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# FELKER BROTHERS CORPORATION



125 Beaver Trail Road, Glasgow KY 42141 TELEPHONE (270) 678-4143 FAX (270) 678-2338

January 10, 2024

Amy K. Tempus-Doom, P.E.  
Division For Air Quality  
Permit Review Branch  
Commonwealth of Kentucky  
Department for Environmental Protection  
300 Sower Boulevard  
Frankfort, KY 40601



RE: Air Permit Renewal Application  
Felker Brothers Corporation  
Agency Interest (AI) Number: 71  
Facility ID: 21-009-00064/Permit F-19-016

Dear Ms. Temple-Doom:

Felker Brothers Corporation air permit F-19-016 expires on August 18, 2024. We are submitting the attached application to renew the existing air permit. Ms. McCloskey of the Division of Air Quality indicated that as long as there are no changes to the facility, such as adding or changing a process, only Form DEP700A1 is required. There have been no changes to the facility other than two approved minor off-permit changes listed in Section A.1.7. These minor changes do not alter the potential air emissions. The Potential to Emit (PTE) has been recalculated to include:

- 1) New hydrofluoric acid emission factors based on the permit required stack test of the scrubbers in 2020. The revised emission factors were approved by the DEP and have been used in the Air Emission Inventory.
- 2) Revised approach to estimating emissions for the Saw Cutting EP03 is presented for review and approval. This revised approach does not impact the air permitting status of the facility, but it was completed to represent emissions more accurately from 98 Mill which uses a plasma cutting saw instead of standard saw.

Attached please find the following:

- 1) Form DEP7007AI
- 2) Form DEP7007N with attached calculations to update the Potential to Emit (PTE) analysis.

These calculations show that the facility can remain a Conditional Minor source and no changes to the air permit limits appear to be necessary. Please feel free to contact the undersigned or Mary Recktenwalt of Mead & Hunt at 414-755-1122 or [mary.recktenwalt@meadhunt.com](mailto:mary.recktenwalt@meadhunt.com), if you have any questions.

**Felker Brothers Corporation**

Robert Steger

Plant Manager - Glasgow, Ky. Operations

**Division for Air Quality**

300 Sower Boulevard  
 Frankfort, KY 40601  
 (502) 564-3999

**DEP7007AI**

**Administrative Information**

- Section AI.1: Source Information
- Section AI.2: Applicant Information
- Section AI.3: Owner Information
- Section AI.4: Type of Application
- Section AI.5: Other Required Information
- Section AI.6: Signature Block
- Section AI.7: Notes, Comments, and Explanations

**Additional Documentation**

Additional Documentation attached

**Source Name:** Felker Brothers Corporation

**KY EIS (AFS) #:** 21- 009-00064

**Permit #:** F-19-016

**Agency Interest (AI) ID:** 71

**Date:** 1.10.24

**Section AI.1: Source Information**

<b>Physical Location</b>	<b>Street:</b>	<u>125 Beaver Trail Road</u>		
<b>Address:</b>	<b>City:</b>	<u>Glasgow</u>	<b>County:</b>	<u>Barren</u>
			<b>Zip Code:</b>	<u>42141</u>
<b>Mailing Address:</b>	<b>Street or P.O. Box:</b>	<u>125 Beaver Trail Road</u>		
	<b>City:</b>	<u>Glasgow</u>	<b>State:</b>	<u>KY</u>
			<b>Zip Code:</b>	<u>42141</u>

**Standard Coordinates for Source Physical Location**

**Longitude:** -85.92469 (decimal degrees)      **Latitude:** 37.03061 (decimal degrees)

**Primary (NAICS) Category:** Iron and Steel Pipe & Tube Manufacturing from Purchased Steel      **Primary NAICS #:** 331210

<b>Classification (SIC) Category:</b>		<u>Steel Pipe &amp; Tubes</u>		<b>Primary SIC #:</b> <u>3317</u>		
<b>Briefly discuss the type of business conducted at this site:</b>		Felker manufactures stainless steel pipe and tube. The facility consists of five (5) tube mills and a acid pickling operation. Each tube mill consists of tube forming by rolling from flat stock, welding and a cutoff saw. The tube mills process flat stainless steel stock into pipe by forming the stock into a pipe form and welding the seam. The pipe is cut to length with a cutoff saw and then sent to the pickling operation.				
<b>Description of Area Surrounding Source:</b>	<input checked="" type="checkbox"/> Rural Area	<input type="checkbox"/> Industrial Park	<input type="checkbox"/> Residential Area	<b>Is any part of the source located on federal land?</b>	<input type="checkbox"/> Yes	<b>Number of Employees:</b> <span style="border: 1px solid black; padding: 2px;">69</span>
	<input type="checkbox"/> Urban Area	<input checked="" type="checkbox"/> Industrial Area	<input type="checkbox"/> Commercial Area		<input checked="" type="checkbox"/> No	
<b>Approximate distance to nearest residence or commercial property:</b> <u>500 ft</u>		<b>Property Area:</b> <u>63.71 acres (entire)</u>		<b>Is this source portable?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<b>What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?</b>						
<b>NPDES/KPDES:</b>	<input checked="" type="checkbox"/> Currently Hold	<input type="checkbox"/> Need	<input type="checkbox"/> N/A			
<b>Solid Waste:</b>	<input type="checkbox"/> Currently Hold	<input type="checkbox"/> Need	<input checked="" type="checkbox"/> N/A			
<b>RCRA:</b>	<input checked="" type="checkbox"/> Currently Hold	<input type="checkbox"/> Need	<input type="checkbox"/> N/A			
<b>UST:</b>	<input type="checkbox"/> Currently Hold	<input type="checkbox"/> Need	<input checked="" type="checkbox"/> N/A			
<b>Type of Regulated Waste Activity:</b>	<input type="checkbox"/> Mixed Waste Generator	<input checked="" type="checkbox"/> Generator	<input type="checkbox"/> Recycler	<input type="checkbox"/> Other: _____		
	<input type="checkbox"/> U.S. Importer of Hazardous Waste	<input type="checkbox"/> Transporter	<input type="checkbox"/> Treatment/Storage/Disposal Facility	<input type="checkbox"/> N/A		

**Section AI.2: Applicant Information**

**Applicant Name:** Robert Steger

**Title:** (if individual) Plant Manager

**Mailing Address:** **Street or P.O. Box:** 125 Beaver Trail Road  
**City:** Glasgow **State:** KY **Zip Code:** 42141

**Email:** (if individual) RSteger@felkerbrothers.com

**Phone:** 270-678-4143

**Technical Contact**

**Name:** Robert Steger

**Title:** Plant Manager

**Mailing Address:** **Street or P.O. Box:** 125 Beaver Trail Road  
**City:** Glasgow **State:** KY **Zip Code:** 42141

**Email:** RSteger@felkerbrothers.com

**Phone:** 270-678-4143

**Air Permit Contact for Source**

**Name:** Candice Baker, MPH, CSM

**Title:** Safety/Environmental Manager

**Mailing Address:** **Street or P.O. Box:** 125 Beaver Trail Road  
**City:** Glasgow **State:** KY **Zip Code:** 42141

**Email:** cbaker@felkerbrothers.com

**Phone:** 270-678-4143

**Section AI.3: Owner Information**

**Owner same as applicant**

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Mailing Address:** **Street or P.O. Box:** \_\_\_\_\_  
**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip Code:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

List names of owners and officers of the company who have an interest in the company of 5% or more.

