

SMAQMD BACT CLEARINGHOUSE

CATEGORY Type:

MISCELLANEOUS

BACT Category: MINOR SOURCE

BACT Determination Number: 314**BACT Determination Date:**

7/25/2022

Equipment Information**Permit Number:** N/A -- Generic BACT Determination**Equipment Description:** PLASMA ARC METAL CUTTING TORCH**EXPIRED****Unit Size/Rating/Capacity:** ALL**Equipment Location:****BACT Determination Information****District Contact:** Felix Trujillo Phone No.: (279)207-1154 email: ftrujllo@airquality.org

ROCs	Standard:	
	Technology Description:	
	Basis:	
NOx	Standard:	
	Technology Description:	
	Basis:	
SOx	Standard:	
	Technology Description:	
	Basis:	
PM10	Standard:	99.9% Control Efficiency
	Technology Description:	
	Basis:	Achieved in Practice
PM2.5	Standard:	99.9% Control Efficiency
	Technology Description:	
	Basis:	Achieved in Practice
CO	Standard:	
	Technology Description:	
	Basis:	
LEAD	Standard:	
	Technology Description:	
	Basis:	

Comments: T-BACT was determined to be equivalent to BACT.



**BEST AVAILABLE CONTROL TECHNOLOGY & TOXIC BEST AVAILABLE
CONTROL TECHNOLOGY DETERMINATION**

EXPIRED

DETERMINATION NO.: 314

DATE: July 25, 2022

ENGINEER: Felix Trujillo, Jr.

Category/General Equip Description: Miscellaneous

Equipment Specific Description: Plasma Arc Metal Cutting Torch

Equipment Size/Rating: Minor Source

Previous BACT Det. No.: 233

This BACT determination will update Determination #233 (12/20/19) for a plasma arc metal cutting torch.

Plasma cutting is a process that is used to cut steel and other metals using a plasma torch. In this process, an inert gas is blown at high speed out of a nozzle; at the same time an electrical arc is formed through that gas from the nozzle to the surface being cut, turning some of that gas to plasma. The plasma is sufficiently hot enough to melt the metal being cut and moves sufficiently fast to blow molten metal away from the cut.

BACT ANALYSIS

A: ACHIEVED IN PRACTICE (Rule 202, §205.1a):

The following control technologies are currently employed as BACT for plasma arc metal cutting torches and are listed as Achieved in Practice:

US EPA

BACT

A search of the EPA BACT Clearinghouse was performed using the default search period of 10 years (1/1/12) for plasma (all process types). The following results were found.

[Source: EPA RACT/BACT/LAER CLEARINGHOUSE; RBLC ID: KY-0115 \(4/19/21\)](#)

Plasma Cutter	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	99%
PM2.5	99%
CO	No standard

[Source: EPA RACT/BACT/LAER CLEARINGHOUSE; RBLC ID: KY-0110 \(7/23/20\)](#)

Plasma Cutter	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	99.9%
PM2.5	99.9%
CO	No standard

[Source: EPA RACT/BACT/LAER CLEARINGHOUSE; RBLC ID: AL-0301 \(7/22/14\)](#)

Plasma Cutter	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	99%
PM2.5	99%
CO	No standard

RULE REQUIREMENTS:

None

California Air Resources Board (CARB)

BACT

[Source: ARB Technology Clearinghouse](#)

The California Air Resources Board (CARB) has updated their BACT Clearinghouse and is now known as the Technology Clearinghouse. A search of the Technology Clearinghouse

was performed and only the SMAQMD, SJVAPCD and SCAQMD included BACTs for plasma cutters. The BACTs listed are the same BACTs identified under the BACT section of each District in this document.

RULE REQUIREMENTS:

None

Sacramento Metropolitan AQMD

BACT

Source: [SMAQMD BACT Clearinghouse](#)

Plasma Cutter	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	99.9%
PM2.5	Same control technology as PM10 (A)
CO	No standard

(A) This is listed as Technologically Feasible.

