly basis the Permittee shall document and record each material processed in the mixing room for off-site use. The record shall include the specification number and quantity (either mass or volume). This shall be completed by the 10th day of each calendar month for the previous calendar month.	Minn. R. 7007.0800, subp. 4 and 5
Material Specifications: For each VOC-containing material purchased for use on-site or VOC-containing material mixed on-site, the Permittee shall document and record the maximum VOC content as well as any other data needed to convert the usage records into a weight value in "tons" (e.g., density in lb/gal). This record shall be updated prior to beginning use of any new material.	Minn. R. 7007.0800, subp. 4 and 5
Monthly Recordkeeping -- VOC Emissions. By the 15th of the month, the Permittee shall calculate and record the following: 1) The total usage of VOC containing materials for the previous calendar month using the usage records. This record shall also include the VOC contents of each material as determined by the Material Content requirement of this permit. 2) The VOC emissions for the previous month using the formulas specified in Appendix I of this permit. 3) The 12-month rolling sum VOC emissions for the previous 12-month period by summing the monthly VOC emissions data for the previous 12 months.	Minn. R. 7007.0800, subp. 4 and 5
Material Content: The VOC content of materials shall be determined by the Material Safety Data Sheet (MSDS) provided by the supplier for each material used. If a material content range is given on the MSDS, the highest number in the range shall be used in all permit calculations. Other alternative methods approved by the MPCA may be used to determine the VOC contents. The Commissioner reserves the right to require the Permittee to determine the VOC contents of any material, according to EPA or ASTM reference methods. If an EPA or ASTM reference method is used for material content determination, the data obtained shall supersede the MSDS.	Minn. R. 7007.0800, subp. 4 and 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

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<p>Waste Credit: If the Permittee elects to obtain credit for VOC shipped in waste materials, the Permittee shall use either Option 1 or 2 to determine the VOC content for each credited shipment.</p> <p>Option 1: The Permittee shall analyze a composite sample of each waste shipment to determine the weight content of VOC.</p> <p>Option 2: The Permittee may use supplier data for raw materials to determine the VOC contents of each waste shipment, using the same content data used to determine the content of raw materials. If the waste contains several materials, the content of mixed waste shall be assumed to be the lowest VOC content of any of the materials.</p>	Minn. R. 7007.0800, subp. 4 and 5
<p>Mix Room Emission Factor Study: The Permittee may conduct an engineering study using a mass balance approach to develop an emissions factor, or multiple emissions factors as needed, for the mix room. The Permittee shall submit the study results and proposed emission factor(s) to the MPCA for review and approval. Once the emissions factor(s) are approved in writing by the MPCA, they shall be used in the calculations detailed in Appendix I of this permit.</p>	Minn. R. 7007.0800, subp. 2, 4 and 5
<p>Ethanolamine Emission Factor Study: The Permittee may conduct an engineering study using a mass balance approach to develop an emissions factor for this compound. The Permittee shall submit the study results and proposed emission factor to the MPCA for review and approval. Once the emissions factor is approved in writing by the MPCA, it may be used in the calculations detailed in Appendix I of this permit.</p>	Minn. R. 7007.0800, subp. 2, 4 and 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item:** GP 002 Natural Gas/Propane Boilers: Pre-Jan. 31, 1977**Associated Items:** EU 001 Boiler 0-8985

EU 008 Boiler 958

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input . This applies separately to each indirect heating unit in GP 002. The potential to emit is 0.0076 lb/MMBtu based on allowable fuels.	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. This applies separately to each indirect heating unit in GP 002.	Minn. R. 7011.0510, subp. 2
Fuel Type: natural gas or propane only, by design.	Minn. R. 7005.0100, subp. 35a

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item:** GP 003 No. 2 Fuel Oil/Natural Gas/Propane Boilers: Jan. 31, 1977 or later**Associated Items:** EU 002 Boiler H1390

EU 006 Boiler 15772

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input . This applies separately to each indirect heating unit in GP 003. The maximum potential to emit is 0.014 lb/MMBtu based on allowable fuels.	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. This applies separately to each indirect heating unit in GP 003.	Minn. R. 7011.0515, subp. 2
Fuel Type: Natural Gas, Propane, or No. 2 Fuel Oil only, by design.	Minn. R. 7005.0100, subp. 35a
No. 2 Fuel Oil, Sulfur Content: less than or equal to 0.5% by weight.	Minn. R. 7007.0800, subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item:** GP 004 Emergency Generators**Associated Items:** EU 085 Backup Generator