**Name**

**Position**

\_\_\_\_\_  
Thomas Umhoefer

\_\_\_\_\_  
CEO - Owner

\_\_\_\_\_  
Lois Umhoefer

\_\_\_\_\_  
Board Secretary - Owner 2011 Trust

**Section AI.4: Type of Application**

**Current Status:**  Title  Conditional Major  State-Origin  General Permit  Registration  None

**Requested Action:** *(check all that apply)*

<input type="checkbox"/> Name Change	<input type="checkbox"/> Initial Registration	<input type="checkbox"/> Significant Revision	<input type="checkbox"/> Administrative Permit Amendment
<input checked="" type="checkbox"/> Renewal Permit	<input type="checkbox"/> Revised Registration	<input type="checkbox"/> Minor Revision	<input type="checkbox"/> Initial Source-wide Operating Permit
<input type="checkbox"/> 502(b)(10) Change	<input type="checkbox"/> Extension Request	<input type="checkbox"/> Addition of New Facility	<input type="checkbox"/> Portable Plant Relocation Notice
<input type="checkbox"/> Revision	<input type="checkbox"/> Off Permit Change	<input type="checkbox"/> Landfill Alternate Compliance Submittal	<input type="checkbox"/> Modification of Existing Facilities
<input type="checkbox"/> Ownership Change	<input type="checkbox"/> Closure		

**Requested Status:**  Title  Conditional Major  State-Origin  PSD  NSR  Other: \_\_\_\_\_

**Is the source requesting a limitation of potential emissions?**  Yes  No

<b>Pollutant:</b>	<b>Requested Limit:</b>	<b>Pollutant:</b>	<b>Requested Limit:</b>
<input type="checkbox"/> Particulate Matter	_____	<input type="checkbox"/> Single HAP	_____
<input type="checkbox"/> Volatile Organic Compounds (VOC)	_____	<input type="checkbox"/> Combined HAPs	_____
<input type="checkbox"/> Carbon Monoxide	_____	<input type="checkbox"/> Air Toxics (40 CFR 68, Subpart F)	_____
<input type="checkbox"/> Nitrogen Oxides	_____	<input type="checkbox"/> Carbon Dioxide	_____
<input type="checkbox"/> Sulfur Dioxide	_____	<input type="checkbox"/> Greenhouse Gases (GHG)	_____
<input type="checkbox"/> Lead	_____	<input type="checkbox"/> Other	Maintain current permit limits

**For New Construction:**

**Proposed Start Date of Construction:** (MM/YYYY) \_\_\_\_\_

**Proposed Operation Start-Up Date:** (MM/YYYY) \_\_\_\_\_

**For Modifications:**

**Proposed Start Date of Modification:** (MM/YYYY) \_\_\_\_\_

**Proposed Operation Start-Up Date:** (MM/YYYY) \_\_\_\_\_

**Applicant is seeking coverage under a permit shield.**  Yes  No

**Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.**

**Section AI.5 Other Required Information**

Indicate the documents attached as part of this application:

- |  |   |
|--|---|
| <input type="checkbox"/> DEP7007A Indirect Heat Exchangers and Turbines                    | <input type="checkbox"/> DEP7007CC Compliance Certification                       |
| <input type="checkbox"/> DEP7007B Manufacturing or Processing Operations                   | <input type="checkbox"/> DEP7007DD Insignificant Activities                       |
| <input type="checkbox"/> DEP7007C Incinerators and Waste Burners                           | <input type="checkbox"/> DEP7007EE Internal Combustion Engines                    |
| <input type="checkbox"/> DEP7007F Episode Standby Plan                                     | <input type="checkbox"/> DEP7007FF Secondary Aluminum Processing                  |
| <input type="checkbox"/> DEP7007J Volatile Liquid Storage                                  | <input type="checkbox"/> DEP7007GG Control Equipment                              |
| <input type="checkbox"/> DEP7007K Surface Coating or Printing Operations                   | <input type="checkbox"/> DEP7007HH Haul Roads                                     |
| <input type="checkbox"/> DEP7007L Mineral Processes  | <input type="checkbox"/> Confidentiality Claim                                    |
| <input type="checkbox"/> DEP7007M Metal Cleaning Degreasers                                | <input type="checkbox"/> Ownership Change Form                                    |
| <input checked="" type="checkbox"/> DEP7007N Source Emissions Profile                      | <input type="checkbox"/> Secretary of State Certificate                           |
| <input type="checkbox"/> DEP7007P Perchloroethylene Dry Cleaning Systems                   | <input type="checkbox"/> Flowcharts or diagrams depicting process                 |
| <input type="checkbox"/> DEP7007R Emission Offset Credit                                   | <input type="checkbox"/> Digital Line Graphs (DLG) files of buldings, roads, etc. |
| <input type="checkbox"/> DEP7007S Service Stations   | <input type="checkbox"/> Site Map   |
| <input type="checkbox"/> DEP7007T Metal Plating and Surface Treatment Operations           | <input type="checkbox"/> Map or drawing depicting location of facility            |
| <input type="checkbox"/> DEP7007V Applicable Requirements and Compliance Activities        | <input type="checkbox"/> Safety Data Sheet (SDS)                                  |
| <input type="checkbox"/> DEP7007Y Good Engineering Practice and Stack Height Determination | <input type="checkbox"/> Emergency Response Plan                                  |
| <input type="checkbox"/> DEP7007AA Compliance Schedule for Non-complying Emission Units    | <input checked="" type="checkbox"/> Other: <u>  Emission Calculations  </u>       |
| <input type="checkbox"/> DEP7007BB Certified Progress Report                               |   |

**Section AI.6: Signature Block**

I, the undersigned, hereby certify under penalty of law, that I am a responsible official\*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

  
 \_\_\_\_\_  
 Authorized Signature

1-11-2024  
 \_\_\_\_\_  
 Date

Robert W. Steger  
 \_\_\_\_\_  
 Type or Printed Name of Signatory

Plant Manager  
 \_\_\_\_\_  
 Title of Signatory

\*Responsible official as defined by 401 KAR 52:001.



<p><b>Section A1.7: Notes, Comments, and Explanations</b></p>
<p>No changes to processes since last permit issuance except for the following:</p>
<p>1. Off Permit submittal for replacing the acid pickling tank (EP 01 T-2,T-3) with similar tank was submitted on 12/10/2021 and approved on 2/2/2022.</p>
<p>2. Off Permit submittal for replacing the Scanacon SA 70 Acid Manager System with a Luova AC200 Acid Controller System was submitted on 9/29/2022 and approved on 11/1/2022.</p>
<p>3. Approval for updating the Hydrofluoric acid emission factor for the acid pickling tank, and rinse tank (EP 01 T-2,T-3) based on the 2020 stack test for the Air Emission Inventory was submitted via email on 4/6/2022. The emission was changed and was used for RY 2022 Air Emission Inventory calculations and the current emission calculations submitted with this form.</p>
<p>Updated PTE calculations with updated HF emission factor are included with this renewal application. In addition, a revised approach for calculating emissions for the Saw Cutting EP03 is presented for review and approval. This revised approach does not impact the air permitting status of the facility, but was completed to represent emissions more accurately from 98 Mill which uses a plasma cutting instead of a standard saw.</p>
<p>The emissions for the standard saw cutting mills and the plasma saw cutting are presented separately and then combined in the facility total.</p>
<p>Please also note that the acid pickling line has always included a 7,200-gallon clean rinse tank (in addition to the 6,000-gallon rinse tank) but it has never been listed in the air permit. Very few, if any, emissions are expected from this tank, but it is vented to the scrubber and therefore any emissions have been included in the periodic emission tests. The facility requests that it be included in the process description.</p>
<p>Updated PTE calculations with updated HF emission factor and revised 98 Mill calculations are included with this renewal application.</p>
<p>These calculations confirm that the facility can remain a Conditional Major maintaining the existing permit limits.</p>

Division for Air Quality

300 Sower Boulevard  
Frankfort, KY 40601  
(502) 564-3999

**DEP7007N**

Source Emissions Profile

- Section N.1: Emission Summary
- Section N.2: Stack Information
- Section N.3: Fugitive Information
- Section N.4: Notes, Comments, and Explanations

Additional Documentation

Complete DEP7007AI

Source Name: Felker Brothers Corporation

KY EIS (AFS) #: 21- 009-00064

Permit #: F-19-016

Agency Interest (AI) ID: 71

Date: 1.10.24

**N.1: Emission Summary**

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions		
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)	
							See attached Emission calculations for each permitted Emission source along with facility summary										

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions		
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)	

**Section N.2: Stack Information**

**UTM Zone:**

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter <i>(ft)</i>	Height <i>(ft)</i>	Base Elevation <i>(ft)</i>	Northing <i>(m)</i>	Easting <i>(m)</i>	Flowrate <i>(acfm)</i>	Temperature <i>(°F)</i>	Exit Velocity <i>(ft/sec)</i>
	See attached								

