

## Air Permit Review

Permit Issue Date: **December 10, 2008**

<b>Region:</b> Mooresville Regional Office <b>County:</b> Catawba <b>NC Facility ID:</b> 1800102 <b>Inspector's Name:</b> Jennifer Manning <b>Date of Last Inspection:</b> 06/24/2008 <b>Compliance Code:</b> C/In Compliance With <span style="float: right;">Procedural Requirements</span>
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<b>Facility Data</b>			<b>Permit Applicability</b>		
<b>Applicant (Facility's Name):</b> Hickory Chair Company, Plant 7 37 9th Street Pl SE Hickory, NC 28602  <b>SIC:</b> 2512 / Upholstered Household Furniture <b>NAICS:</b> 337121 / Upholstered Household Furniture Manufacturing  <b>Facility Classification:</b> Before: Title V After: Title V <b>Fee Classification:</b> Before: Title V After: Title V			<b>SIP:</b> 2D .0503, .0504, .0512, .0516 and .0521 <b>NSPS:</b> Not applicable <b>NESHAP:</b> 40 CFR Part 63, Subparts JJ, DDDD and ZZZZ <b>PSD:</b> Not applicable <b>PSD Avoidance:</b> Not applicable <b>NC Toxics:</b> 2Q .0705 <b>112(r):</b> Not applicable <b>Other:</b> 2D .1806		
<b>Contact Data</b>			<b>Application Data</b>		
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<b>Application Number:</b> 1800102.08A <b>Date Received:</b> 08/14/2008 <b>Application Type:</b> Renewal <b>Application Schedule:</b> TV-Renewal <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 02779/T20 <b>Existing Permit Issue Date:</b> 12/18/2007 <b>Existing Permit Expiration Date:</b> 05/31/2009		
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<b>Review Engineer:</b> David Putney  <b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____			<b>Comments / Recommendations:</b> Issue 02779/T21 <b>Permit Issue Date:</b> <b>December 10, 2008</b> <b>Permit Expiration Date:</b> <b>November 30, 2013</b>		

### I Reason for Application:

**Facility Description:** Hickory Chair Company operates a wood furniture manufacturing operation at the Plant 7 facility in Hickory, Catawba County, North Carolina.

**Requested Permit Modifications:** The Permittee submitted permit application 1800102.08A to renew Permit No. 02779T20. This application indicates that Compliance Assurance Monitoring (CAM) requirements do not apply to this facility.

### II Regulatory Review for Individual Source Categories:

**A. One wood/finishing materials/paper-fired firetube boiler (38 million Btu per hour maximum heat input rate; ID No. WFB-1) and two associated multicyclones (20 nine-inch diameter tubes, each; ID Nos. CDMCY-1 and CDMCY-2)**

This boiler was manufactured by Bigelow in 1957 and is used to generate comfort heat, process heat and steam for use throughout the facility. In an add-info letter dated 09/15/08, the Permittee indicated their preference to remove coal as a fuel for this boiler. That change is made in this review and Permit No. 02779T21.

**i. 2D .0503 "Particulates from Fuel Burning Indirect Heat Exchangers"**

This rule is applicable to boiler WFB-1 while burning wood combined with finishing materials and/or paper and limits the allowable PM emissions from this source to those described in the equation in 2D .0503(f) and repeated below:

$$E_{comb} = [(E_w)(Q_w) + (E_o)(Q_o)]/Q_t = [(0.52)(Q_w) + (0.41)(Q_o)]/(Q_w + Q_o)$$

Where:  $E_{comb}$  = Emission limit for the fuel combination  
 $E_w$  = Plant site emission limit for wood fuel only (see 2D .0504 below)  
 $= 1.1698(38)^{-0.223} = 0.52$  (lb PM/10<sup>6</sup> Btu)  
 $Q_w$  = Actual wood fuel heat input into the boiler  
 $E_o$  = Plant site emission limit for other fuels only (heat input under this scenario includes fuel oil in OFB at 29.29 x 10<sup>6</sup> Btu/hour, coal fuel in WFB-1, as was previously permitted at 14.6 x 10<sup>6</sup> Btu/hour, and finishing waste/paper in WFB-1 at 1.44 x 10<sup>6</sup> Btu/hour \*)  
 $= 1.090(1.44 + 14.6 + 29.29)^{-0.2594} = 0.41$  (lb PM/10<sup>6</sup> Btu)  
 $Q_o$  = Actual other fuels heat input into the boiler  
 $Q_t$  = Actual total heat input into the boiler (i.e.  $Q_t = Q_w + Q_o$ )

\* In accordance with an 11/22/02 agreement with DAQ, the Permittee cannot burn more than 180 pounds per hour of paper/finishing materials. Assuming a heat value equal to that of dry wood (i.e. 8,000 Btu per pound) for these wastes, we can estimate the resulting heat input as:

$$Q_{waste} = [180 \text{ (lb/hour)}][8,000 \text{ (Btu/lb)}] = 1,440,000 \text{ (Btu/hour)} = 1.44 \times 10^6 \text{ (Btu/hour)}$$

Table 1.6-1 of Supplement E to the 5<sup>th</sup> edition of the AP-42 document predicts total (condensable and filterable) PM emissions from uncontrolled dry wood combustion of 0.417 (lb/10<sup>6</sup> Btu) of heat input. Therefore, assuming that the dry wood combustion emission factor is reasonably representative of finishing materials and/or paper, we can estimate the required control efficiency for compliance with this rule while burning finishing materials and/or paper (resulting in the lowest, or worst-case, allowable emission factor) to be:

$$\text{Efficiency} \geq [0.417 - 0.41]/0.417 = 0.02 \text{ or } 2\%$$

DAQ believes that the multicyclones will achieve the required level of control for compliance with this rule while burning wood and/or finishing materials/paper.

For boiler WFB-1, Permit No. 02779T21 will include the standard language for the emission limits of 2D .0503 and the methods of testing for compliance (if/when required by DAQ). However, Permit No. 02779T21 will not require any additional testing to demonstrate compliance with 2D .0503 for this boiler due to the low multicyclone control efficiency required (i.e. 2%) to achieve compliance with this rule.

For boiler WFB-1 Permit No. 02779T21 will require monthly monitoring and recordkeeping of the amount of finishing materials/paper burned, monthly external multicyclone/ ductwork monitoring/recordkeeping and annual internal multicyclone monitoring/recordkeeping. Permit No. 02779T21 will require the Permittee to submit semiannual summary reports of this monitoring and submit the results of multicyclone and/or ductwork maintenance within 30 days of a written request by DAQ.

## ii. 2D .0504 “Particulates from Wood Burning Indirect Heat Exchangers”

This rule is applicable to boiler WFB-1 while burning wood only and limits the allowable PM emissions (E) from this source to those described in the following equations:

$$E = \begin{cases} 0.15 & \text{If } Q \geq 10,000, \\ 0.70 & \text{If } Q \leq 10, \text{ and} \\ 1.1698(Q)^{-0.223} & \text{If } Q \text{ is any other value} \end{cases}$$

Where:  $E$  = allowable emissions (lb PM/10<sup>6</sup> Btu), and  
 $Q$  = maximum heat input (10<sup>6</sup> Btu/hr)

In accordance with paragraph 2D .0504(e):  $Q = 38$  (10<sup>6</sup> Btu/hr); and  
 $E = 0.52$  (lb PM/10<sup>6</sup> Btu).

According to the review for Permit No. 02779T18, the Permittee conducted PM stack testing on boiler WFB-1 while burning wood in CY2001. That test indicated a PM emission rate of 0.36 pounds per million Btu (lb/MMBtu), indicating compliance with this rule.

Note also that, according to Table 1.6-1 of Supplement E to the 5<sup>th</sup> edition of the AP-42 document, we expect total (condensable and filterable) PM emissions of 0.417 (lb/MMBtu) from dry wood combustion, suggesting compliance with this rule before control.

For boiler WFB-1, Permit No. 02779T21 will include the standard language for the emission limits of 2D .0504 and the methods of testing for compliance (if/when required by DAQ). However, since the permitted fuel is believed to be inherently compliant and previous testing has confirmed compliance, Permit No. 02779T21 will not require any additional testing to demonstrate compliance with 2D .0504 for this boiler.

For boiler WFB-1, Permit No. 02779T21 will require monthly external multicyclone/ductwork monitoring/recordkeeping and annual internal multicyclone monitoring/recordkeeping. The Permittee is required to submit semiannual summary reports of this monitoring. The Permittee must also submit the results of multicyclone and/or ductwork maintenance within 30 days of a written request by DAQ.

### **iii. 2D .0516 “Sulfur Dioxide Emissions from Combustion Sources”**

This rule applies to boiler WFB-1 and limits the sulfur dioxide (SO<sub>2</sub>) emissions from this combustion device to 2.3 (lb/10<sup>6</sup> Btu).

Finishing materials contain little, if any, sulfur and, therefore, it is assumed that SO<sub>2</sub> emissions from the combustion of finishing materials is negligible. Table 1.6-2 of Supplement E to the 5<sup>th</sup> edition of the AP-42 document predicts SO<sub>2</sub> emissions of 0.025 (lb SO<sub>2</sub>/10<sup>6</sup> Btu) from wood combustion. Emissions of SO<sub>2</sub> from paper combustion are assumed to be similar to emissions of SO<sub>2</sub> from wood combustion. Compliance with this rule is indicated, without controls.

For boiler WFB-1, Permit No. 02779T21 will include the standard language for the emission limits of 2D .0516 and the methods of testing for compliance (if/when required by DAQ). However, since finishing materials, wood and paper are inherently compliant, Permit No. 02779T21 will not require any additional testing or any monitoring, recordkeeping or reporting (MRR) to demonstrate compliance with 2D .0516.

### **iv. 2D .0521 “Control of Visible Emissions”**

Boiler WFB-1 was manufactured before 07/01/71. Therefore, except for those visible emissions (VEs) occurring during startup, shutdown and malfunctions that are regulated under rule 2D .0535, paragraph (c) of this rule requires that the 6-minute average VEs from these boilers be less than or equal to 40% opacity with the following exceptions:

- One six-minute average VE per hour may exceed 40% opacity as long as that VE does not also exceed 90% opacity; and
- Up to four six-minute average VEs per 24-hour period may exceed 40% opacity as long as those VEs do not also exceed 90% opacity.

For boiler WFB-1, Permit No. 02779T21 will include the standard language for the emission limits of 2D .0521 and the methods of testing for compliance (if/when required by DAQ) but will not require any additional testing to demonstrate compliance with this rule unless the Permittee notes VEs that are above “normal” when conducting the required monitoring.

Permit No. 02779T21 will require daily monitoring and recordkeeping of VEs (with an allowance to miss up to 3 days of monitoring/recordkeeping per semiannual period) and semiannual reporting associated with rule 2D .0521 for WFB-1.

v. **2D .1806 “Control and Prohibition of Odorous Emissions”**

See discussion in Section III A.i of this document, below.

vi. **2Q .0705 “Existing Facilities and SIC Calls”**

See discussion in Section III A.ii of this document, below.

**B. One woodwaste collection system (ID No. ESDS) and eight associated bagfilters (3,060; 7,555; 3,825; 3,825; 4,800; 3,825; 4,800 and 4,800 square feet of filter area; ID Nos. CDBF-1 through CDBF-8, respectively) and three simple cyclones (56, 80 and 56 inches in diameter; ID Nos. CDCY-1 through CDCY-3, respectively)**

The woodwaste collection system collects the wood dust generated by the various pieces of woodworking equipment utilized at this facility.

i. **2D .0512 “Particulates from Wood Products Finishing Plants”**

This rule applies to the wood dust collection system and requires that the Permittee “shall not cause, allow, or permit particulate matter caused by the working, sanding, or finishing of wood to be discharged ... into the environment without providing ... adequate ductwork and properly designed collectors ...” No excessive VEs were noted during the most recent compliance inspection on 06/24/08. Compliance with this regulation is expected due to the presence of the bagfilter and cyclones installed on the wood dust collection system.

Permit No. 02779T21 will include the standard shell language for the control requirements of 2D .0512 but will not require any testing to demonstrate compliance for this system.

Permit No. 02779T21 will require monthly external (cyclones/ductwork/bagfilters) and annual internal (bagfilters) monitoring (with the associated recordkeeping) and semiannual reporting associated with rule 2D .0512 for the woodwaste collection system. Permit No. 02779T21 will also require the Permittee to submit the results of maintenance performed on the bagfilters/cyclones within 30 days of a written request by DAQ.

ii. **2D .0521 “Control of Visible Emissions”**

Portions of the woodwaste collection system (i.e. CDBF-1 through CDBF-5 and CDCY-1 through CDCY-3) were manufactured before 07/01/71. Paragraph (c) of this rule requires that, except for those visible emissions (VEs) occurring during startup, shutdown and malfunctions that are regulated under rule 2D .0535, the 6-minute average VEs from this portion of the woodwaste collection system be less than or equal to 40% opacity with the following exceptions:

- One six-minute average VE per hour may exceed 40% opacity as long as that VE does not also exceed 90% opacity; and
- Up to four six-minute average VEs per 24-hour period may exceed 40% opacity as long as those VEs do not also exceed 90% opacity.

For those portions of the woodwaste collection system (i.e. CDBF-6 through CDBF-8) that were manufactured after 07/01/71 paragraph (d) of this rule requires that, except for those VEs occurring during startup, shutdown and malfunctions that are regulated under 2D .0535, the 6-minute average VEs be less than or equal to 20% opacity except as follows:

- One six-minute average VE per hour may exceed 20% opacity as long as that VE does not also exceed 87% opacity; and
- Up to four six-minute average VEs per 24-hour period may exceed 20% opacity as long as those VEs do not also exceed 87% opacity.

Permit No. 02779T21 will include the standard shell language for the emission limits and testing for 2D .0521 but will not require any additional testing for the woodwaste collection

system to demonstrate compliance with this rule unless the Permittee notes VEs that are above “normal” when conducting the required monitoring for these sources.

Permit No. 02779T21 will require weekly monitoring and recordkeeping of VEs and semiannual reporting associated with 2D .0521 for the wood dust collection system.

**C. One No. 5 fuel oil/No. 6 fuel oil-fired boiler (29.29 million Btu per hour maximum heat input rate; ID No. OFB)**

This boiler was manufactured by Cleaver Brooks in 1968 and is used to generate comfort heat, process heat and steam for use throughout the facility. This boiler serves mainly as a backup to WFB-1 (i.e. when WFB-1 cannot handle the required load).

**i. 2D .0503 “Particulates from Fuel Burning Indirect Heat Exchangers”**

This rule is applicable to the No. 5/No. 6 fuel oil-fired boiler OFB and limits the allowable PM emissions (E) from this emission source to those described in the following equations:

$$E = \begin{cases} 0.10 & \text{If } Q \geq 10,000, \\ 0.60 & \text{If } Q \leq 10, \text{ and} \\ 1.090(Q)^{-0.2594} & \text{If } Q \text{ is any other value} \end{cases}$$

Where: E = allowable emissions (lb PM/10<sup>6</sup> Btu), and  
Q = maximum heat input (10<sup>6</sup> Btu/hr)

This boiler was installed after WFB-1. Therefore, in accordance with 2D .0503(e) the maximum heat input must include the heat inputs from finishing waste/paper and (formerly permitted) coal combustion in boiler WFB-1 (see discussion of 2D .0503 in Section II A.i of this document, above) as follows:

$$Q = 43.89 (10^6 \text{ Btu/hr}) [\text{i.e. } 1.44 + 14.6 + 29.29 (10^6 \text{ Btu/hr})] \text{ and} \\ E = 0.41 (\text{lb PM}/10^6 \text{ Btu}).$$

No. 6 fuel oil is the worst-case fuel for PM emissions from OFB. Tables 1.3-1 and 1.3-2 of Supplement E to the 5<sup>th</sup> edition of the AP-42 document predict total PM emissions (filterable and condensable) from No. 6 fuel oil combustion as:

$$9.19 \times S + 3.22 + 1.5 (\text{lb}/10^3 \text{ gallons}), \text{ where “S” is the fuel oil sulfur content in weight \%}.$$

If we assume a No. 6 fuel oil heat value of 150,000 (Btu/gallon) and sulfur content of 2.1% by weight, then we can estimate total PM emissions of:

$$[(9.19)(2.1)+3.22+1.5 (\text{lb}/10^3 \text{ gallons})]/[150 (10^6 \text{ Btu}/10^3 \text{ gallons})] = 0.16 (\text{lb PM}/10^6 \text{ Btu})$$

Compliance with this rule is indicated.

For boiler OFB, Permit No. 02779T21 will include the standard language for the emission limits of 2D .0503 and the methods of testing for compliance (if/when required by DAQ). However, since the permitted fuels are inherently compliant, Permit No. 02779T21 will not require any additional testing or any MRR to demonstrate compliance with rule 2D .0503 for oil-fired boiler OFB.