EU 103 Backup Generator

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained. This applies separately to each generator in GP 004.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . This applies separately to each generator in GP 004. The potential to emit is 0.0006 lb/MMBtu based on allowable fuels.	Minn. R. 7011.2300, subp. 2
Fuel Type: natural gas only, by design.	Minn. R. 7005.0100, subp. 35a
Recordkeeping -- Hours of Operation: The Permittee shall maintain documentation on-site that each unit in GP 004 is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, limiting operation to 500 hours per year.	Minn. R. 7007.0800, subp. 4 and 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item:** EU 003 Boiler F-1060-23**Associated Items:** SV 050 Stack C1 Central

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input . The potential to emit is 0.0076 lb/MMBtu based on allowable fuels.	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0515, subp. 2
Fuel Type: natural gas or propane only, by design.	Minn. R. 7005.0100, subp. 35a

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item:** EU 012 Oxidizer Burner**Associated Items:** SV 017 Stack AA West

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0610, subp. 1(A)(2)
Fuel Type: natural gas or propane only, by design.	Minn. R. 7005.0100, subp. 35a

# TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item:** CE 002 Catalytic Afterburner w/Heat Exchanger

**Associated Items:** EU 015 Laminator #2, Slot Exhaust  
EU 023 Laminator #5, Slot Exhaust  
EU 025 Laminator #1  
EU 026 Laminator #1, Enclosure  
EU 027 39" Laminator, Slot Exhaust  
EU 080 Pilot Coater  
EU 081 Laminator #10  
EU 082 Laminator #2  
EU 083 Laminator #5  
EU 084 39" Laminator

What to do	Why to do it
A. MONITORING SCENARIOS	hdr
Monitoring Scenarios: The Permittee is authorized to install a new temperature monitoring system that will monitor the 3-hour rolling average inlet temperature of the catalytic oxidizer. Prior to installation of such a system, the Permittee shall comply with and monitor for the absolute minimum temperature limit listed under Scenario 1. After installation of the system, the Permittee shall comply with and monitor for the 3-hour rolling average temperature limit under Scenario 2.	Minn. R. 7007.0800, subp. 11
Notify: due 30 days after Equipment Installation. The Permittee shall notify the MPCA when the installation of the new temperature monitoring system is complete. The notification shall include the date that the Permittee switched to Monitoring Scenario 2.	Minn. R. 7007.0800, subp. 11
B. LIMITS APPLICABLE UNDER BOTH SCENARIOS	hdr
The Permittee shall operate and maintain the control equipment such that it achieves a destruction efficiency for Volatile Organic Compounds: greater than or equal to 92 percent destruction efficiency	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
The Permittee shall operate and maintain the catalytic oxidizer any time that any one of following units is in operation and using VOC-containing materials: EUs 025, 080, 081, 082, 083, and 084 (Laminators).	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
The Permittee has the option of controlling the following emissions points: EUs 015, 023, 026, and 027 (Slot or Enclosure Exhaust).	
C. SCENARIO 1	hdr
Temperature: greater than or equal to 684.5 degrees F absolute minimum at the inlet until a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the average temperature recorded during the most recent MPCA approved performance test where compliance for VOC emissions was demonstrated. If the inlet temperature drops below the minimum temperature limit, the VOC used during that time shall be considered uncontrolled until the minimum temperature limit is once again achieved. This shall be reported as a deviation.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
D. SCENARIO 2	hdr
Temperature: greater than or equal to 684.5 degrees F as a 3-hour rolling average at the inlet until a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the average temperature recorded during the most recent MPCA approved performance test where compliance for VOC emissions was demonstrated. If the 3-hour rolling average inlet temperature drops below the minimum temperature limit, the VOC used during that time shall be considered uncontrolled until the average minimum temperature limit is once again achieved. This shall be reported as a deviation.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
E. MONITORING	hdr
Monitoring Equipment: The Permittee shall install and maintain thermocouples for measuring the temperatures as required by this permit. The monitoring equipment must be installed, in use, and properly maintained whenever the monitored control equipment is required to be operated.	Minn. R. 7007.0800, subp. 4
The Permittee shall maintain and operate a thermocouple monitoring device that continuously indicates and records both the inlet and outlet temperatures of the catalytic oxidizer. The monitoring device shall have a margin of error less than the greater of +/- 0.75 percent of the temperature being measured or +/- 2.5 degrees Celsius. Once operating under Scenario 2, the recording device shall also calculate the three-hour rolling average inlet temperature.	Minn. R. 7007.0800, subp. 4 and 5



**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

The Permittee shall maintain a continuous hard copy readout or computer disk file of the inlet and outlet temperatures. Once operating under Scenario 2, the Permittee shall also maintain the calculated three-hour rolling average inlet temperature.	Title I Condition: Monitoring for Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
Daily Monitoring: The Permittee shall physically check the temperature recording device at least once each operating day to verify that it is working and recording properly.	Minn. R. 7007.0800, subp. 4 and 5
Sample Analysis: due before end of each calendar 24 months starting 11/22/2002 . The Permittee shall send a representative sample of the catalyst to a laboratory to test the catalyst's destruction efficiency. If test results show a destruction efficiency of less than 92%, the Permittee shall follow the corrective actions contained in the Operation and Maintenance Plan.	Minn. R. 7007.0800, subp. 4, 5, and 14
Quarterly Inspections: At least once per calendar quarter, or more frequently if required by the manufacturer specifications, the Permittee shall inspect the control equipment external system components. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Annual Inspections: At least once per calendar year, or more frequently if required by the manufacturer specifications, the Permittee shall inspect the control equipment internal system components, including but not limited to the refractory, heat exchanger, and electrical systems. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Annual Calibration: The Permittee shall calibrate the temperature monitor at least annually and shall maintain a written record of the calibration and any action resulting from the calibration.	Minn. R. 7007.0800, subp. 4, 5, and 14
For periods when the catalytic oxidizer is operated above the minimum inlet temperature, the Permittee shall use either one of the following when completing calculations as required elsewhere in this permit: a. The destruction efficiency specified in this permit (92%); or b. The destruction and/or overall control efficiency determined during the most recent MPCA approved performance test. If the tested efficiency is less than the efficiency limit in this permit, the Permittee must use the tested value in all calculations until the efficiency is demonstrated to be above the permit limit through a new test.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
The Permittee shall keep records at each Laminator documenting when non-VOC-containing materials are being used (and therefore control is not required). In the absence of such a record, it will be assumed that VOC-containing materials were in use.  The Permittee shall keep a log of times and materials used when the Slot or Enclosure Exhausts are vented to CE 002.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Corrective Actions: If the temperature is below the minimum specified by this permit or if the catalytic oxidizer or any of its components are found during the inspections to need repair, the Permittee shall take corrective action as soon as possible. Corrective actions shall return the temperature to at least the permitted minimum and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the catalytic oxidizer. The Permittee shall keep a record of the type and date of any corrective action taken.	Minn. R. 7007.0800, subp. 4, 5, and 14
The Permittee shall operate and maintain the thermal oxidizer in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
Hood Certification and Evaluation: If the Permittee wishes to obtain credit for controlling any slot exhaust or enclosure (EUs 015, 023, 026, and 027), the Permittee must satisfy this requirement for each unit where credit is taken.  The ventilation hood must conform to the requirements listed in Minn. R. 7011.0070, subp. 1, and the Permittee shall certify this as specified in Minn. R. 7011.0070, subp. 3. The Permittee shall maintain a copy of the certification on site, as well as an annual record of fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method. If these requirements are satisfied, the Permittee can assume a 60% capture efficiency for these units in the calculations in Appendix I of this permit.	Minn. R. 7007.0800, subp. 4 and 14
Performance Test: due before end of each 60 months starting 05/20/2003 for VOC Destruction Efficiency of the Catalytic Oxidizer. In addition, the test shall measure the carryover of VOC emissions into the dryer versus emitted from the slot/enclosure exhaust (currently assumed to be 93% and 7%).	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item: CE 003 Wet Scrubber-High Efficiency****Associated Items:** EU 098 DESN Line (Ammonia)

EU 099 DESN 2 (Ammonia)

EU 100 ESA-1 Line (Ammonia)

EU 101 ESA-2 Line (Ammonia)

EU 102 SEB Line (Ammonia)

What to do	Why to do it
Ammonia: less than or equal to 6.2 lb/hr, based on a three-hour average. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Ammonia: greater than or equal to 85% control efficiency.	Minn. R. 7007.0800, subp. 2
Pressure Drop: less than or equal to 6.0 inches of water column , unless a new limit is set pursuant to Minn. R. 7017.2025, subp. 3, based on the value recorded during the most recent MPCA approved performance test where compliance was demonstrated. The Permittee shall record the pressure drop once every 24 hours when in operation.	Minn. R. 7007.0800, subp. 2 and 14
pH: less than or equal to 3.5, unless a new limit is set pursuant to Minn. R. 7017.2025, subp. 3, based on the value recorded during the most recent MPCA approved performance test where compliance was demonstrated. The Permittee shall record the pH once every 24 hours when in operation.	Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain the wet scrubber any time that any emission unit controlled by the wet scrubber is in operation.	Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop and pH. The Permittee shall record the time and date of each pressure drop and pH reading and whether or not the recorded value was under the limit specified in this permit.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pH is greater than the listed limit; - the recorded pressure drop is greater than the listed limit; or - the scrubber or any of its components are found during the inspections to need repair. Corrective actions shall return the values to below the listed permit limits and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the scrubber. The Permittee shall keep a record of the type and date of any corrective action taken for the scrubber.	Minn. R. 7007.0800, subp. 4, 5, and 14
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording the pressure drop and pH as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored scrubber is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
The Permittee shall operate and maintain the wet scrubber in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

**Subject Item:** CE 004 Wet Scrubber-High Efficiency**Associated Items:** EU 092 DES Line, Etch Develop Module

What to do	Why to do it
Ammonia: less than or equal to 0.56 lb/hr, based on a three-hour average. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Ammonia: greater than or equal to 85% control efficiency.	Minn. R. 7007.0800, subp. 2
Pressure Drop: less than or equal to 6.0 inches of water column , unless a new limit is set pursuant to Minn. R. 7017.2025, subp. 3, based on the value recorded during the most recent MPCA approved performance test where compliance was demonstrated. The Permittee shall record the pressure drop once every 24 hours when in operation.	Minn. R. 7007.0800, subp. 2 and 14
pH: less than or equal to 3.5, unless a new limit is set pursuant to Minn. R. 7017.2025, subp. 3, based on the value recorded during the most recent MPCA approved performance test where compliance was demonstrated. The Permittee shall record the pH once every 24 hours when in operation.	Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain the wet scrubber any time that any emission unit controlled by the wet scrubber is in operation.	Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop and pH. The Permittee shall record the time and date of each pressure drop and pH reading and whether or not the recorded value was under the limit specified in this permit.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pH is greater than the listed limit; - the recorded pressure drop is greater than the listed limit; or - the scrubber or any of its components are found during the inspections to need repair. Corrective actions shall return the values to below the listed permit limits and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the scrubber. The Permittee shall keep a record of the type and date of any corrective action taken for the scrubber.	Minn. R. 7007.0800, subp. 4, 5, and 14
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording the pressure drop and pH as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored scrubber is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
The Permittee shall operate and maintain the wet scrubber in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14

## TABLE B: SUBMITTALS

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd  
Permit Number: 13100005 - 003

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor  
Permit Section  
Air Quality Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor  
Compliance Determination Unit  
Air Quality Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak  
Air and Radiation Branch  
EPA Region V  
77 West Jackson Boulevard  
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency  
Clean Air Markets Division  
1200 Pennsylvania Avenue NW (6204N)  
Washington, D.C. 20460

**TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS**

01/12/05

Facility Name:        Multek Flexible Circuits Inc-Sheldahl Rd  
Permit Number:       13100005 - 003

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility

**TABLE B: RECURRENT SUBMITTALS**

01/12/05

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005 - 003

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 11/22/2002 . The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.	Total Facility
Annual Report	due 31 days after end of each calendar year starting 11/22/2002 . The Permittee shall submit an annual report by January 31 that describes the changes made at the facility during the previous calendar year using the latest MPCA application forms. The report shall include the VOC 12-month rolling sum calculations for the previous calendar year. The report shall be submitted with the annual Compliance Certification listed in Table B. As part of the Annual Report, the Permittee shall verify and certify that the facility has maintained minor source status for New Source Review.	Total Facility
Compliance Certification	due 31 days after end of each calendar year starting 11/22/2002 (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner and to the US EPA regional office in Chicago. This report covers all deviations experienced during the calendar year.	Total Facility

## APPENDIX MATERIAL

Facility Name: Multek Flexible Circuits Inc-Sheldahl Rd

Permit Number: 13100005-003

### Appendix I: VOC Calculation Procedures

The Permittee shall calculate monthly VOC emissions using the formulas below. If the Permittee tracks material usage on a volume basis, the Permittee shall also record the necessary material density or VOC content in lbs/gallon, and perform the necessary conversions to calculate emissions in tons/month.