RULE REQUIREMENTS:

None

South Coast AQMD

BACT

Source: [SCAQMD BACT Guidelines for Non-Major Polluting Facilities, page 96 \(10/20/2000\)](#)

Plasma Arc Metal Cutting Torch	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	Water table and nozzle water shroud; or electrostatic precipitator
PM2.5	No standard
CO	No standard

RULE REQUIREMENTS:

None

San Diego County APCD

BACT

Source: [NSR Requirements for BACT](#)

The SDCAPCD does not have a BACT determination for this source category listed.

RULE REQUIREMENTS:

None

Bay Area AQMD

BACT

Source: [BAAQMD BACT/TBACT Workbook](#)

The BAAQMD does not have a BACT determination for this source category listed.

RULE REQUIREMENTS:

None

San Joaquin Valley Unified APCD

BACT

Source: [SJVUAPCD BACT Guideline 8.3.4 \(Last Update 5/6/20\)](#)

Metal Parts and Products Fabrication – Plasma Cutting	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	99.9% Control efficiency (dust collector with a HEPA filter or equivalent)
PM2.5	No standard
CO	No standard

RULE REQUIREMENTS:

None

The following control technologies have been identified and are ranked based on stringency:

SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	1. 99.9% Control efficiency – [SJVAPCD, SMAQMD, EPA BACT Clearinghouse] 2. 99% Control efficiency – [EPA BACT Clearinghouse] 3. Water table and nozzle water shroud, or electrostatic precipitator – [SCAQMD]
PM2.5	99.9% Control efficiency – [EPA BACT Clearinghouse]
CO	No standard

The following control technologies have been identified as the most stringent, achieved in practice control technologies:

BEST CONTROL TECHNOLOGIES ACHIEVED		
Pollutant	Standard	Source
VOC	No standard	
NOx	No standard	
SOx	No standard	
PM10	99.9% Control Efficiency	SMAQMD, SJVAPCD, EPA BACT Clearinghouse
PM2.5	99.9% Control Efficiency	EPA BACT Clearinghouse
CO	No standard	

B. TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE (Rule 202, §205.1.b.):

Technologically Feasible Alternatives:

Any alternative basic equipment, fuel, process, emission control device or technique, singly or in combination, determined to be technologically feasible by the Air Pollution Control Officer.

The table below shows the technologically feasible alternatives identified as capable of reducing emissions beyond the levels determined to be "Achieved in Practice" as per Rule 202, §205.1.a.

Pollutant	Technologically Feasible Alternatives
VOC	Not applicable
NOx	1. Selective Catalytic Reduction (SCR) 2. Selective Non-catalytic Injection (SNCR)
SOx	Not applicable
PM10	No other technologically feasible option identified
PM2.5	No other technologically feasible option identified
CO	Not applicable

None of the above technologies are technologically feasible, since they both require elevated exhaust gas temperatures. Although plasma cutting occurs at high temperatures, high volumes of air are necessarily exhausted by the collection system to capture the particulate matter (fume) generated by the process. The resulting gas stream is near ambient temperatures and several hundred degrees Fahrenheit lower than the temperatures needed for SCR and NSCR.

C. SELECTION OF BACT:

Minor source BACT for a plasma arc metal cutting torch is the following:

BACT FOR PLASMA ARC METAL CUTTING TORCH		
Pollutant	Standard	Source
VOC	No standard	
NOx	No standard	
SOx	No standard	
PM10	99.9% Control Efficiency	SMAQMD, SJVAPCD, EPA BACT Clearinghouse (Achieved in Practice)
PM2.5	99.9% Control Efficiency	EPA BACT Clearinghouse (Achieved in Practice)
CO	No standard	

D. SELECTION OF T-BACT:

Toxics are in the form of PM matter. The control of particulate matter through meeting the BACT standard will also control toxics found in the PM. Therefore meeting the BACT controls for the control of PM will be considered equivalent to meeting T-BACT requirements (as determined in the SJVAPCD's BACT determination No. 8.3.4 – Plasma Arc Cutting Torch (searchable details page)).