**ii. 2D .0516 “Sulfur Dioxide Emissions from Combustion Sources”**

This rule applies to boiler OFB and limits the SO<sub>2</sub> emissions from that combustion device to 2.3 (lb/10<sup>6</sup> Btu). Table 1.3-1 of Supplement E to the 5<sup>th</sup> edition of the AP-42 document predicts SO<sub>2</sub> emissions from combustion of No. 5 and No. 6 fuel oil as:

$$157 \times S (\text{lb SO}_2/10^3 \text{ gallons}), \text{ where “S” is the sulfur content of the fuel oil in weight \%}.$$

If we assume a heat value of 150,000 Btu per gallon (i.e. 150 x 10<sup>6</sup> Btu per 10<sup>3</sup> gallons) we can calculate the maximum allowable fuel oil sulfur content as follows:

$$S < [2.3 (\text{lb SO}_2/10^6 \text{ Btu})]/[150 (10^6 \text{ Btu}/10^3 \text{ gall})]/[157 (\text{lb SO}_2/(10^3 \text{ gall-wt}\%))] = 2.2 \text{ wt \%}.$$

For boiler OFB, Permit No. 02779T21 will include the standard language for the emission limits of 2D .0516 and the methods of testing for compliance (if/when required by DAQ). However, since monitoring of No. 5/No. 6 fuel oil sulfur content will adequately demonstrate compliance (or lack thereof) with this rule, Permit No. 02779T21 will not require any additional testing to demonstrate compliance with 2D .0516. Permit No. 02779T21 will require the Permittee to monitor the sulfur content of the No. 5/No. 6 fuel oil brought on-site and submit semiannual summary reports to DAQ.

**iii. 2D .0521 “Control of Visible Emissions”**

Oil-fired boiler OFB was manufactured before 07/01/71. Therefore, except for those visible emissions (VEs) occurring during startup, shutdown and malfunctions that are regulated under 2D .0535, paragraph (c) of this rule requires that the 6-minute average VEs from these boilers be less than or equal to 40% opacity with the following exceptions:

- One six-minute average VE per hour may exceed 40% opacity as long as that VE does not also exceed 90% opacity; and
- Up to four six-minute average VEs per 24-hour period may exceed 40% opacity as long as those VEs do not also exceed 90% opacity.

For oil-fired boiler OFB, Permit No. 02779T21 will include the standard language for the emission limits of 2D .0521 and the methods of testing for compliance (if/when required by DAQ) but will not require any additional testing to demonstrate compliance with this rule unless the Permittee notes VEs that are above “normal” when conducting the required monitoring for this source.

Permit No. 02779T21 will require daily monitoring and recordkeeping of VEs (with an allowance to miss up to 3 days of monitoring/recordkeeping per semiannual period) and semiannual reporting associated with rule 2D .0521 for this boiler.

**iv. 2D .1806 “Control and Prohibition of Odorous Emissions”**

See discussion in Section III A.i of this document, below.

**D. Wood furniture and parts coating operation (ID No. SPO-1) including:**

**Twenty dry filter-type spray booths (ID Nos. SB-1 through SB-20);**

**One dip tank (ID No. DT-1);**

**One wash-off tank (ID No. WT-1);**

**Gluing operation (ID No. G-1);**

**Printing operation (ID No. P-1); and**

**Three steam-heated drying ovens (ID Nos. DO-1 through DO-3)**

The Permittee performs gluing operations to assemble wooden furniture and subsequently applies various finishes and/or print patterns to the furniture before drying it in the drying ovens. This source was reportedly installed before 07/01/71.

**i. 2D .0512 “Particulates from Wood Products Finishing Plants”**

This rule applies to the wood furniture and parts coating operation and stipulates that the Permittee “shall not cause, allow, or permit particulate matter caused by the working, sanding, or finishing of wood to be discharged ... into the environment without providing ... adequate ductwork and properly designed collectors ...” Compliance with this regulation is expected due to the presence of the dry filters installed on the spray booths.

Permit No. 02779T21 will include the standard shell language for the control requirements of 2D .0512 but will not require any testing to demonstrate compliance for these sources.

Permit No. 02779T21 will require weekly (dry filter) and annual (ductwork) monitoring (with the associated recordkeeping) and semiannual reporting associated with rule 2D .0512 for the spray booths. Permit No. 02779T21 will also require the Permittee to submit the results of maintenance performed on the spray booths' dry filters and ductwork within 30 days of a written request by DAQ.

**ii. 2D .0521 “Control of Visible Emissions”**

This rule is applied only to the spray booths since PM emissions are not expected from the other sources. The spray booths were manufactured before 07/01/71. Therefore, except for those visible emissions (VEs) occurring during startup, shutdown and malfunctions that are regulated under 2D .0535, paragraph (c) of this rule requires that the 6-minute average VEs from these spray booths be less than or equal to 40% opacity with the following exceptions:

- One six-minute average VE per hour may exceed 40% opacity as long as that VE does not also exceed 90% opacity; and
- Up to four six-minute average VEs per 24-hour period may exceed 40% opacity as long as those VEs do not also exceed 90% opacity.

Permit No. 02779T21 will include the standard shell language for the emission limits and testing for 2D .0521 but will not require any additional testing for the spray booths to demonstrate compliance with this rule unless the Permittee notes VEs that are above “normal” when conducting the required monitoring for these sources.

Permit No. 02779T21 will require monthly monitoring and recordkeeping of VEs and semiannual reporting associated with 2D .0521 for the spray booths.

**iii. 2D .1111 “Maximum Achievable Control Technology”**

The wood furniture and parts coating operation sources are subject to this rule due to the applicability of 40 CFR Part 63, Subpart JJ (i.e. the NESHAP for Wood Furniture Manufacturing Operations). Current Permit No. 02779T20 includes detailed MACT language associated with Subpart JJ. Application 1800102.08A indicates that the Permittee has not made any changes since the issuance of Permit No. 02779T20 that would affect the applicable requirements pursuant to Subpart JJ. Therefore, the relevant language from Permit No. 02779T20 is “carried over” into Permit No. 02779T21 unchanged.

**iv. 2D .1806 “Control and Prohibition of Odorous Emissions”**

See discussion in Section III A.i of this document, below.

**E. Diesel-fired emergency fire pump (251 horsepower maximum rated power output; ID No. DFE)**

The Permittee maintains a diesel-fired emergency fire pump that was installed in 1991. This device is not included in the list of insignificant activities because it is subject to the RICE MACT (i.e. 40 CFR Part 63, Subpart ZZZZ – see the discussion of 2D .1111, below). Note that 2D .0503 does not apply since this device is not an indirect heat exchanger and 2D .0515 does not apply by DAQ policy (see discussion of Internal Combustion Engines on page 5-11 of version S-9 of Appendix 5 to the North Carolina Air Quality Rules).

**i. 2D .0516 “Sulfur Dioxide Emissions from Combustion Sources”**

This rule limits the SO<sub>2</sub> emissions from combustion devices to 2.3 (lb/10<sup>6</sup> Btu). Note, however, that paragraph 2D .0516(b) exempts sources that are subject to an emission standard for sulfur dioxide pursuant to a NSPS or a MACT from the sulfur dioxide limits in 2D .0516. The emergency fire pump is subject to MACT but the MACT does not limit SO<sub>2</sub> emissions. Therefore, 2D .0516 **does apply** to the emergency fire pump.

According to Table 3.3-1 of Supplement B to the 5<sup>th</sup> edition of the AP-42 document, we can predict SO<sub>x</sub> emissions of 0.29 pounds per million Btu of heat input from the combustion of diesel fuel in a small (< 600 hp) diesel engine, indicating compliance without controls.

For 2D .0516 (as applicable to this emergency fire pump), Permit No. 02779T21 will include the standard language for the emission limits of, and the methods of testing (if/when required by DAQ) for compliance with, this rule. However, since the permitted fuel is inherently compliant, no additional testing or MRR requirements will appear in the permit for DFE.

#### ii. 2D .0521 “Control of Visible Emissions”

The emergency fire pump was manufactured after 07/01/71. Therefore, except for those visible emissions (VEs) occurring during startup, shutdown and malfunctions that are regulated under Rule 2D .0535, paragraph (d) of this rule requires that the 6-minute average VEs from this source be less than or equal to 20% opacity with the following exceptions:

- One six-minute average VE per hour may exceed 20% opacity as long as that VE does not also exceed 87% opacity; and
- Up to four six-minute average VEs per 24-hour period may exceed 20% opacity as long as those VEs do not also exceed 87% opacity.

Note that paragraph 2D .0521(b) exempts sources that are subject to an opacity limit pursuant to a NSPS or a MACT from the opacity limits in 2D .0521. Although the emergency fire pump is subject to MACT, that standard does not include opacity limits for this source. Therefore, 2D .0521 **does apply** to emergency fire pump DFE.

For 2D .0521 (as applicable to the emergency fire pump), Permit No. 02779T21 will include the standard language for the emission limits of, and the methods of testing (if/when required by DAQ) for compliance with, this rule but will not require additional testing. Since operation of this source is unpredictable and uncommon and compliance with this rule by a large margin is expected, no MRR requirements will appear in Permit No. 02779T21 for emergency fire pump DFE.

#### iii. 2D .0524 “New Source Performance Standards”

The new source performance standards (NSPS) for this source category (i.e. compression ignition internal combustion engines (CI ICE) found in 40 CFR Part 60, Subpart IIII) apply to owners and operators of stationary CI ICE that: [§60.4200(a)]

- Commence construction after 07/11/05 where the stationary CI ICE are:
  - Manufactured after 04/01/06 and are not fire pump engines; or
  - Manufactured as a certified NFPA fire pump engine after 07/01/06.
- Modify or reconstruct their stationary CI ICE after 07/11/05.

The emergency fire pump pre-dates this rule and the Permittee indicated that this source has not been modified or reconstructed since 07/11/05 (refer to letter dated 09/15/08). Therefore, emergency fire pump **DFE is not subject** to the NSPS requirements.

#### iv. 2D .1111 “Maximum Achievable Control Technology”

This emergency fire pump is subject to 2D .1111 due to the applicability of 40 CFR Part 63, Subpart ZZZZ (i.e. the MACT for reciprocating internal combustion engines - RICE).

The Permittee indicated that the emergency fire pump has not been reconstructed since its installation (refer to letter dated 09/15/08). Therefore, the emergency fire pump is considered an existing source under this MACT [see §63.6590(a)(1)] and, in accordance with §63.6590(b)(3), emergency fire pump DFE does not have to meet the requirements of Subparts ZZZZ or A (i.e. no initial notification is necessary).

Permit No. 02779T21 will show the applicability of Subpart ZZZZ to emergency fire pump DFE and indicate that this rule does apply but that there are **no associated requirements**.

**v. 2D .1806 “Control and Prohibition of Odorous Emissions”**

See discussion in Section III A.i of this document, below.

**F. Miscellaneous glue press operations including edge banding, resin prep, and miscellaneous coating operations (ID No. G2)**

Various miscellaneous glue press operations (e.g. hot and cold press operations, UF glue preparation, edge sealing and banding, etc. - utilizing hot melt, UF and PVA glues not subject to 40 CFR Part 63, Subpart JJ) are conducted at this facility under ID No. G2.

**i. 2D .1111 “Maximum Achievable Control Technology”**

The Permittee submitted an initial notification pursuant to §63.2280 and §63.9, dated 01/19/04 and supplemented via a letter dated 12/19/05, indicating that this facility was permitted to utilize five lumber drying kilns that are subject to, and several other sources that may be subject to, 15A NCAC 2D .1111 “Maximum Achievable Control Technology” (i.e. 40 CFR Part 63, Subpart DDDD “National Emission Standards for Plywood and Composite Wood Products”). The lumber kilns were never installed at this facility and were removed from the permit with the issuance of 02779T17.

The 12/19/05 letter confirmed that this facility does conduct several operations (e.g. hot and cold press operations, UF glue preparation, edge sealing and banding, etc.) included in current Permit No. 02779T20 as source G2 that are subject to Subpart DDDD.

According to the Permittee (see letter dated 09/15/08) most of source G2 (i.e. the hot press, cold press, edge banding and resin preparation operations) is subject only to initial the notification requirements (see 40 CFR §63.2252). However, the miscellaneous coating operations portion of source G2 is subject to work practice, recordkeeping, reporting and initial notification requirements in MACT Subpart DDDD (see letter dated 09/15/08 and email dated 10/02/08).

The Permittee has already fulfilled the initial notification requirements of MACT Subpart DDDD. A brief summary of the requirements associated with the miscellaneous coating operations portion of source G2 is provided in the table below. Detailed permit language is added to Permit No. 02779T21 to incorporate the work practice and MRR requirements associated with the miscellaneous coating operations portion of source G2.

**MACT Subpart DDDD requirements for the miscellaneous coating operations portion of source G2**

Citation	Requirement(s)
§63.2241(a)	Comply with the applicable requirements in Table 3 “Work Practice Requirements” of MACT Subpart DDDD, as listed below: <ul style="list-style-type: none"> <li>• Use non-HAP coatings (as defined at 40 CFR §63.2292)</li> </ul>
§63.2250(a)	Comply with the applicable work practice requirements at all times except when G2 is not operating or during startup, shut down or malfunction
§63.2260(b)	Demonstrate initial compliance with applicable work practice requirement in Table 6 “Initial Compliance Demonstrations for Work Practice Requirements” of MACT Subpart DDDD, as listed below: <ul style="list-style-type: none"> <li>• Meet the applicable work practice requirement; and</li> <li>• Submit a signed statement with the Notification of Compliance Status that only non-HAP coatings are utilized and that you have records showing this</li> </ul>

Citation	Requirement(s)
§63.2261(b)	Conduct the initial compliance demonstration no later than 30 calendar days from the facility's compliance date
§63.2271(a)	Demonstrate continuous compliance with applicable work practice requirement via the methods in Table 8 "Continuous Compliance With the Work Practice Requirements" of MACT Subpart DDDD, as listed below: <ul style="list-style-type: none"> <li>Continue to meet the applicable work practice requirement; and</li> <li>Maintain records to show that only non-HAP coatings are utilized</li> </ul>
§63.2271(b)	Report instances of non-compliance with the applicable work practice requirement in accordance with §63.2281
§63.2280(a)	Submit semiannual compliance status notifications required by §63.9(h)
§63.2280(b)	Submit Initial Notification as specified in §63.9(b)(2) no later than 120 calendar days after 09/28/04
§63.2281(a)	Submit reports required in Table 9 "Requirements for Reports" of MACT Subpart DDDD, as listed below: <ul style="list-style-type: none"> <li>Semiannual compliance reports containing the information required pursuant to §63.2281(c) through (g)</li> </ul>
§63.2282(a)(1)	Maintain records of each notification and report that is submitted to comply with MACT Subpart DDDD in accordance with §63.10(b)(2)(xiv)
§63.2282(b)	Maintain records utilized to show continuous compliance with the applicable work practice requirements of MACT Subpart DDDD
§63.2283	Maintain records for at least 5 years in suitable form readily available for expeditious review and in accordance with §63.10(b)(1). Keep these records on site for at least the first 2 years
§63.2290	Comply with General Provisions of §63.1 through §63.13 as specified in Table 10 "Applicability of General Provisions" of MACT Subpart DDDD

**ii. 2D .1806 "Control and Prohibition of Odorous Emissions"**

See discussion in Section III A.i of this document, below.

**iii. 2Q .0705 "Existing Facilities and SIC Calls"**

See discussion in Section III A.ii of this document, below.

**III Regulatory Review for Multiple Source Categories:**

**A. Facility-wide affected sources**

**i. 2D .1806 "Control and Prohibition of Odorous Emissions"**

This rule requires the Permittee to prevent odorous emissions from the facility from causing or contributing to objectionable odors [as defined at 2D .1801(9)] beyond the facility's boundary. The Permittee conducts operations that could reasonably be expected to create objectionable odors but does not have a history of violations of this rule. Therefore, this rule is included in Permit No. 02779T21, but with only the standard shell language.

**ii. 2Q .0705 "Existing Facilities and SIC Calls"**

Boiler WFB-1 burns adulterated fuel and, therefore, is not classified as a "combustion source" under 2Q .0703(6). Therefore, in accordance with 2Q .0705(b), the Permittee must submit a facility-wide toxics demonstration when they submit a permit application to comply with the last MACT for this facility (i.e. the boiler MACT). The boiler MACT was vacated by the courts recently and the re-issue date is not yet known. Therefore, this rule is included in Permit No. 02779T21 but without a specific due date other than to reference the pending boiler MACT promulgation date.

#### IV NSPS/NESHAP/PSD/Toxics/112(r)/CAM/RACT Applicability:

**NSPS:** The applicability of new source performance standards (i.e. NSPS in 40 CFR Part 60) to sources at this facility are discussed briefly below:

- **Subpart Dc** for Small Steam Generating Units: The boilers at this facility **are not subject** to the relevant standard for Small Industrial-Commercial-Institutional Steam Generating Units because they pre-date the applicability date of the rule (i.e. 06/09/89) (refer to the discussions in Section II A and Section II C above).
- **Subpart Kb** for VOL Storage Vessels: The storage tanks at this facility **are not subject** to this regulation which applies to VOL storage tanks that were constructed/reconstructed/modified after 7/23/84, and either (1) have storage capacities > 151 m<sup>3</sup> (39,898 gallons) and store liquids with maximum true vapor pressures ≥ 3.5 kPa; or (2) have storage capacities of ≥ 75 m<sup>3</sup> (19,817 gallons) but < 151 m<sup>3</sup> and store liquids with maximum true vapor pressures of ≥ 15.0 kPa. None of the storage tanks at this facility meet the storage capacity threshold of 19,817 gallons.
- **Subpart IIII** for Compression Ignition Internal Combustion Engines (CI ICE): The emergency fire pump DFE **is not subject** to this regulation (it pre-dates the rule - refer to the discussion of rule 2D .0524 in Section II E.iii, above).

**NESHAP:** The applicability of national emission standards for hazardous air pollutants (i.e. NESHAP in 40 CFR Part 63) to sources at this facility are discussed briefly below:

- **Subpart JJ** for Wood Furniture Manufacturing Operations: The sources in the wood furniture and parts coating operation (ID No. SPO-1) **are subject to** the requirements of this regulation. Refer to the discussion of 2D .1111 in Section III D.iii of this document, above, for more information. Note that Miscellaneous glue press operations (ID No. G2) utilizes hot melt, UF and PVA glues and is not subject to Subpart JJ.
- **Subpart DDDD** for Plywood and Composite Wood Products (PCWP): The miscellaneous glue press operations G2 **are subject** to this regulation (see the discussion of 2D .1111 in Section II F.i of this document, above, for more information).
- **Subpart ZZZZ** for Reciprocating Internal Combustion Engines (RICE): The emergency fire pump DFE **is subject** to this regulation but **with no applicable requirements** (see the discussion of 2D .1111 in Section II E.iv, above).

**PSD:** This facility does not fall into one of the PSD categories listed at 40 CFR §51.166(b)(1)(i)(a) with a 100 ton per year threshold but does have the potential to emit > 250 tons of VOC and SO<sub>2</sub> per consecutive 12-month period. However, the relevant sources pre-date the PSD rules. Therefore, this facility is classified as major for PSD purposes under 40 CFR §51.166(b)(1)(i)(b) but is “grandfathered” from the associated PSD monitoring/recordkeeping/reporting requirements. Permit application 1800102.08A is a renewal without modification and does not represent a major modification for PSD purposes – therefore neither PSD review nor increment tracking is triggered.

**Toxics:** Permit No. 02779T21 does not include 2Q .0711 or 2D .1100 but does require the Permittee to submit a facility-wide toxics demonstration for this facility pursuant to 2Q .0705 when they submit their permit application to comply with the boiler MACT. For more information refer to the discussion of 2Q .0705 in Sections III A.ii of this document, above).

**112(r):** According to Section A3 of application 1800102.08A, this facility does not use/handle/store any regulated substances in quantities above their associate thresholds and is therefore not subject to the requirements of this regulation other than General Duty.

**CAM:** According to application 1800102.08A, this facility is not subject to the requirements of 40 CFR Part 64 “Compliance Assurance Monitoring.” None of the sources at this facility meets the

criteria for applicability cited at 2D .0614(a) [refer to the Summary of CAM Applicability (Attachment A to this document) for more information].

**RACT:** This facility is not located in an area listed in either paragraph 2D .0902(f) or 2D .1402(d). Therefore, existing source RACT requirements are not applicable or discussed here.

**V Application Fee:**

No fee is required for the renewal without modification requested via application 1800102.08A.

**VI Compliance Status:**

The facility was most recently inspected on 06/24/08 by Jennifer Manning of MRO and appeared to be operating in compliance with DAQ requirements during that inspection.

**VII Permit Modifications/Changes:**

The following table summarizes the changes to Air Quality Permit No. 02779T20 resulting from Permit Application No. 1800102.08A:

Old Page(s)	New Page(s)	Condition/Item	Description of Change(s)
Global	Global	N/A	<ul style="list-style-type: none"> <li>Change the issuance/effective dates of the permit;</li> <li>Amend the application number and complete date;</li> <li>Change permit revision number to T21;</li> <li>Modify descriptions of sources and/or control devices to provide more details</li> <li>Modify limits/standards table to add rules 2D .1806 and 2Q .0705 where applicable;</li> <li>Remove references to coal combustion in WFB-1; and</li> <li>Change testing citation to 2D .2601</li> </ul>
3 - 4	3 - 4	Equipment List	<ul style="list-style-type: none"> <li>Remove asterisk language for multiple sources pursuant to public comment/EPA review;</li> <li>Correct the description of controls on source ESDS;</li> <li>Add diesel-fired emergency fire pump DFE; and</li> <li>Modify description of source G2 and controls on ESDS</li> </ul>
5 - 7	5 - 6	2.1 A	Correct the PM emissions limits for WFB-1
7	5	2.1 A.2.a	Modify AOS to be burning paper and/or finishing waste either alone or in combination with wood
6 - 7	6	2.1 A.2.b + f	Enhance MRR for paper/finishing waste combustion
6	6	2.1 A.3.a	Modify POS to be burning wood only
N/A	13 - 16	2.1 D.3	Move requirements associated with 2D .1111 (i.e. MACT JJ) from Section 2.2 A to this new permit section
N/A	16 - 17	2.1 E	Add permit section for the diesel-fired emergency fire pump (ID No. DFE) and associated requirements
N/A	17 - 18	2.1 F	Add permit section for the Miscellaneous glue press operations (ID No. G2) and the applicable requirements associated with 2D .1111 (i.e. MACT DDDD)
15 - 18	19	2.2 A	Move the requirements associated with 2D .1111 (i.e. MACT JJ) to Section 2.1 D.3 and add the requirements associated with 2D .1806 to Section 2.2 A.1
18	19	2.2 B (02779T20)	Delete Section 2.2 B, move the requirements of 2D .1806 to Section 2.2 A.1 and add the requirements associated with rule 2Q .0705 to Section 2.2 A.2

Old Page(s)	New Page(s)	Condition/Item	Description of Change(s)
18 – 19	N/A	2.3 A + B (02779T20)	Delete Sections 2.3 A and 2.3 B since the requirements that were previously included here have been relocated to Section 2.1 F and Section 2.2 B, respectively
20 – 28	20 - 27	Section 3	Update Section 3 General Conditions
29 - 31	N/A	Part II (02779T20)	Remove Part II

Note: Condition/Item numbers are as they appear on Permit No. 02779T21, unless otherwise noted.

### VIII Title V Permit History:

The following table provides a very brief summary of Title V permit revisions for this facility:

Permit No.	Issuance	Description of Revision
02779T10	11/03/99	Initial Title V permit (effective date of 12/03/99)
02779T11	09/28/01	Administrative amendment for name change, addition of ten insignificant activities, update of WFB-1 primary operating scenario and change of Responsible Official
02779T12	11/01/01	Administrative amendment to update the coal sulfur content testing, rename the ten insignificant activities and update general conditions
02779T13	03/19/02	502(b)(10) modification to add two cyclones, rename some control devices and change filter areas of CDBF-1 and CDBF-4
02779T14	03/25/03	Administrative amendment concerning burning finishing waste
02779T15	09/26/03	A 502(b)(10) modification to add 3 dust collectors to the existing woodwaste collection system
02779T16	06/09/04	Title V permit renewal with administrative amendments
02779T17	01/10/06	Administrative amendment to correct site address and permit number, change annual compliance certification date, and remove lumber drying operation from permit (it did not exist on-site)
02779T18	06/09/06	Replace the two existing multicyclones installed on boiler WFB-1 with two new multicyclones
02779T19	10/22/07	<ul style="list-style-type: none"> <li>• Add cyclone CDCY-3 to woodwaste collection system;</li> <li>• Remove references to MACT DDDDD due to court action; and</li> <li>• Add requirement to conduct last MACT/toxics demonstration</li> </ul>
02779T20	12/18/07	Administrative amendment concerning the requirement to conduct last MACT/toxics demonstration
02779T21	12/10/08	Renewal of Title V permit

### IX Zoning Consistency:

No zoning consistency determination is required for the renewal without modification requested via application 1800102.08A.

### X Miscellaneous:

**Equipment List:** Diesel-fired emergency fire pump (included in the list of insignificant activities attached to Permit No. 02779T20 with ID No. I-DFE) has been added to the equipment list (with ID No. DFE) due to the applicability of MACT Subpart ZZZZ (see the discussion in Section II E of this document, above, for more information). Also note that the descriptions of some sources and/or control devices have been modified for consistency and to add detail. For example, the bagfilter

filter areas and the cyclone/multicyclone tube diameters have been added to the descriptions and the modifier “steam heated” has been added to the description of the three drying ovens.

**Insignificant Activities List:** Sources I-GEO and I-PCT have been removed from the list of insignificant activities attached to Permit No. 02779T21. Also, source I-CS is replaced by I-WDS (see discussion of Draft Permit in Section XI of this document, below).

**Certification by Responsible Official:** In accordance with 2Q .0520, Jeffrey D. Anderson (i.e. the responsible official for Hickory Chair Company, Plant 7) provided the required certification on Form E5 of application 1800102.08A.

## **XI Permit Review:**

**Draft Permit:** A draft version of Permit No. 02779T21 and the associated review were sent to the Permittee and the MRO for a review and comment period on 09/12/08. MRO staff submitted no comments. The Permittee requested (see 09/15/08 letter, 10/02/08 email and 10/13/08 phone log):

- (1) Changes to the list of insignificant activities [i.e. glue wastewater evaporating operations (I-GEO) and industrial process cooling tower (I-PCT) have been removed and coal storage silo (I-CS) has been converted to a wood dust storage silo (I-WDS)]; and
- (2) To have coal combustion in WFB-1 removed from the permit.

The Permittee also indicated that emergency fire pump DFE was installed in 1991 and therefore has a 20% opacity limit under 2D .0521(d) and that the miscellaneous coating operations portion of source G2 is subject to work practice requirements under MACT Subpart DDDD (it was initially believed that only the initial notification requirements applied to this facility).

Finally, the permit writer and the Permittee noticed several typographical errors in the draft permit, that the MRR requirements associated with combustion of finishing waste/paper in WFB-1 were inadvertently omitted from the draft permit and the use of continuous coaters was incorrectly added to the draft permit in the MACT JJ requirements.

All of the associated changes were made in Proposed Permit No. 02779T21 and are reflected in the associated technical review (i.e. this document).

**Public Participation:** In accordance with 2Q .0521, NC DAQ must provide the opportunity for public participation prior to the renewal of a Title V permit (such as that represented by application 1800102.08A). NC DAQ met this obligation with the public notice posted in the **Hickory Daily Record** of Catawba County **on 10/17/08**.

**EPA & Affected States Review:** In accordance with 2Q .0522, NC DAQ must provide EPA and any Affected States [as defined at 2Q .0503(1)] the opportunity to review a proposed renewal of this Title V permit. NC DAQ met this obligation by sending those agencies a copy of Proposed Permit No. 02779T21 and the associated review on **10/15/08**.

## **XII Recommendation:**

The Title V Permit renewal application for the Hickory Chair Company, Plant 7 facility in Hickory, Catawba County, North Carolina has been reviewed by NC DAQ personnel to determine compliance with all applicable procedures and requirements. NC DAQ personnel have determined that this facility is complying or will achieve compliance with all applicable requirements as specified in Permit No. 02779T21.

Issuance of Permit No. 02779T21 is recommended.

### Attachment A: CAM Applicability Summary Table

Emission Source(s)	Control Device(s)	Controlled TV Pollutant(s)	Pre-Control PTE of Controlled TV Pollutant(s) (tons per year)	CAM Disqualifications/Exemption(s)	CAM Applicable?
SPO-1 (Wood furniture and parts coating operations)	N/A	N/A	N/A	Does not meet criteria of 15A NCAC 2D .0614(a) [No control device]	No
WFB-1 (Wood/Paper/Finish materials-fired boiler)	CDMCY-1 and CDMCY-2	PM <sub>10</sub>	62.8 tons per year	Does not meet criteria of 15A NCAC 2D .0614(a) [Emission less than major source thresholds]	No
OFB (No. 5/No. 6 oil-fired boiler)	N/A	N/A	N/A	Does not meet criteria of 15A NCAC 2D .0614(a) [No control device]	No
ESDS (Woodwaste collection system)	8 bagfilters and 3 simple cyclones	PM <sub>10</sub>	5.3 tons per year	Does not meet criteria of 15A NCAC 2D .0614(a) [Emission less than major source thresholds]	No
DFE (Diesel fuel oil-fired emergency fire pump)	N/A	N/A	N/A	Does not meet criteria of 15A NCAC 2D .0614(a) [No control device]	No
G2 (Misc. glue press operations)	N/A	N/A	N/A	Does not meet criteria of 15A NCAC 2D .0614(a) [No control device]	No