$$\text{VOC (tons)} = A + B + C + D + F - G$$

A = VOC emissions, in tons, from laminating mixing area (EUs 016, 017, 020, 024, 087, 088, 089, 091, and 119)

$$A = [(MF1 \times U1 \times V1) + (MF2 \times U2 \times V2) + \dots]/2000$$

MF# = the appropriate Total Mixing Emissions Factor for a given material, based on the number of times the given material is mixed or weighed. This shall be based on the specific factors of 0.10 lb/lb for open mixing, 0.06 lb/lb for closed mixing, and 0.92 lb/ton for product weighing unless the MPCA approves new mixing factors per the procedures in Table A of this permit.

U# = amount of each VOC-containing material mixed the previous month, in pounds (or tons for product weighing at EU 016)

V# = weight percent VOC in U#, as a fraction (e.g., 10 % is 0.10)

B = VOC emissions, in tons, from the laminator slots or enclosures (EUs 026, 015, 023, and 027)

$$B = [(1-MF1) \times (S1 \times (U1 \times V1) \times (1 - (CE \times DE))) + (1-MF2) \times (S2 \times (U2 \times V2) \times (1 - (CE \times DE))) + \dots]/2000$$

S# = the percentage of the material emitted at the given slot or enclosure. This is 0.07 (7%) for all units until new values are set per MPCA-approved testing.

MF# = For any material that was mixed and where the mixing emissions were already calculated under item "A", this is the same mixing factor from above (e.g., 0.10 lb/lb for open mixing). If the material was not mixed (e.g., cleaner), MF# = 0.

U# = pounds of each VOC-containing material used at the laminators in the previous month

V# = weight percent VOC in U#, as a fraction

For times when the emissions are controlled (per the requirements in Table A of this permit):

CE = capture efficiency for the specific slot or enclosure, as determined through an MPCA-approved performance test or as specified in Table A of this permit.

DE = destruction efficiency of the applicable control system

***If the emissions are not vented to the control device, CE and DE = 0***

C = VOC emissions, in tons, from the laminator dryers (EUs 025, 080, 081, 082, 083, and 084)

$$C = [(1-MF1) \times (T1 \times (U1 \times V1) \times (1 - OCE)) + (1-MF2) \times (T2 \times (U2 \times V2) \times (1 - OCE)) + \dots]/2000$$

T# = the percentage of the material emitted into the tunnel dryers (vs. the slot or enclosure). For EUs 025, 082, 083, and 084, this is 0.93 (or 93%) until new values are set per MPCA-approved testing. For EUs 080 and 081, this is 1.0.

MF# = For any material that was mixed and where the mixing emissions were already calculated under item “A”, this is the same mixing factor from above (e.g., 0.10 lb/lb for open mixing). If the material was not mixed (e.g., cleaner), MF# = 0.

U# = amount of each VOC-material used at the laminators in the previous month, in pounds

V# = weight percent VOC in U#, as a fraction

OCE = overall control efficiency of the control system, assuming a capture efficiency of 100%.

### **D = VOC emissions, in tons, from all other processes**

$$D = [(EF1 \times U1 \times V1) + (EF2 \times U2 \times V2) + \dots]/2000$$

EF# = emissions factor for the given process. EF is assumed to be “1” (or 100% emitted) for each VOC-containing material unless a new value is approved by the MPCA per the procedures detailed in Table A of this permit.

U# = amount of each VOC-containing material used in the previous month, in pounds

V# = weight percent VOC in U#, as a fraction

F = VOC emissions, in tons, from combustion of fuel.

$$F = (NG \times EF_{\text{gas}}) + (FO \times EF_{\text{fo}})$$

NG = amount of natural gas burned in the previous month.

EF<sub>gas</sub> = emissions factor for natural gas combustion, from most recent edition of EPA’s AP-42.

FO = amount of No. 2 fuel oil burned in the previous month.

EF<sub>fo</sub> = emissions factor for No. 2 fuel oil combustion, from most recent edition of EPA’s AP-42.

If the Permittee doesn’t wish to calculate the actual VOC emissions from fuel combustion, the Permittee shall use the total calculated VOC PTE from all significant combustion units for “F”. At the time of permit issuance, this is 1.25 tpy.



G = the amount of VOC shipped in waste, in tons

$$\mathbf{G = [(W1 \times V1) + (W2 \times V2) + .....]/2000}$$

W# = amount, in pounds, of each VOC-containing waste shipped in the previous month. If the Permittee chooses to not take credit for waste shipments, this parameter would be zero.

V# = weight percent VOC in W#, as a fraction

Waste may be credited at the individual variable level (e.g., A, B, C, etc.) or as a separate variable, G.

## Appendix II: Insignificant Activities and General Applicable Requirements

The table below lists the insignificant activities that are currently at the facility and their associated general applicable requirements.

<b>Minn. R. 7007.1300, subp.</b>	<b>Rule Description of the Activity</b>	<b>General Applicable Requirement</b>
3(B)(1)	infrared electric ovens	Minn. R. 7011.0110 (opacity)
3(G)	laboratory equipment	Minn. R. 7011.0715 (PM and opacity)
3(H)(4)	brazing, soldering or welding equipment	Minn. R. 7011.0715 (PM and opacity)
3(I)	Individual emissions units at a stationary source, each of which have a potential to emit the following pollutants in amounts less than:  1. 4,000 lbs/year of carbon monoxide; and  2. 2,000 lbs/year each of nitrogen oxide, sulfur dioxide, particulate matter, particulate matter less than ten microns, volatile organic compounds (including hazardous air pollutant-containing VOC), and ozone.  <i>Sheldahl has approximately 25 units that qualify under this subpart.</i>	Minn. R. 7011.0715 (PM and opacity)
4	Individual emissions units with actual emissions of one ton per year or less for particulate matter, particulate matter less than ten microns, nitrogen oxide, sulfur dioxide, and VOCs, and emissions of HAP under various thresholds listed in the rule.  <i>Sheldahl has approximately 45 units that qualify under this subpart.</i>	various

## Appendix III: Facility Description from Delta

The Permittee owns and operates a flexible printed circuit fabrication facility and manufactures specialty electronic products such as flexible printed circuitry, flexible composite laminates, and specialty engineering products. The stationary source consists of two buildings on either side of a county road called the East and West facilities. They are considered one stationary source under all air regulations. The types of emissions units include mixing, laminating, screen printing, plating, etching, stripping, material handling, and combustion of propane, natural gas and no. 2 fuel oil.

The main emissions are Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP), with lesser amounts of Particulate Matter and Particulate Matter less than 10 microns (PM/PM<sub>10</sub>) and various other pollutants from the combustion of propane, natural gas, and No. 2 fuel oil. The Facility currently has two scrubbers for controlling ammonia and a catalytic oxidizer for controlling VOC emissions from the laminators.

The Facility received several air emissions permits from the MPCA starting in 1985. In 1996, the total facility permit was amended to allow for several new units. This amendment (No. 6 to 884-91-OT-2) also established a total facility emissions cap on VOCs that allowed the Facility to avoid major source classification for NSR. Those limits are carried forward in this permit. The Facility is a major source under the federal operation permits program (40 CFR pt. 70) and the National Emissions Standards for Hazardous Air Pollutants (NESHAPs, 40 CFR pt. 63).

The permit contains requirements that limit emissions of VOCs, HAPs, and PM/PM<sub>10</sub> and authorizes certain changes that can take place during the permit term.

**TECHNICAL SUPPORT DOCUMENT**  
**For**  
**AIR EMISSION PERMIT NO. 13100005-003**

This technical support document is intended for all parties interested in the permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp.1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the determination to issue the permit.

**1. General Information**

**1.1. Applicant and Stationary Source Location:**

Applicant/Address	Stationary Source/Address (SIC Code: <b>3679</b> )
Multek Flexible Circuits, Inc. 1150 Sheldahl Road Northfield, MN 55057	1150 Sheldahl Rd and 805 North Highway 3 Northfield, MN 55057 Dakota County
Contact: <b>Mr. Ronald Keller, EHS Mgr</b> Phone: <b>(507) 663-8274</b>	

**1.2. Description of the Permit Action**

An administrative amendment application was received December 10, 2004 in accordance with Minn. R. 7007.1400, subp. 1(B) to request a name change for the facility from Northfield Acquisition Co – East & West to Multek Flexible Circuits, Inc. A copy of the request for the name change is included in attachment 1 to this TSD.

The permit applies to both the East and the West Buildings at this facility.

**2. Conclusion**

Based on the information provided by Multek Flexible Circuits, Inc., the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 13100005-003 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team:     Bonnie Nelson (permit writer/engineer)  
   Fred Jenness (peer reviewer)

Attachment:         1. Documentation of name change request.