APPROVED BY: Brian F Krebs

DATE: 07-25-2022

Attachment A

Review of BACT Determinations

SMAQMD BACT CLEARINGHOUSE

CATEGORY:

Miscellaneous

BACT Size:

Plasma Arc Metal Cutting Torch

BACT Determination Number:	233	BACT Determination Date:	12/20/2019
-----------------------------------	-----	---------------------------------	------------

Equipment Information

Permit Number: N/A -- Generic BACT Determination

Equipment Description: Plasma Arc Metal Cutting Torch

Unit Size/Rating/Capacity: Minor Source BACT

Equipment Location:

EXPIRED

BACT Determination Information

ROCs	Standard:	
	Technology Description:	
	Basis:	
NOx	Standard:	
	Technology Description:	
	Basis:	
SOx	Standard:	
	Technology Description:	
	Basis:	
PM10	Standard:	99.9% Control Efficiency
	Technology Description:	
	Basis:	Achieved in Practice
PM2.5	Standard:	
	Technology Description:	
	Basis:	
CO	Standard:	
	Technology Description:	
	Basis:	
LEAD	Standard:	
	Technology Description:	
	Basis:	

Comments: T-BACT was determined to be equivalent to BACT.

District Contact: Felix Trujillo Phone No.: (916) 874 - 7357 email: ftrujillo@airquality.org

Printed: 12/20/2019

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 8.3.4*

Last Update: 5/6/2020

Metal Parts and Products Fabrication - Plasma Cutting

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
PM10	99.9% efficiency (dust collector with a HEPA filter or equivalent)		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a State Implementation Plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source**

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*
10-20-2000 Rev. 0

Equipment or Process: Plasma Arc Metal Cutting Torch

Rating/Size	Criteria Pollutants				
	VOC	NOx	SOx	CO	PM ₁₀
> 30 KVA Electrical Input					Water Table and Nozzle Water Shroud; or Electrostatic Precipitator (1988)
					Inorganic

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions



Technology Transfer Network Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.

Or click on the Process List button to return to the list of processes.

[RBLC Home](#)
[New Search](#)
[Search Results](#)
[Facility Information](#)
[Process List](#)
[Process Information](#)
[Pollutant Information](#)
[Help](#)
FINAL
RBLC ID: KY-0110

Corporate/Company: NUCOR

Facility Name: NUCOR STEEL BRANDENBURG

Process: EP 03-06 - Hot Rolling Mill Plasma Cutter

Pollutant: Particulate matter, total < 2.5 μ (TPM2.5)

CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),

Substance Registry System: Particulate matter, total < 2.5 μ (TPM2.5)
Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: B

P2/Add-on Description: This EP is required to have a Good Work Practices (GWP) Plan and a baghouse designed to control 99.9% of particulate emissions.

Test Method:	Unspecified	EPA/DAR Methods	All Other Methods
Percent Efficiency:	99.900		
Compliance Verified:	Unknown		
EMISSION LIMITS:			
Case-by-Case Basis:	BACT-PSD		
Other Applicable Requirements:			
Other Factors Influence Decision:	No		
Emission Limit 1:	0.0110 LB/IN CUT		
Emission Limit 2:	0.4200 TON/YR 12-MONTH ROLLING		
Standard Emission Limit:	0		
COST DATA:			
Cost Verified?	No		
Dollar Year Used in Cost Estimates:			
Cost Effectiveness:	0 \$/ton		
Incremental Cost Effectiveness:	0 \$/ton		
Pollutant Notes:	For EP 03-06, the permittee shall prepare and implement, upon initial compliance demonstration but no later than 180 days after startup, a Good Work Practices (GWP) plan that includes written operating instructions and procedures that specify good operating and maintenance practices and includes, at a minimum, the following specific practices targeting PM, PM10, PM2.5, NOx, and VOC emission minimization, and a means of verifying the practices have occurred: i. Tracking material usage to ensure that equipment is operated as designed and correcting any operating or design issues as quickly as possible. ii. Employing a preventative maintenance program, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.		



Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.
Or click on the Process List button to return to the list of processes.

[RBLC Home](#)
[New Search](#)
[Search Results](#)
[Facility Information](#)
[Process List](#)
[Process Information](#)

[Pollutant Information](#)

[Help](#)

FINAL

RBLC ID: KY-0110

Corporate/Company: NUCOR

Facility Name: NUCOR STEEL BRANDENBURG

Process: EP 03-06 - Hot Rolling Mill Plasma Cutter

Pollutant: Particulate matter, total <
10 µ (TPM10)

CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),

Substance Registry System: Particulate matter, total < 10 µ (TPM10)

Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: B

P2/Add-on Description: This EP is required to have a Good Work Practices (GWP) Plan and a baghouse designed to control 99.9% of particulate emissions.

Test Method:

Unspecified

[EPA/QAR Methods](#)

[All Other Methods](#)

Percent Efficiency:

99.900

Compliance Verified:

Unknown

EMISSION LIMITS:

Case-by-Case Basis:

BACT-PSD

Other Applicable Requirements:

Other Factors Influence Decision:

No

Emission Limit 1:

0.0110 LB/IN CUT

Emission Limit 2:

0.4200 TON/YR 12-MONTH ROLLING

Standard Emission Limit:

0

COST DATA:

Cost Verified?

No

Dollar Year Used in Cost Estimates:

Cost Effectiveness:

0 \$/ton

Incremental Cost Effectiveness:

0 \$/ton

Pollutant Notes:

For EP 03-06, the permittee shall prepare and implement, upon initial compliance demonstration but no later than 180 days after startup, a Good Work Practices (GWP) plan that includes written operating instructions and procedures that specify good operating and maintenance practices and includes, at a minimum, the following specific practices targeting PM, PM10, PM2.5, NOx, and VOC emission minimization, and a means of verifying the practices have occurred: i. Tracking material usage to ensure that equipment is operated as designed and correcting any operating or design issues as quickly as possible. ii. Employing a preventative maintenance program, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.



Technology Transfer Network Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.

Or click on the Process List button to return to the list of processes.

[RBLC Home](#)
[New Search](#)
[Search Results](#)
[Facility Information](#)
[Process List](#)
[Process Information](#)
[Pollutant Information](#)
[Help](#)
FINAL
RBLC ID: KY-0115

Corporate/Company: NUCOR STEEL GALLATIN, LLC

Facility Name: NUCOR STEEL GALLATIN, LLC

Process: Material Handling Sample Line Plasma Cutter (EP 02-06)

Pollutant: Particulate matter, total <
2.5 μ (TPM2.5)

CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),

Substance Registry System: Particulate matter, total < 2.5
 μ (TPM2.5)
Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: B

P2/Add-on Description: The permittee must develop a Good Work Practices (GWP) Plan to minimize emissions. Equipped with a RoboVent air filtration unit.

Test Method:	Unspecified	EPA/OAR Methods	All Other Methods
Percent Efficiency:	99.000		
Compliance Verified:	Unknown		
EMISSION LIMITS:			
Case-by-Case Basis:	BACT-PSD		
Other Applicable Requirements:			
Other Factors Influence Decision:	Unknown		
Emission Limit 1:	0.0400 LB/HR 3-HR AVERAGE		
Emission Limit 2:	0.1900 TON/YR 12-MONTH ROLLING		
Standard Emission Limit:	0		
COST DATA:			
Cost Verified?	No		
Dollar Year Used in Cost Estimates:			
Cost Effectiveness:	0 \$/ton		
Incremental Cost Effectiveness:	0 \$/ton		
Pollutant Notes:	The permittee shall prepare and implement a Good Work Practices (GWP) plan that includes written operating instructions and procedures that specify good operating and maintenance practices and includes, at a minimum, the following specific practices targeting emission minimization, and a means of verifying the practices have occurred: i. Tracking material usage to ensure that equipment is operated as designed and correcting any operating or design issues as quickly as possible. ii. Employing a preventative maintenance program, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and longterm maintenance.		



Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.

Or click on the Process List button to return to the list of processes.

[RBLC Home](#)
[New Search](#)
[Search Results](#)
[Facility Information](#)
[Process List](#)
[Process Information](#)
[Pollutant Information](#)
[Help](#)
FINAL
RBLC ID: KY-0115

Corporate/Company: NUCOR STEEL GALLATIN, LLC

Facility Name: NUCOR STEEL GALLATIN, LLC

Process: Material Handling Sample Line Plasma Cutter (EP 02-06)

Pollutant: Particulate matter, total <
10 µ (TPM10)

CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),

Substance Registry System: Particulate matter, total < 10 µ (TPM10)
Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: B

P2/Add-on Description: The permittee must develop a Good Work Practices (GWP) Plan to minimize emissions. Equipped with a RoboVent air filtration unit.

Test Method:

Unspecified

[EPA/QAR Methods](#)
[All Other Methods](#)
Percent Efficiency:

99.000

Compliance Verified:

Unknown

EMISSION LIMITS:
Case-by-Case Basis:

BACT-PSD

Other Applicable Requirements:
Other Factors Influence Decision:

Unknown

Emission Limit 1:

0.0400 LB/HR 3-HR AVERAGE

Emission Limit 2:

0.1900 TON/YR 12-MONTH ROLLING

Standard Emission Limit:

0

COST DATA:
Cost Verified?

No

Dollar Year Used in Cost Estimates:
Cost Effectiveness:

0 \$/ton

Incremental Cost Effectiveness:

0 \$/ton

Pollutant Notes:

The permittee shall prepare and implement a Good Work Practices (GWP) plan that includes written operating instructions and procedures that specify good operating and maintenance practices and includes, at a minimum, the following specific practices targeting emission minimization, and a means of verifying the practices have occurred: i. Tracking material usage to ensure that equipment is operated as designed and correcting any operating or design issues as quickly as possible. ii. Employing a preventative maintenance program, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and longterm maintenance.



Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the **Process Information** button to see more information about the process associated with this pollutant.

Or click on the **Process List** button to return to the list of processes.

[RBLC Home](#)
[New Search](#)
[Search Results](#)
[Facility Information](#)
[Process List](#)
[Process Information](#)
[Pollutant Information](#)
[Help](#)
FINAL

RBLC ID: AL-0301

Corporate/Company: NUCOR STEEL TUSCALOOSA, INC.

Facility Name: NUCOR STEEL TUSCALOOSA, INC.

Process: PLASMA TORCHES

Pollutant: Particulate matter,
filterable (FPM)

CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),

Substance Registry System: Particulate matter, filterable (FPM)

Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: A

P2/Add-on Description: BAGHOUSE

Test Method:

EPA/OAR Mthd 5

[EPA/OAR Methods](#)
[All Other Methods](#)

Percent Efficiency:

99.000

Compliance Verified:

No

EMISSION LIMITS:

Case-by-Case Basis:

BACT-PSD

Other Applicable Requirements:

Other Factors Influence Decision:

No

Emission Limit 1:

0.1000 LB/H

Emission Limit 2:

0

Standard Emission Limit:

0

COST DATA:

Cost Verified?

No

Dollar Year Used in Cost Estimates:

Cost Effectiveness:

0 \$/ton

Incremental Cost Effectiveness:

0 \$/ton

Pollutant Notes: