

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Application Review**

**Issue Date:**

**Region:** Raleigh Regional Office  
**County:** Vance  
**NC Facility ID:** 9100082  
**Inspector's Name:** Jeff Harris  
**Date of Last Inspection:** 05/28/2020  
**Compliance Code:** 3 / Compliance - inspection

<p style="text-align: center;"><b>Facility Data</b></p> <p><b>Applicant (Facility's Name):</b> Kennametal Inc.</p> <p><b>Facility Address:</b>          Kennametal Inc.          139 Warehouse Road          Henderson, NC 27537</p> <p><b>SIC:</b> 3399 / Primary Metal Products, Nec  <b>NAICS:</b> 331492 / Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V  <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p>	<p style="text-align: center;"><b>Permit Applicability (this application only)</b></p> <p><b>SIP:</b> 02D .0515, .0521, .1100, .1806  <b>NSPS:</b> NA  <b>NESHAP:</b> GACT ZZZZ  <b>PSD:</b> NA  <b>PSD Avoidance:</b> 02Q .0317  <b>NC Toxics:</b> 02D .1100  <b>112(r):</b> NA  <b>Other:</b> NA</p>
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Contact Data			Application Data
<p style="text-align: center;"><b>Facility Contact</b></p> <p>David Kannianen          EHS Lead          (252) 430-3367          139 Warehouse Road          Henderson, NC 27537</p>	<p style="text-align: center;"><b>Authorized Contact</b></p> <p>Jim Randolph          Plant Manager          (252) 430-3304          139 Warehouse Rd.          Henderson, NC 27537</p>	<p style="text-align: center;"><b>Technical Contact</b></p> <p>David Kannianen          EHS Lead          (252) 430-3367          139 Warehouse Road          Henderson, NC 27537</p>	<p><b>Application Number:</b> 9100082.20A  <b>Date Received:</b> 12/02/2020  <b>Application Type:</b> Renewal  <b>Application Schedule:</b> TV-Renewal</p> <p style="text-align: center;"><b>Existing Permit Data</b></p> <p><b>Existing Permit Number:</b> 04328/T12  <b>Existing Permit Issue Date:</b> 11/30/2016  <b>Existing Permit Expiration Date:</b> 10/31/2021</p>

**Total Actual emissions in TONS/YEAR:**

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	---	0.4300	155.03	0.3400	0.0200	0.0077	0.0073 [Hexane, n-]
2018	---	0.4300	236.74	0.3400	0.0200	0.0079	0.0073 [Hexane, n-]
2017	---	0.4300	322.22	0.3400	0.0200	0.0079	0.0073 [Hexane, n-]
2016	---	0.4300	222.12	0.3400	0.0200	0.0079	0.0073 [Hexane, n-]
2015	---	0.4300	146.22	0.3400	0.0200	0.0242	0.0152 [Hexane, n-]

<p><b>Review Engineer:</b> Eric Crump</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____</p>	<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue</b> 04328/T13  <b>Permit Issue Date:</b>  <b>Permit Expiration Date:</b></p>
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## 1. Purpose of Application

Kennametal Inc. (hereafter referred to as Kennametal) operates a facility located in Henderson, Vance County, North Carolina that manufactures various blends of tungsten carbide powder. The facility operates under Title V Permit No. 04328T12 with an expiration date of October 31, 2021. Kennametal has applied for renewal of their facility's air quality permit. The renewal application was received on December 2, 2020, or at least six months prior to the expiration date. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

Through permit application No. 9100082.20A, Kennametal requested the emission sources and control devices listed below to be deleted from the permit. The equipment listed below has either already been removed from the facility or is not being operated and will be removed over the next few months.

Source ID No.	Source Description	Control Device ID No.	Control Device Description
BL-001	Ammonium paratungstate electric conversion furnace	BODC-001	Baffle chamber
VD-1 VD-5	Two vacuum dryers each equipped with an integral condenser (Nos. VC-1 and VC-5, respectively)	VCS-2	One condenser (48.6 square feet condenser surface area and 7,506 pounds per hour chilled water coolant flow rate)
VD-2 VD-3	Two vacuum dryers each equipped with an integral condenser (Nos. VC-2 and VC-3, respectively)	VCS-3	One condenser (48.6 square feet condenser surface area and 7,506 pounds per hour chilled water coolant flow rate)
VD-4	One vacuum dryer equipped with an integral condenser (No. VC-4)	VCS-4	One condenser (48.6 square feet condenser surface area and 7,506 pounds per hour chilled water coolant flow rate)

## 2. Facility Description

Kennametal manufactures various blends of tungsten carbide powder at its Henderson facility and ships it to other facilities (primarily other Kennametal facilities) for use in producing metal cutting tools and other extremely durable metal products. The production of tungsten carbide powder is generally produced as follows:

- Tungsten oxide powder is received and sent through an electric conversion furnace which converts the tungsten oxide to tungsten metal powder.
- The tungsten metal powder is mixed with carbon black and sent through one of three electric carbonizing furnaces to create tungsten carbide powder.
- The tungsten carbide powder is milled into a finer particle size and blended with various binder compounds (e.g., cobalt and titanium carbide) in one of four milling rooms to produce the different blends of tungsten carbide powder.
- The powder is either vacuum or spray dried to remove moisture. The facility has moved towards spray drying in lieu of vacuum drying to produce the final tungsten carbide powder, because the resulting powder is easier to pour and produces less emissions.

The facility currently has approximately 55 employees and operates 24 hours per day, seven days per week.

### 3. Application Chronology

November 30, 2016	Division of Air Quality (DAQ) issues Permit No. 04328T12 to Kennametal as a Title V renewal.
March 17, 2017	Raleigh Regional Office (RRO) issues Notice of Violation (NOV) to Kennametal for late submittal of the Annual Compliance Certification (ACC) for calendar year 2016. In addition, when submitted, the ACC did not reference the Notice of Deficiency (NOD) issued to Kennametal dated May 27, 2016.
June 20, 2018	Jeff Harris and Will Wike, RRO conduct facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
November 20, 2018	DAQ issues NOV and Notice of Recommendation for Enforcement (NRE) letter to Kennametal for failure to apply for a Prevention of Significant Deterioration (PSD) permit, and for failure to inspect and maintain control systems as required in the permit.
April 24, 2019	Jeff Harris, RRO conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
June 12, 2019	North Carolina Environmental Management Commission issues civil penalty assessment (File No. DAQ 2019-004) to Kennametal in the amount of \$10,520 for numerous violations of 15A NCAC 02Q .0317: Avoidance Conditions for 15A NCAC 02D .0530, Prevention of Significant Deterioration.
July 16, 2019	DEQ acknowledges receipt of payment in full of the civil penalty assessment levied upon Kennametal, closing out File No. DAQ 2019-004.
August 5, 2019	DEQ submits retroactive invoice to Kennametal in the amount of \$643 for a correction made to erroneous calculations of air quality permit fees for 2016. The corrections were made following submittal of revised compliance reports by Kennametal to address an underreporting of volatile organic compound (VOC) emissions.
June 11, 2020	Jeff Harris, RRO conducts partial facility compliance inspection via e-mail due to travel restrictions resulting from the Governor's stay-at-home order as a result of COVID-19. Facility appeared to be operating in compliance with all evaluated permit requirements.
December 2, 2020	DAQ receives permit renewal application No. 9100082.20A from Kennametal.
January 26, 2021	DAQ sends draft permit to Kennametal and Regional Office for review and comment.
February 10, 2021	DAQ receives comments on draft permit from Kennametal.

February 11, 2021      DAQ receives comments on draft permit from Regional Office.

xxx                      Permit renewal notice published, 30-day public notice and comment period begins, and 45-day EPA comment period begins.

xxx                      30-day public notice and comment period ends.

xxx                      45-day EPA comment period ends.

#### 4. Permit Modifications and Title V Equipment Editor (TVEE) Discussion

The following table summarizes changes to the Kennametal permit resulting from the permit renewal:

Page No.	Section	Description of Changes
Cover and throughout	---	Updated all dates and permit revision numbers
Insignificant Activities List	Attachment	Changed ( <b>GACT, Supbart ZZZZ</b> ) to <b>GACT ZZZZ</b>
3	1	Deleted emission sources ID Nos. VD-1 through VD-5 and BL-001, along with corresponding control devices BODC-001 and VCD-2, VCD-3, and VCD-4
4	2.1 A  2.1 B	Deleted emission sources ID Nos. VD-1 through VD-5 from list of sources Deleted volatile organic compound work practice standards from the summary table  <ul style="list-style-type: none"> <li>Deleted emission source ID BODC-001 and corresponding requirements for particulates and visible emissions. Redesignated Section 2.1 C as Section 2.1 B.</li> <li>Updated summary table to reflect most current summary of particulate matter requirements (15 NCAC 02D .0515)</li> </ul>
5	2.1 B.1	Updated section to reflect the most current stipulations for 15A NCAC 02D .0515
6	2.1 B.1.d.iii	Changed “bagfilters” to “bagfilter or cyclone”
7	2.1 B.2	Updated section to reflect the most current stipulations for 15A NCAC 02D .0521
8	2.2 A	<ul style="list-style-type: none"> <li>Deleted source ID No. BL-001 from title</li> <li>Deleted volatile organic compound work practice standards from the summary table</li> </ul>
9	2.2 A.1.e	Deleted inspection and maintenance requirements for condensers. Redesignated paragraphs f and g as paragraphs e and f.
9	2.2 A.2	Deleted section on work practices for sources of volatile organic compounds (15A NCAC 02D .0958)
10	2.2 B	Deleted source ID No. BL-001 and 15A NCAC 02D .1100 from table
11	2.2 B.3	Deleted section on control of toxic air pollutants 15A NCAC 02D .1100
13-23	3	Updated General Conditions to Version 5.5 dated August 25, 2020

The following changes were made to the Title V Equipment Editor (TVEE):

Emission sources deleted:

- ID No. BL-001, Ammonium paratungstate electric conversion furnace
- ID No. VD-1, One vacuum dryer equipped with an integral condenser (No. VC-1)
- ID No. VD-2, One vacuum dryer equipped with an integral condenser (No. VC-2)
- ID No. VD-3, One vacuum dryer equipped with an integral condenser (No. VC-3)
- ID No. VD-4, One vacuum dryer equipped with an integral condenser (No. VC-4)
- ID No. VD-5, One vacuum dryer equipped with an integral condenser (No. VC-5)

Control devices deleted:

- ID No. BODC-001, Baffle chamber
- ID No. VCS-2, One condenser (48.6 square feet condenser surface area and 7,506 pounds per hour chilled water coolant flow rate)
- ID No. VCS-3, One condenser (48.6 square feet condenser surface area and 7,506 pounds per hour chilled water coolant flow rate)
- ID No. VCS-4, One condenser (48.6 square feet condenser surface area and 7,506 pounds per hour chilled water coolant flow rate)

## 5. Description of Changes and Estimated Emissions

As discussed above in Sections 1 and 4, the ammonium paratungstate electric conversion furnace (ID No. BL-001) and five vacuum dryers with condensers (ID Nos. VD-1 through VD-5) were either removed from the facility or taken out of service for upcoming removal. Kennametal had already moved towards spray drying 85 percent of the time for final production of tungsten carbide powder, because the resulting powder is easier to pour and produces less emissions than with vacuum drying. With the removal of the vacuum dryers, the Kennametal facility is fully committed to spray drying, which should result in a modest additional reduction of air emissions. Similarly, the removal of the electric conversion furnace eliminates a source of particulate and visible emissions from the facility, resulting in reduced emissions.

In addition, a correction has been made to the summary table in Section 2.1 B which had formerly indicated the central vacuum system (ID No. CV-001) and its associated cyclone (ID No. CV-001A) in series with bagfilter (ID No. CV-001B) were subject to state-enforceable regulations for toxic air pollutants. This change, which has no impact on emissions, is explained in further detail in Section 11 of this review.

## 6. Regulatory Review

Kennametal has been subject to the following regulations:

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes
- 15A NCAC 02D .0521, Control of Visible Emissions
- 15A NCAC 02D .0958, Work Practices for Sources of Volatile Organic Compounds
- 15A NCAC 02D .1100, Control of Air Toxics
- 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions
- 15A NCAC 02D .1111, Generally Achievable Control Technology (40 CFR 63, Subpart ZZZZ)

15A NCAC 02Q .0317, Avoidance Conditions (for 15A NCAC 2D .0530, Prevention of Significant Deterioration)

15A NCAC 02Q .0711, Emission Rates Requiring a Permit

The facility remains subject to these regulations, with the following exceptions:

- 02D .0958, Work Practices for Sources of Volatile Organic Compounds: On November 1, 2016, amendments to 15A NCAC 02D .0902 for VOC emissions were finalized, narrowing the applicability of work practice standards in 15A NCAC 02D .0958 from statewide to the maintenance area for the 1997 8-hour ozone standard. This change was made primarily because the abundance of biogenic VOC emissions in North Carolina results in ozone formation being limited by the amount of available NO<sub>x</sub> emissions. Clean Air Act provisions require VOC requirements previously implemented in an ozone nonattainment area prior to redesignation to remain in place. However, facilities outside the maintenance area counties for the 1997 8-hour ozone standard are no longer required to comply with the work practice standards in 15A NCAC 02D .0958. For this reason, the work practice standards have been removed from the Kennametal permit.
- 15A NCAC 02D .1100, Control of Air Toxics: The requirements under 02D .1100 have been removed from the permit, since the only source subject to these requirements—the ammonium paratungstate electric conversion furnace (ID No. BL-001)—has been removed from the facility.

There were no changes made to the applicable regulations under this permit renewal.

The permit has been updated to reflect the most current stipulations for all applicable regulations. Continued compliance is expected.

## **7. National Emission Standards for Hazardous Air Pollutants (NESHAPS): Maximum and/or Generally Achievable Control Technology (MACT/GACT)**

The natural gas-fired emergency generators at this facility (ID Nos. I-G1 and I-G2) are subject to the GACT component of the RICE MACT (40 CFR 63, Subpart ZZZZ) under 15A NCAC 02D .1111, Maximum Achievable Control Technology. Both generators are classified as insignificant activities under 15A NCAC 02Q .0503(8), because their respective emissions would not violate any applicable emissions standard, the potential uncontrolled criteria pollutant emissions for each are no more than five tons per year and the potential uncontrolled HAP emissions for each are less than 1000 pounds per year. For this reason, these generators are not subject to any permit conditions. This permit renewal does not affect this status. Continued compliance is expected.

## **8. New Source Performance Standards (NSPS)**

Kennametal is not currently subject to any NSPS. This permit renewal does not affect this status.

## **9. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)**

The Kennametal facility currently operates under a facility-wide emissions cap of 250 tons of volatile organic compounds (VOC) per year in order to avoid the applicability of 15A NCAC 02D .0530, Prevention of Significant Deterioration. The current permit requires that Kennametal multiply the total amount of each type of VOC-containing material consumed during each month by the VOC content of the material. In the past, inspection and maintenance activities were required for the vacuum dryers controlled

by condensers as VOC control, but these sources and controls have been removed from the facility, as discussed above in Sections 1 and 5. Semi-annual reporting of all monthly calculations is also required. Continued compliance is expected.

### 10. Risk Management Plan Requirements

40 CFR Part 68 requires stationary sources storing more than threshold quantities of regulated substances to develop a risk management plan (RMP), in accordance with Section 112(r) of the Clean Air Act. The RMP lists the potential effects of a chemical accident at the facility, steps the facility is taking to prevent an accident, and emergency response procedures to be followed if an accident should occur.

Kennametal is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule. This permit renewal does not affect the 112(r) status of the facility. Continued compliance is expected.

### 10. Compliance Assurance Monitoring (CAM)

Under 40 CFR Part 64, a facility must develop a continuous CAM plan for any pollutant specific unit meeting all of the following criteria:

- It is located at a major source required to obtain a 40 CFR Part 70 or Part 71 permit;
- It is subject to an emission limitation or standard for a regulated air pollutant (and that standard is not exempt under 40 CFR 64.2(a)(1)(b));
- It uses an active control device to comply with that emission limitation or standard; and
- It has a potential pre-control emission rate that equals or exceeds the major source threshold for criteria pollutants or HAPs.

CAM was determined in a preceding permit review (B. Bland, Application No. 9100082.11A, June 13, 2011) to not be applicable for Kennametal because potential pre-controlled emissions were either less than major source thresholds (with regard to particulate matter), or subject to an “emissions cap” as defined by 40 CFR 64.2(b)(1)(v) (i.e., the threshold for VOC established by the PSD avoidance condition discussed in Section 9 of this review). This permit renewal does not affect the facility’s status with respect to CAM. Continued compliance is expected.

### 11. Facility-wide Toxics Review

The permit lists the following NC toxic air pollutants (TAPs) and their respective toxic permit emission rates (TPERs) as established in 15A NCAC 02Q .0711, Emission Rates Requiring a Permit.

Pollutant (CAS Number)	TPERs Limitations			
	Carcinogens (lbs/yr)	Chronic Toxicants (lbs/day)	Acute Systemic Toxicants (lbs/hr)	Acute Irritants (lbs/hr)
Toluene (108-88-3)		98		14.4
n-hexane (110-54-3)		23		
Hexane isomers				92
Benzene (71-43-2)	8.1			
Nickel metal (7440-02-0)		0.13		
Chromium VI	0.0056			

Kennametal is required to obtain a permit to emit any of these TAPs if actual emissions from all sources will exceed these TPERs, and to maintain records demonstrating that these TPERs are not exceeded. Based on the most recent inspection, Kennametal has complied with this regulation. Continued compliance will be determined during subsequent inspections.

As discussed in the application review for Permit No. 04328/T10, (K. Godwin, Application No. 9100082.05A, November 7, 2006). Kennametal requested to increase the process rate for the ammonium paratungstate electric conversion furnace (ID No. BL-001) and associated baffle chamber from 216.5 lb/hr to 311.5 lb/hr (which would increase the ammonia emission rate from 8.5 lb/hr to 16.27 lb/hr). This increase triggered a modeling analysis for facility-wide ammonia emissions pursuant to 02D .1100. According to the application, the furnace is the only source of ammonia emissions. The DAQ modeling analysis (K. Sellman memo, DAQ/AQAB, July 31, 2006) indicated the maximum impact was 75% of the 1-hour acceptable ambient level for ammonia - indicating compliance with 02D .1100. A 02D .1100 toxic air pollutants condition was placed in the permit limiting ammonia emissions in the furnace to 16.27 lb/hr.

However, for some reason, the summary table in Permit No. 04328T10 (Section 2.1 C) suggests that this toxic air pollutants condition for ammonia also applies to the central vacuum system (ID No. CV-001) with associated cyclone (ID No. CV-001A) in series with one bagfilter (ID No. CV-001B) by referring the reader to Section 2.2 B.3 in the permit (the 02D .1100 condition) - which never mentioned the vacuum system. This suggestion appears to be an error, which has been corrected in this permit revision. And as discussed herein and in Section 6 above (Regulatory Review), the ammonium paratungstate electric conversion furnace (ID No. BL-001) was the only source at the Kennametal facility subject to the requirements under 15A NCAC 02D .1100, Control of Air Toxics. This furnace has been removed from the facility since the last renewal. Therefore, the requirements for this source under 02D .1100 have been removed from the permit.

## **12. Facility Emissions Review**

The table in the header page of this review summarizes emissions Kennametal has reported in the annual emissions inventories after the application of required emission controls. Other than the exceedance in VOC emissions in 2017, criteria pollutant emissions have stayed relatively steady over the past few years, well within emission limits. After a peak in 2015 of 0.0242 tons, HAP emissions have stayed relatively level over the past four years, with hexane being the highest individual HAP emitted.

## **13. Compliance Status**

Kennametal was issued an NOV on March 17, 2017 for late submittal of the ACC for calendar year 2016. In addition, when Kennametal submitted the ACC, it did not reference the NOD issued to Kennametal on May 27, 2016.

Kennametal was issued an NOV and NRE on November 20, 2018 for failure to apply for a PSD permit, and for failure to inspect and maintain control systems as required in the permit. Subsequently, on June 12, 2019, the North Carolina Environmental Management Commission issued a civil penalty assessment (File No. DAQ 2019-004) to Kennametal in the amount of \$10,520. Kennametal paid this assessment in full.

The facility was last inspected on June 11, 2020 by Jeff Harris of the Raleigh Regional Office. The company appeared to be in compliance with all applicable requirements at that time.



#### **14. Public Notice/EPA and Affected State(s) Review**

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above. Virginia is an affected state within 50 miles of the facility. There are no affected states or local programs within 50 miles of the facility.)

#### **15. Other Regulatory Considerations**

The following items were not required for Permit Application No. 9100082.20A:

- Professional Engineer's seal
- Zoning consistency determination
- Permit fee.

#### **16. Recommendations**

DAQ has reviewed the permit application for Kennametal, Inc. located in Henderson, Vance County to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ recommends the issuance of Air Permit No. 04328T13.