**Section N.3: Fugitive Information**

**UTM Zone:**

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side <i>(ft)</i>	Length of the Y Side <i>(ft)</i>	Northing <i>(m)</i>	Easting <i>(m)</i>	Release Temperature <i>(°F)</i>	Release Height <i>(ft)</i>
	NA							

<b>Section N.4: Notes, Comments, and Explanations</b>
A set of emission calculations are attached to this application. The emission factor for the pickling tank and rinse tank were revised to reflect the results of the 2020 stack test. This change was previously communicated with the DEP and incorporated into the air emission survey for the past several years of reporting.
In addition, a revised approach for calculating emissions for the Saw Cutting EP03 is presented for review and approval. This revised approach does not impact the air permitting status of the facility, but was completed to represent emissions more accurately from 98 Mill which uses a plasma saw instead of a standard saw.
All the stack information remains the same as presented in the air emission survey with the exception that the release height of the cut off saws should be 33 ft instead of 23 feet to match the release height of the welding (all emissions for these processes are filtered through dust control and then released inside the building through the roof)

Felker Brothers Corporation  
125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 2100900064  
AI ID: 71

**Facility-Wide Permit Limits:**  
**Chromium VI: 0.582 lb/hr monthly avg**  
  
**PM/PM<sub>10</sub> : 90 tons/yr 12-month rolling basis**  
**23,808.31 tons of pipe and tube produced/yr**  
**on 12-month rolling basis (for pickling process)**  
**HF: 0.7 tons/yr based on 12-month rolling basis**

**State Plant Classification**  
0, Conditional Major

**Principal Product -Stainless Steel Pipe & Tube**

<b>SIC Code:</b>	<b>SIC Description</b>	<b>NAIC Code</b>	<b>NAICS Description</b>
3317	Steel Pipe & Tube	33121	Iron & Steel Pipe and Tube Manufacturing from Purchased Steel

Facility Wide Emissions Summary

Pollutant ID/CAS	Description	Actual Emissions	Uncontrolled "Actual Emissions"	Title V PTE Emissions (with control but no limits on Pipe & Tube Processed)	PTE Emissions (Using Control & Permit Limit on Pipe & Tube Processed of 23,808.31 Tons/yr))	Facility-Wide Emission Permit Limits
		(Tons/Year)	(Tons/Year)	(Tons/Year)	(Tons/Year)	lb/hr
7429-90-5	Aluminum	0.000214	0.007127	0.000919924	0.000577	
71-43-2	Benzene	0.0000164	0.0000164	0.0000087	0.0000087	
124-38-9	Carbon Dioxide	940	940	4,973	4,973	
7440-47-3	Chromium	0.0131	0.1976	0.0563720	0.0354	
18540-29-9	Chromium VI and Compounds	0.0000124	0.0001365	0.0000535	0.00003357	0.582 Monthly average
630-08-0	CO (Carbon Monoxide)	0.658	0.658	3.481	3.481	
50-00-0	Formaldehyde	0.000587	0.000587	0.003108	0.003108	
110-54-3	Hexane; N-Hexane	0.0141	0.0141	0.0746	0.0746	
7664-39-3	Hydrofluoric Acid	0.130	2.543	1.864	0.350	
7439-92-1	Lead, Total (as Pb)	0.00000392	0.00000392	0.00002072	0.00002072	
7439-96-5	Manganese	0.0003066	0.0102207	0.0013213	0.0008288	
74-82-8	Methane	0.0180	0.0180	0.0953	0.0953	
7440-02-0	Nickel; Nickel (Total and Dissolved)	0.00249	0.08290	0.01072	0.00672	
7697-37-2	Nitric Acid	6.54	11.76	93.97	17.64	
10024-97-2	Nitrous Oxide	0.0172	0.0172	0.0912	0.0912	
10102-44-0	NO2 (Nitrogen Dioxide)	0.740	0.740	3.878	3.817	
PM10-FIL	PM10 (Particulate Matter - 10 Microns Or Less)	1.84	20.24	25.35	5.22	
PM25-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	0.302	3.436	4.070	1.091	
PM-FIL	PT (Particulate Matter)	1.84	20.24	25.35	5.22	
7446-09-5	SO2 (Sulfur Dioxide)	0.00470	0.00470	0.02486	0.02486	
108-88-3	Toluene	0.0000266	0.0000266	0.0001409	0.0001409	
VOC	VOC (Volatile Organic Compounds)	0.0431	0.0431	0.2279	0.2279	
1314-13-2	Zinc (Fume Or Dust)	0.000227	0.000227	0.000429	0.001202	

**Pipe and Tube Produced Permit Limit**  
**Listed in Pickling Process**  
Section B- EP-01 1.b (page 2 of permit)

**23,808.31**  
12-month rolling average

Felker Brothers Corporation

125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 2100900064

Alt ID: 71

Equipment ID: EQPT 001

Current Operating Schedule		
Hours/Day	Days/Week	Weeks/Year
16	5	52

Stack Height (ft)	Stack Diameter (ft)	Stack Flow (Acfm)	Stack Velocity (ft/sec)	Exit T, (F)
33	3.9	34608	48.28	77

Stack information from Air Survey- Unchanged

**Equipment Description: Acid Pickling Tank (EP01) (T-2, T-3)**

One 12,193 gallon HF/HNO3 pickling tank and one 6,000-gallon rinse tank and one 7,200 gallon clean rinse tank

Capacity: Unit 1 : 14.5 tons/hr of stainless steel tube/pipe

Controls: One ESCO Plate Scrubber, One C&E Custom Scrubber

Tank replaced in 2022 with similar tank. Replacement authorized as 401 KAR 52:030, Section 17 Off-Permit and 502(b)(10) Changes

**Facility-Wide Permit Limits:**  
**Chromium VI: 0.582 lb/hr monthly avg**  
**PM/PM<sub>10</sub> : 90 tons/yr 12-month rolling basis**  
**23,808.31 tons of pipe and tube produced/yr**  
 on 12-month rolling basis (for pickling process)  
**HF: 0.7 tons/yr based on 12-month rolling basis**

Maximum Hourly Operating Rate (Tons/Hr)	2022 Annual Throughput (Tons/Year)	Maximum Operating Hrs (Hrs/Yr)	Maximum Operating Rate (Tons/Year) (Max rate (ton/hr) x 8760 hr/yr)	Permit Limit (Tons steel/Yr)	Permit Limit for HF Acid (Tons/Yr)
14.4774	8827.0	8760	126.822	23,808.31	0.7

Pollutant ID	Description	Emission Factor (lbs/Ton Pickled) <sup>1</sup>	Emission Factor Source <sup>1</sup>	Control Equipment Description	Actual Ctrl. Eff.	PTE Ctrl. Eff.	Actual Emissions (TPY) <sup>2,3</sup>	Unctrl. Actual Emissions (TPY)	Max Operating Rate PTE Emissions (TPY) <sup>4</sup>	Hourly Emissions		Annual Emissions (W/out Permit Limits)		Hourly Emissions		Annual Emissions	
										Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr) <sup>5</sup>	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>4</sup>	Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr) <sup>5</sup>	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>6</sup>
7664-39-3	Hydrofluoric Acid	0.551200	2020 stack test	Wet Scrubber	94.90	94.90	0.12399850	2.43134320	1.78255964	7.9799	0.40697709	34.95214981	1.78255964	7.9799	0.40697709	6.56157024	0.33464008
7697-37-2	Nitric Acid	2.538400	KEIS	Wet Scrubber	44.40	44.40	6.22546661	11.19688240	89.49515715	36.7494	20.43268428	160.96251286	89.49515715	36.7494	20.43268428	30.21750705	16.80093392
PM10-FIL	PM10 (Particulate Matter - 10 Microns Or Less)	3.691500	KFIS	Wet Scrubber	90.0	90.0	1.62832065	16.28320650	23.40817508	53.4433	5.34433221	234.08175080	23.40817508	53.4433	5.34433221	43.94418818	4.39441882
PM25-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	0.553725	KEIS	Wet Scrubber	90.0	90.0	0.24424810	2.44248098	3.51122626	8.0165	0.80164983	35.11226262	3.51122626	8.0165	0.80164983	6.59162823	0.65916282
PM-FIL	PT (Particulate Matter)	3.691500	KEIS	Wet Scrubber	90.0	90.0	1.62832065	16.28320650	23.40817508	53.4433	5.34433221	234.08175080	23.40817508	53.4433	5.34433221	43.94418818	4.39441882

No Control

No Control

No Control

No Control

No Control

1. Emission factors (before Control) are Department previously approved factors from Air Emission Survey. Control Eff Unchanged.

In actuality, the monthly emissions for HF will vary depending upon the % HF measured in the pickling tank.

The HF measurements during the 2020 test were 3.36% and 3.4% - for an average of 3.38 HF % during the performance test

Per Permit- HF Emissions (lbs/Month) = tons produced/month \* EF lb HF/ton produced \* avg monthly % HF/3.38%

2. Actual emissions represent emission estimates for 2022 as reported in the annual air survey

3. Actual Emissions TPY = EF (lbs/ton) x Actual Annual Tons/yr x ((1-Ctrl. Eff.)/100)/2000 lbs/ton

4. PTE Emissions & Controlled Potential (TPY) = max hourly rate (ton/hr) x 8760 hour/yr x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton

5. Controlled Potential (lb/hr) = max tons/hr x EF (lb/ton) x ((1-Ctrl. Eff.)/100)

6. Controlled Potential (TPY) with Permit Limit = Permit Limit (tons/yr) x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton

Pickling also has a HF limit of 0.7 tons/year  
 The steel throughput limit, however, results in lower PTE

Prepared JJS  
 Checked Mar 12.5.23

1/10/2024:25 PM

Felker Glasgow PTE Calcs 1.9.24.rev.jjs.1.10.24



Felker Brothers Corporation

125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 2100900064

AI ID: 71

Equipment ID: EQPT 001 - 2

	Stack Diameter	Stack Flow (Acfm)	Stack Velocity (ft/sec)	Exit T, (F)
Stack Height (ft)	(ft)			
33	3.9	34608	48.28	77

Stack information from Air Survey- Unchanged

Equipment Description: Acid Pickling - Immersion Rinse Tank (EP01) (T-2, T-3)

One 12,193 gallon HF/HNO3 pickling tank and one 6,000-gallon rinse tank and one 7,200 gallon clean rinse tank

Capacity: Unit 1 : 14.5 tons/hr of stainless steel tube/pipe

Controls: One ESCO Plate Scrubber, One C&E Custom Scrubber

Facility-Wide Permit Limits:

Chromium VI: 0.582 lb/hr monthly avg

PM/PM<sub>10</sub> : 90 tons/yr 12-month rolling basis

23,808.31 tons of pipe and tube produced/yr

on 12-month rolling basis (for pickling process)

HF: 0.7 tons/yr based on 12-month rolling basis

Current Operating Schedule		
Hours/Day	Days/Week	Weeks/Year
16	5	52

Maximum Hourly Operating Rate (Tons/Hr)	Maximum Annual Throughput (Tons/Year)	Maximum Operating Rate (Hrs/Yr)	Maximum Operating Rate (Tons/Year)	Permit Limit (Tons for HF Acid Steel/Yr)	Permit Limit (Tons/Yr)
14.4774	8822.0	8760	126,822	23,808.31	0.7

Pollutant ID	Description	Emission Factor (lbs/Ton Pickled) <sup>1</sup>	Emission Factor Source <sup>1</sup>	Control Equipment Description	Actual Ctrl. Eff.	PTE Ctrl. Eff.	Actual Emissions (TPY) <sup>2,3</sup>	Unctrl. Actual Emissions (TPY)	PTE Emissions (TPY) <sup>4</sup>	Hourly Emissions		Annual Emissions (W/out Permit Limits)		Hourly Emissions		Annual Emissions	
										Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr) <sup>5</sup>	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>4</sup>	Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr) <sup>5</sup>	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>6</sup>
7664-39-3	Hydrofluoric Acid	0.025300	2020 stack test	Wet Scrubber	94.90	94.90	0.00569151	0.11159830	0.08181923	0.3663	0.01868019	1.60429860	0.08181923	0.3663	0.01868019	0.30117512	0.01535993
7697-37-2	Nitric Acid	0.1269200	KEIS	Wet Scrubber	44.40	44.40	0.31127333	0.55984412	4.47475786	1.8375	1.02163421	8.04812564	4.47475786	1.8375	1.02163421	1.51087535	0.84004670
PM10-FIL	PM10 (Particulate Matter - 10 Microns Or Less)	0.1845750	KEIS	Wet Scrubber	90.0	90.0	0.08141603	0.81416033	1.17040875	2.6722	0.26721661	11.70408754	1.17040875	2.6722	0.26721661	2.19720941	0.21972094
PM25-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	0.0276860	KEIS	Wet Scrubber	90.0	90.0	0.01221229	0.12212295	0.17555973	0.4008	0.04008213	1.75559728	0.17555973	0.4008	0.04008213	0.32957844	0.03295784
PM-FIL	PT (Particulate Matter)	0.1845750	KEIS	Wet Scrubber	90.0	90.0	0.08141603	0.81416033	1.17040875	2.6722	0.26721661	11.70408754	1.17040875	2.6722	0.26721661	2.19720941	0.21972094

No Control

No Control

No Control

No Control

No Control

1. Emission factors (before Control) are Department previously approved factors from Air Emission Survey. Control Eff Unchanged.

In actuality, the monthly emissions for HIF will vary depending upon the % HF measured in the pickling tank.

The HF measurements during the 2020 test were 3.36% and 3.4% - for an average of 3.38 HF % during the performance test

Per Permit- HF Emissions (lbs/Month) = tons produced/month \* EF lb HF/ton produced \* avg monthly % HF/3.38%

2. Actual emissions represent emission estimates for 2022 as reported in the annual air survey

3. Actual Emissions TPY = EF (lbs/ton) x Actual Annual Tons/yr x ((1-Ctrl. Eff.)/100)/2000 lbs/ton

4. PTE Emissions & Controlled Potential (TPY) = max hourly rate (ton/hr)x 8760 hour/yr x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton

5. Controlled Potential (lb/hr) = max tons/hr x EF (lb/ton) x ((1-Ctrl. Eff.)/100)

6. Controlled Potential (TPY) with Permit Limit = Permit Limit (tons/yr) x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton

Pickling also has a HF limit of 0.7 tons/year  
The steel throughput limit, however, results in lower PTE

Prepared JJS  
Checked Mar

12.5.23

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Felker Brothers Corporation

125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 2100900064

Alt ID: 71

Stack Height (ft)	Stack Diameter (ft)	Stack Flow (Acfm)	Stack Velocity (ft/sec)	Exit T. (F)
30	1.6	989	8.2	350

Stack information from Air Survey: Unchanged

Equipment ID: EQPT 002

Equipment Description: NG Fired Indirect Heat Exchange Units (EP 02)

Titan Air Rotation Units 1 & 2  
 Capacity: Unit 1: 4.356 MMBtu/hr, Unit 2: 3.334 MMBtu/hr  
 Controls: Fabric Filter / Baghouse

Facility-Wide Permit Limits:  
 Chromium VI: 0.582 lb/hr monthly avg  
 PM/PM<sub>10</sub>: 90 tons/yr 12-month rolling basis  
 23,808.31 tons of pipe and tube produced/yr on 12-month rolling basis (for picking process)  
 HF: 0.7 tons/yr based on 12-month rolling basis

Current Operating Schedule		
Hours/Day	Days/Week	Weeks/Year
16	5	52

Maximum Hourly Operating Rate (MMscf/Hr)	Maximum Annual Throughput (MMscf)	Maximum Operating Hrs (Hrs/Yr)	Maximum Operating Rate (MMscf/Yr) (0.0075 mmSCF/hr x 8760 hr/yr)
0.0075	12.45	8760	65.70

Pollutant ID	Description	Emission Factor (lbs/MMscf) <sup>1</sup>	Emission Factor Source	Control Equipment Description <sup>1</sup>	Actual Ctrl. Eff.	PTE Ctrl. Eff.	Actual Emissions (TPY) <sup>2</sup>	Unctrl. Actual Emissions (TPY)	PTE Emissions (TPY) <sup>3</sup>	Hourly Emissions		Annual Emissions	
										Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr) <sup>1</sup>	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>1</sup>
71-43-2	Benzene	0.0021	AP42		0.0%	0.0%	0.0000131	0.0000131	0.0000690	0.00001575	0.00001575	0.00007	0.00007
124-38-9	Carbon Dioxide	120000.00	KEIS		0.0%	0.0%	745.8000000	745.8000000	3942.0000000	900	900	3942.000	3942.000
630-06-0	CO (Carbon Monoxide)	84.00	KEIS		0.0%	0.0%	0.5220600	0.5220600	2.7594000	0.63	0.63	2.75940	2.75940
50-08-0	Formaldehyde	0.08	KEIS		0.0%	0.0%	0.0004661	0.0004661	0.0024638	0.0005625	0.0005625	0.00246	0.00246
110-54-3	Hexane, N-Hexane	1.80	KEIS		0.0%	0.0%	0.0111870	0.0111870	0.0591300	0.0135	0.0135	0.05913	0.05913
7439-92-1	Lead, Total (as Pb)	0.0005	KEIS		0.0%	0.0%	0.0000031	0.0000031	0.0000164	0.00000375	0.00000375	0.00002	0.00002
74-82-8	Methane	2.30	KEIS		0.0%	0.0%	0.0142945	0.0142945	0.0755550	0.01725	0.01725	0.07556	0.07556
10024-97-2	Nitrous Oxide	2.20	KEIS		0.0%	0.0%	0.0136730	0.0136730	0.0722700	0.0165	0.0165	0.07227	0.07227
10102-44-0	NO2 (Nitrogen Dioxide)	100.00	KEIS		0.0%	0.0%	0.6215000	0.6215000	3.2850000	0.75	0.75	3.28500	3.28500
PM10-FIL	PM10 (Particulate Matter - 10 Microns Or Less)	7.60	KEIS	Fabric Filter / Baghouse	70.0%	70.0%	0.0141702	0.0472340	0.2496600	0.057	0.0570000	0.24966	0.24966
PM25-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	7.60	KEIS	Fabric Filter / Baghouse	70.0%	70.0%	0.0141702	0.0472340	0.2496600	0.057	0.0570000	0.24966	0.24966
PM-FIL	PT (Particulate Matter)	7.60	KEIS	Fabric Filter / Baghouse	70.0%	70.0%	0.0141702	0.0472340	0.2496600	0.057	0.0570000	0.24966	0.24966
7446-09-5	SO2 (Sulfur Dioxide)	0.60	KEIS		0.0%	0.0%	0.0037290	0.0037290	0.0197100	0.0045	0.0045	0.01971	0.01971
108-88-3	Toluene	0.00	AP42		0.0%	0.0%	0.0000211	0.0000211	0.0001117	0.0000255	0.0000255	0.00011	0.00011
VOC	VOC (Volatile Organic Compounds)	5.50	KEIS		0.0%	0.0%	0.0341825	0.0341825	0.1806750	0.04125	0.04125	0.18068	0.18068
1314-13-2	Zinc (Fume Or Dust)	0.029	AP42		0.0%	0.0%	0.0001802	0.0001802	0.0009527	0.0002175	0.0002175	0.00095	0.00095

1. Emission factors are Department previously approved factors from Air Emission Survey. These are from AP-42 Section 1.4 Natural Gas Combustion

Added benzene, toluene, and zinc to match EFs that are in the air survey for the HW heaters (natural gas combustion)

2. Actual emissions represent emission estimates for 2022 as reported in the annual air survey = annual throughput in MMscf x HF / 2000 lbs/ton

3. PTE: Emissions & Controlled Potential (TPY) = max hourly rate (MMscf/hr x 8760 hr/yr) x HF (lbs/MMscf) / 2000 lbs/ton

The annual air survey assumes that PM in the exhaust is removed by being filters by baghouse- filters. The internal air is filtered by Robovent units but to be conservative removed the control from PTE calculations for this summary

Stack information from Air Survey: Unchanged

Prepared: JIS  
 Checked: Mar 12 5:23

Felker Brothers Corporation

125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 2100900064

AI ID: 71

Equipment ID: EQPT 003

Stack Height Release (ft)	Stack Diameter (ft)	Stack Flow (Acfm)	Stack Velocity (ft/sec)	Exit T, (F)
33	na	na	na	77

Stack information from Air Survey- Indicated 23 ft release height. Should match weeding (33 ft) since all processes exhaust inside and then out via roof vents.  
Exhaust inside

Equipment Description: Sawing (Five Cut-off Saws) (EP 03)- MINUS 98 MILL (Represents 4 saws)

Capacity	Max tons/yr (at 8760 hrs/yr)	Max tons/yr (pro-rated to permit limit)
Capacity: 4.33 tons/stainless steel pipes/hr total		
35 Mill	0.517 Tons/Hour	4,529
36 Mill	0.55 Tons/Hour	4,818
45 Mill	0.806 Tons/Hour	7,061
75 Mill	0.914 Tons/Hour	8,007
<del>98 Mill</del>	<del>1.546 Tons/Hour</del>	
<b>Total</b>	<b>2.787 Tons/Hour</b>	<b>24,414</b>

Facility-Wide Permit Limits:

Chromium VI: 0.582 lb/hr monthly avg  
 PM/PM<sub>10</sub>: 90 tons/yr 12-month rolling basis  
 23,808.31 tons of pipe and tube produced/yr on 12-month rolling basis (for pickling process)  
 HF: 0.7 tons/yr based on 12-month rolling basis

Current Operating Schedule

Hours/Day	Days/Week	Weeks/Year
18	5	52

Controls: Enclosure & Dust Collector  
 Emissions from dust collectors and controls are exhausted inside

98 Mill cutting uses a plasma cutter, instead of a traditional saw. Separate emission factors for plasma cutter have been created and presented in separate sheet.

Operating Rate (Tons/year)	Actual Annual (Tons/year)	Maximum Operating Rate (Tons/year)	Maximum Operating Rate: Max hourly rate x 8760 hr/yr (Tons/yr)	Permit Limit (tons/yr less 98 Mill capacity)
2,787	2,787	8760	24,414	23,808.31

Pollutant ID	Description	Emission Factor (lbs/ton)	Emission Source <sup>1</sup>	Control Equipment Description	Actual Ctrl. Eff.	PTE Ctrl. Eff.	Actual Emissions (TPY) <sup>2,3</sup>	Unctrl. Actual Emissions (TPY)	PTE Emissions (TPY) <sup>4</sup>	Potential based on max hourly operating rate and 8760 hrs/yr		Emissions with Permit Limit of 15,314 ton/yr pro-rated					
										Hourly Emissions		Annual Emissions		Hourly Emissions		Annual Emissions	
										Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr) <sup>7</sup>	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>8</sup>	Uncontrolled Potential (lb/hr) <sup>7</sup>	Controlled Potential (lb/hr)	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>8</sup>
7429-90-5	Aluminum	0.0025120	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00021381	0.00712697	0.00091992	0.007001	0.00021003	0.03066413	0.00091992	0.007001	0.00021003	0.01923386	0.00057702
7440-47-3	Chromium	0.0316360	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00269270	0.08975671	0.01158548	0.088170	0.00264509	0.38618255	0.01158548	0.088170	0.00264509	0.24223027	0.00726691
18540-29-9	Chromium VI and Compounds	0.0000040	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00000034	0.00001135	0.00000146	0.000011	0.00000033	0.00004883	0.00000146	0.000011	0.00000033	0.00001063	0.00000092
7439-96-5	Manganese	0.0007390	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00006290	0.00209667	0.00027063	0.002060	0.00006179	0.00902102	0.00027063	0.002060	0.00006179	0.00565837	0.00016975
7440-02-0	Nickel, Nickel (Total and Dissolved)	0.0091770	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00078110	0.02603671	0.00336073	0.025576	0.00076729	0.11202419	0.00336073	0.025576	0.00076729	0.07026638	0.00210799
PM10-FIL	PM10 (Particulate Matter - 10)	0.9267000	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.07887616	2.62920531	0.33936848	2.582713	0.07748139	11.31228250	0.33936848	2.582713	0.07748139	7.09554920	0.21286448
PM2.5-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	0.1390050	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.01183142	0.39438080	0.05090527	0.387407	0.01162221	1.69684238	0.05090527	0.387407	0.01162221	1.06433238	0.03192997
PM-FIL	PT (Particulate Matter)	0.9267000	KEIS	Cyclone / Centrifugal Collector	97.0%	97.0%	0.07887616	2.62920531	0.33936848	2.582713	0.07748139	11.31228250	0.33936848	2.582713	0.07748139	7.09554920	0.21286448

- Emission factors (before Control) are Department previously approved factors from Air Emission Survey. Control Eff Unchanged.
  - Actual emissions represent emission estimates using emission factors (lb/ton) and tons/yr for 2022 pro-rated for all mills minus 98 Mill
  - Emissions are routed to Camfill and Robovent air filtering systems connected to each mill (with min MERV 15 filters) and then exhausted inside the facility. Used % control from KEIS. Actual \* removal is likely higher.
  - Conservatively assumes that all emissions exit facility (even though some may settle on surfaces)
  - Actual Emissions TPY = EF (lbs/ton) x Actual Annual Tons/yr x ((1-Ctrl. Eff.)/100)/2000 lbs/ton
  - PTE Emissions & Controlled Potential (TPY) = max hourly rate (ton/hr x 8760 hour/yr x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton
  - Controlled Potential (lb/hr) = max tons/hr x EF (lb/ton) x ((1-Ctrl. Eff.)/100)
  - Controlled Potential (TPY) with Permit Limit = Permit Limit (tons/yr) x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton
- Stack information from Air Survey- Unchanged

Prepared JIS  
 Checked Mar 1 8 24

1/10/2024:25 PM

Felker Glasgow PTE Calcs 1.9.24.rev.jis.1.10.24

Felker Brothers Corporation

125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 2100900064

AI ID: 71

Equipment ID: EQPT 003

Stack Height Release (ft)	Stack Diameter (ft)	Stack Flow (Acfm)	Stack Velocity (ft/sec)	Exit T. (F)
33	na	na	na	77

Stack Information from Air Survey: Induced 21 ft release height. Stacks match existing (1) B. Once all processes exhaust inside and then out via roof vent. Exhaust inside.

**Equipment Description: Sawing (Plasma Cutting) (EP 03)- 98 MILL ONLY**

Capacity	36-Mill	46-Mill	25-Mill	98 Mill	Total	Max tons/yr (at 8760 hrs/yr)	Max tons/yr (pro-rated to permit limit)
Capacity: 4.33 tons/stainless steel pipes/hr total	0.517 Tons/Hour	0.55 Tons/Hour	0.806 Tons/Hour	0.914 Tons/Hour	1.546 Tons/Hour	13,543	8,495

**Facility-Wide Permit Limits:**

Chromium VI: 0.582 lb/hr monthly avg  
 PM/PM<sub>10</sub>: 90 tons/yr 12-month rolling basis  
 23,808.31 tons of pipe and tube produced/yr on 12-month rolling basis (for pickling process)  
 HF: 0.7 tons/yr based on 12-month rolling basis

**Controls:** Enclosure & Dust Collector  
 Emissions from dust collectors and controls are exhausted inside

**Current Operating Schedule**

Hours/Day	Days/Week	Weeks/Year
16	5	52

Maximum Hourly Operating Rate (Tons/Hr)	Actual Annual Throughput (Tons/Year)	Maximum Operating Hrs (Hrs/Yr)	Maximum Operating Rate: Max hourly rate x 8760 hr/yr (Tons/Yr)
1.546	8,495	8760	13,543

Permit Limit (Tons/Yr)	Pro-rated (Tons/yr just 98 Mill capacity): (23,808*1.546/4.333)=8,495
23,808.31	8,495

Pollutant ID	Description	Emission Factor (lbs/ton)	Emission Source	Control Equipment Description	Actual Ctrl. Eff.	PTE Ctrl. Eff.	Actual Emissions (TPY)	Unctrl. Actual Emissions (TPY)	PTE Emissions (TPY)	Potential based on max hourly operating rate and 8760 hrs/yr		Emissions with Permit Limit of 8495 ton/yr pro-rated					
										Hourly Emissions		Annual Emissions		Hourly Emissions		Annual Emissions	
										Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (TPY)	Controlled Potential (TPY)	Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (TPY)	Controlled Potential (TPY)
7429-90-5	Aluminum		see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000		
7440-47-3	Chromium	0.0517198	see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00243721	0.08124018	0.01050658	0.079959	0.00239876	0.35021937	0.01050658	0.079959	0.00239876	0.21967262	0.00659018
18540-29-9	Chromium VI and Compounds	0.0000600	see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00000283	0.00009430	0.00001220	0.000093	0.00000278	0.00040650	0.00001220	0.000093	0.00000278	0.00025498	0.00000765
7439-96-5	Manganese	0.0051720	see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00024372	0.00812402	0.00105066	0.007996	0.00023988	0.03502194	0.00105066	0.007996	0.00023988	0.02196726	0.00065902
7440-02-0	Nickel: Nickel (Total and Dissolved)	0.0362038	see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.00170604	0.05686612	0.00735461	0.055971	0.00167913	0.24515356	0.00735461	0.055971	0.00167913	0.15377044	0.00461313
10102-44-0	NOX	0.0241286	see Mill 98 plasma cutting worksheet	NA	NA	NA	0.03790060	0.03790060	0.16336621	0.037303	0.03730279	0.16336621	0.16336621	0.037303	0.03730279	0.10248285	0.10248285
PM10-FIL	PM10 (Particulate Matter - 10 Microns Or Less)	0.2585988	see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.01218603	0.40620088	0.05253291	0.399794	0.01199381	1.75109685	0.05253291	0.399794	0.01199381	1.09836311	0.03295089
PM25-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	0.2585988	see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.01218603	0.40620088	0.05253291	0.399794	0.01199381	1.75109685	0.05253291	0.399794	0.01199381	1.09836311	0.03295089
PM-FIL	PT (Particulate Matter)	0.2585988	see Mill 98 plasma cutting worksheet	Cyclone / Centrifugal Collector	97.0%	97.0%	0.01218603	0.40620088	0.05253291	0.399794	0.01199381	1.75109685	0.05253291	0.399794	0.01199381	1.09836311	0.03295089

1. Emission factors (before Control) are calculated in Spreadsheet for Mill 98 Plasma Cutting 3041 and 3161. do not contain aluminum, and therefore emission factors for aluminum have not been created for 98 Mill.  
 2. Actual emissions represent emission estimates using emission factors and 2022 pro-rated tons/yr for 98 Mill.  
 3. Emissions are routed to Camfil and Robocent air filtering systems connected to each mill (with min MERV 15 filters) and then exhausted inside the facility. Used % control from KEIS. Actual % removal is likely higher.  
 4. Conservatively assumes that all emissions exit facility (even though some may settle on surfaces).  
 5. Actual Emissions (TPY) = EF (lbs/ton) x Actual Annual Tons/yr x ((1-Ctrl. Eff.)/100)/2000 lbs/ton  
 6. PTE Emissions & Controlled Potential (TPY) = max hourly rate (ton/hr) x 8760 hours/yr x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton  
 7. Controlled Potential (lb/hr) = max tons/hr x EF (lb/ton) x ((1-Ctrl. Eff.)/100)  
 8. Controlled Potential (TPY) with Permit Limit = Permit Limit (tons/yr) x EF (lb/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton

Stack information from Air Survey- Unchanged  
 Prepared: JS  
 Checked: Mar 18 24

Mill 98 Plasma Cutting - Emission Factor Creation

Mill 98 Plasma Cutting - Emission Factor Creation							
Mill 98 is a saw cut line that uses plasma cutting instead of traditional saw cutting							
Created separate emission factors for Mill 98. These are slightly different than the emission factors historically used for saw cutting and also include NOx emissions from the plasma cutting.							
<b>OPERATING PARAMETERS</b>		Max Process 98 Mill rate (total steel)=	1.546 Tons/hr	x 8760 hours/yea	13542.96	Max Tons/yr Processed	
Earned Hours/yr	8760	Max Hours Available					
Time Study Factor	0.25	Represents % of time cutting due to time required to load, unload, move and set up pieces etc.					
Max cutting HRS/YR:	2,190	Represents max hours possible cutting at maximum rate- actual cut time is a small percentage of total hours					
Cutting speed =	50	linear inches/min					
Strip width	75	inches					
2 cuts/3 minutes	150	inches per 3 minutes					
piece cuts/hr max	5	Limited due to time for piece set up etc.					
inches cut/hr	750	inches per hour cut (5*150)					
linear feet cut/hr	62.5	ft cut/hr (inches/12)					
kerf (cut) width	0.125	inches					
Density of stainless	0.2781779	lb/in <sup>3</sup>					
Pipe thickness cut	0.219	inches					
in <sup>3</sup> cut/hr	20.53	in <sup>3</sup> cut/hr (750 inches x 1.25 inches x 0.219 inches)					
lbs of steel removed/hr	5.71	lb/hr (20.53 in <sup>3</sup> cut/hr * 0.2781779 lb/in <sup>3</sup> )					
POLLUTANT	Thruput	UNITS	EMISSION FACTOR (Before Control)	EMISSION FACTOR UNITS	MAX (LB/HR CUT)	EMISSION FACTOR (BEFORE CONTROL) Converted to lb/ton	EMISSION FACTOR UNITS
Calculation			For PM and Metals Assume 7% of wt cut removed emitted as fumes		=max lbs removed/hr*EF	=Max (lb/hr) / max (ton/hr processed)	Before Control
			For NOX (see below)				
PARTICULATE, PM, PM10, PM2.5- Assume all the same	5.71	lb cut-removed/hr	0.0700	lb/lb steel removed	0.400	0.258598836	lb/ton processed
Chromium	1.14	lb cut-removed/hr	0.0700	lb/lb steel removed	0.080	0.051719767	lb/ton processed
Chromium VI	0.0013	lb cut-removed/hr	0.0700	lb/lb steel removed	0.0001	6.00319E-05	lb/ton processed
Manganese	0.11	lb cut-removed/hr	0.0700	lb/lb steel removed	0.008	0.005171977	lb/ton processed
Nickel	0.80	lb cut-removed/hr	0.0700	lb/lb steel removed	0.056	0.036203837	lb/ton processed
NOX	5.71	lb cut-removed/hr	0.0065	lb/lb steel removed	0.037	0.024128582	lb/ton processed
<b>Source of Emission Factors</b>							
<b>PARTICULATE EMISSIONS:</b>							
Emissions of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless Steel and Mild Steel							
Broman B. et al, The Swedish Institute of Production Engineering, March 1994							
Listed in AP-42 Chapter 12 Metallurgical Industry as "Related Emission Factor Documents"							
Took data for "Dry" (no water under cutting)							
200 amp, 8 mm (0.31 inches) stainless, Dry, air as plasma gas, 2.7 to 4.5 m/min cutting speed (107 to 177 in/minute)							
30-40 g PM/min emitted							
Average of 30-40 g/min=	35	Average of 2.7-4.5 m/min=	3.6	m/min			
average of 107 to 177 in/minute	142	in/min					
Kerf width 3-4 mm - avg=3.5	0.14	inches					
PM Emitted:	35 g/min *lb/454g=	0.077	lb PM/min emitted				
Lbs of SS steel cut:	0.31 inches x 142 inches x 0.14 inches x 0.278 lb/in <sup>3</sup> (density of SS)=				1.71	lb stainless steel removed/min	
% of PM from cutting:	0.077	lb PM/min emitted					

Mill 98 Plasma Cutting- Emission Factor Creation-

	1.71 lb stainless steel/min cut				
	4.5% of steel cut is emitted				
The document posted on AP 42 (partial document), however, indicates that for dry stainless and 8mm thickness that 7% of weight of steel cut is emitted as fumes. Therefore to be conservative use 7% instead of 4.5%.					
<b>SPECIATED METALS EMISSIONS:</b>					
304L Steel spec is 2% Mn, 18-20% Cr, 8-12% Nickel; 316L Steel Spec is 2% Mn, 16-18% Cr, 10-14% Nickel				% x 5.71 lb/hr cut	
Mill Line 98 cuts ~70% 304 and 30% 316 but as conservative approach used worst case of the both the metal types					
<b>Chromium:</b>	Assume fumes are in same ratio as chromium in stainless steel - 20%; lbs cut/hr particulate * 0.20=			1.14227	lb cut/hr
<b>Manganese:</b>	Assume fumes are in same ratio as manganese in stainless steel - 2%; lbs cut/hr particulate * 0.02=			0.11423	lb cut/hr
<b>Nickel:</b>	Assume fumes are in same ratio as nickel in stainless steel - 14%; lbs cut/hr particulate * 0.14=			0.800	lb cut/hr
<b>Chromium VI:</b>	See below- multiplied ratio of Cr VI+/total PM collected during IH Study; lbs cut/hr particulate * 0.0002321			0.0013258	lb cut/hr
1- This ratio is based on of Cr VI+ to total PM collected for 1 samples collected during IH Testing completed 4/20/22 for the plasma cutting at the facility					
Sample Number	Sample location	Hexavalent Chromium (mg/m3)	Total Fume Collected (mg PM/m3)	Hex Chromium as percent of total PM	
#4836-3512	Plasma Table operator-sample	0.00013	0.56	0.02321%	
<b>Note: Aluminum emissions have been traditionally reported for the saw cut lines. 304L and 316L do not contain aluminum, and therefore emission factors for aluminum have not been created for 98 Mill.</b>					
<b>NOX EMISSION FACTOR:</b> Used Swedish Study referenced above and took average from data for two test types for "Dry" (no water under cutting)					
<b>Took data for "Dry" (no water under cutting)</b>					
200 amp, 8 mm (0.31 inches) stainless, Dry, air as plasma gas, 2.7 to 4.5 m/min cutting speed (107 to 177 in/minute)					
4.1-5.4 L NOx/min					
4.1-5.4 L NOx/min avg	4.75	L NOx/min			
lb stainless steel cut/min (from calcs above)	1.71	lb stainless steel cut/min			
4.75 L/min *30g/lb mole NO* 1 lb mole /22.44 l* 1/1.71 lb steel cut/min=		0.0082	lb NOx/lb steel removed	Assume all NO as NOX	
Per Swedish Study can take 80% of NOX values if use nitrogen as the plasma gas=		0.0065	lb NOx/lb steel removed		

Felker Brothers Corporation

125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 210090064

AI ID: 71

Equipment ID: EQPT 004

Stack Height Release (ft)	Stack Diameter (ft)	Stack Flow (Acfm)	Stack Velocity (ft/sec)	Stack Exit T, (F)
33	na	na	na	77

Stack information from Air Survey- Unchanged  
Exhausts inside

Equipment Description: Pipe Mill Welding Mills 1 -5 (EP 04)

Capacity	35 Mill	0.517 Tons/Hour
	36 Mill	0.55 Tons/Hour
	45 Mill	0.806 Tons/Hour
	75 Mill	0.914 Tons/Hour
	98 Mill	1.546 Tons/Hour
<b>Total</b>		<b>4.33 Tons/Hour</b>

Facility-Wide Permit Limits:  
Chromium VI: 0.582 lb/hr monthly avg  
PM/PM<sub>10</sub>: 90 tons/yr 12-month rolling basis  
23,808.31 tons of pipe and tube produced/yr on 12-month rolling basis (for pickling process)  
HF: 0.7 tons/yr based on 12-month rolling basis

Current Operating Schedule

Hours/Day	Days/Week	Weeks/Year
16	5	52

Maximum Hourly Operating Rate (Tons/Hr)	Maximum Operating Hrs (Hrs/Yr)	Maximum Operating Rate (Tons/Yr)	Permit Limit (Tons/Yr)
4.33	882	8760	37,931
			23,808.31

Controls: Enclosure & Dust Collector  
Emissions from dust collectors and controls are exhausted inside

Maximum Operating Rate:  
Max hourly rate ■  
8760 hr/yr  
(Tons/Yr)

Permit Limit  
(Tons/Steel/Yr)

Pollutant ID	Description	Emission Factor (lbs/ton)	Emission Factor Source	Control Equipment Description	Actual Ctrl. Eff.	PTE Ctrl. Eff.	Actual Emissions (TPY) <sup>1</sup>	Unctrl. Actual Emissions (TPY)	PTE Emissions (TPY) <sup>4</sup>	Potential based on max hourly operating rate and 8760 hrs/yr				Emissions with Permit Limit of 23,808.31 Tons/Yr			
										Hourly Emissions		Annual Emissions		Hourly Emissions		Annual Emissions	
										Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (TPY)	Controlled Potential (TPY)	Uncontrolled Potential (lb/hr) <sup>7</sup>	Controlled Potential (lb/hr)	Uncontrolled Potential (TPY)	Controlled Potential (TPY) <sup>8</sup>
7440-47-3	Chromium	0.0060250	KEIS	Process Enclosed	70.0%	70.0%	0.00797288	0.026576275	0.05427996	0.026088	0.00782648	0.11426654	0.03427996	0.026088	0.00782648	0.07172253	0.02151676
18540-29-9	Chromium VI and Compounds	0.0000070	KEIS	Process Enclosed	70.0%	70.0%	0.00000926	0.000030877	0.00003983	0.000030	0.00000909	0.00013276	0.00003983	0.000030	0.00000909	0.00008333	0.00002500
PM10-FIL	PM10 (Particulate Matter - 10 Microns Or Less)	0.0119300	KEIS	Process Enclosed	70.0%	70.0%	0.01578697	0.052623230	0.06787717	0.051657	0.01549707	0.22625722	0.06787717	0.051657	0.01549707	0.14201657	0.04260497
PM25-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	0.0053685	KEIS	Process Enclosed	70.0%	70.0%	0.00710414	0.023680454	0.03054472	0.023246	0.00697368	0.10181575	0.03054472	0.023246	0.00697368	0.06390746	0.01917224
PM-FIL	PT (Particulate Matter)	0.0119300	KEIS	Process Enclosed	70.0%	70.0%	0.01578697	0.052623230	0.06787717	0.051657	0.01549707	0.22625722	0.06787717	0.051657	0.01549707	0.14201657	0.04260497

- Emission factors (before Control) are Department previously approved factors from Air Emission Survey. Control Eff Unchanged.
  - Actual emissions represent emission estimates for 2022 as reported in the annual air survey
  - Emissions are routed to a Robovent air filtering system (min 15 MERV filters) and then exhausted inside the facility. Used % control from KEIS. It represents the overall removal efficiency. Actual % removal is likely higher.
  - Conservatively assumes that all emissions exit facility (even though some may settle on surfaces)
  - Actual Emissions TPY = EF (lbs/ton) x Actual Annual Tons yr x ((1-Ctrl. Eff.)/100)/2000 lbs/ton
  - PTE Emissions & Controlled Potential (TPY) = max hourly rate (ton/hr) x 8760 hour/yr x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton
  - Controlled Potential (lb/hr) = max tons/hr x EF (lb/ton) x ((1-Ctrl. Eff.)/100)
  - Controlled Potential (TPY) with Permit Limit = Permit Limit (tons yr) x EF (lbs/ton) x ((1-Ctrl. Eff.)/100)/2000 lbs/ton
- Stack information from Air Survey- Unchanged

Prepared JIS  
Checked Mar 12.5.23

1/10/2024:25 PM

Felker Glasgow PTE Calcs 1.9.24.rev.jjs.1.10.24

Felker Brothers Corporation

125 Beaver Trail Road, Glasgow KY 42141

Facility ID: 210090064

AI ID: 71

Stack Diameter (ft)	Stack Flow (Acfm)	Stack Velocity (ft/sec)	Exit T, (F)
30	0.25	150	50.93

Stack information from Air Survey- Unchanged

Equipment ID: EQPT 005

Equipment Description: Two (2) Hot Water Heaters each at 1.0 MMBtu/hr

Model: Evolution EVS-1000-1

Capacity: Unit 1 : 1.0 MMBtu/hr each

Controls: None

Insignificant Activity

Facility-Wide Permit Limits:

Chromium VI: 0.582 lb/hr monthly avg

PM/PM<sub>10</sub>: 90 tons/yr 12-month rolling basis

23,808.31 tons of pipe and tube produced/yr

on 12-month rolling basis (for pickling process)

HF: 0.7 tons/yr based on 12-month rolling basis

Current Operating Schedule

Hours/Day	Days/Week	Weeks/Year
16	5	52

Maximum Operating Rate (MMscf/Yr)

{0.001961

mmscf/hr x 8760

hr/yr)

Maximum Hourly Operating Rate (MMscf/Hr)	Annual Throughput (MMscf)	Maximum Operating Hrs (Hrs/Yr)
0.001961	8760	17.18

Pollutant ID	Description	Emission Factor (lbs/MMscf) <sup>1</sup>	Emission Source	Control Equipment Description	Actual Ctrl. Eff.	PTE Ctrl. Eff.	Actual Emissions (TPY) <sup>2</sup>	Unctrl. Actual Emissions (TPY)	PTE Emissions (TPY) <sup>3</sup>	Hourly Emissions		Annual Emissions	
										Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (TPY)	Controlled Potential (TPY)
71-43-2	Benzene	0.00210	KEIS	None	0.0	0.0	0.00000319	0.00000319	0.00001804	0.0000041	0.0000041	0.000015	0.000003
124-38-9	Carbon Dioxide	120000.0	KEIS	None	0.0	0.0	193.8000	193.8000	1030.70160	235.3200	235.3200	1030.7016	1030.7016
630-08-0	CO (Carbon Monoxide)	84.000	KEIS	None	0.0	0.0	0.13566000	0.13566000	0.72149112	0.1647240	0.1647240	0.721491	0.721491
50-00-0	Formaldehyde	0.075	KEIS	None	0.0	0.0	0.00012113	0.00012113	0.00064419	0.0001471	0.0001471	0.00064	0.000644
110-54-3	Hexane, N-Hexane	1.800	KEIS	None	0.0	0.0	0.00290700	0.00290700	0.01546052	0.0035298	0.0035298	0.01546	0.015461
7439-92-1	Lead, Total (as Pb)	0.0005	KEIS	None	0.0	0.0	0.00000081	0.00000081	0.00000429	0.0000010	0.0000010	0.00000	0.000004
74-82-8	Methane	2.300	KEIS	None	0.0	0.0	0.00371450	0.00371450	0.01975511	0.0045103	0.0045103	0.01976	0.019755
10074-97-2	Nitrous Oxide	2.200	KEIS	None	0.0	0.0	0.00355300	0.00355300	0.01889620	0.0043142	0.0043142	0.01890	0.018896
10102-44-0	NO2 (Nitrogen Dioxide)	50.000	KEIS	None	0.0	0.0	0.08075000	0.08075000	0.42945900	0.0980500	0.0980500	0.42946	0.429459
PM10-FIL	PM10 (Particulate Matter - 10 Microns Or Less)	7.600	KEIS	None	0.0	0.0	0.01227400	0.01227400	0.06527777	0.0149036	0.0149036	0.06528	0.065278
PM2.5-FIL	PM2.5 (Particulate Matter - 2.5 Microns Or Less)	7.600	KEIS	None	0.0	0.0	0.01227400	0.01227400	0.06527777	0.0149036	0.0149036	0.06528	0.065278
PM-FIL	PT (Particulate Matter)	7.600	KEIS	None	0.0	0.0	0.01227400	0.01227400	0.06527777	0.0149036	0.0149036	0.06528	0.065278
7446-09-5	SO2 (Sulfur Dioxide)	0.600	KEIS	None	0.0	0.0	0.00096900	0.00096900	0.00515351	0.0011766	0.0011766	0.00515	0.005154
108-88-3	Toluene	0.0014	KEIS	None	0.0	0.0	0.00000549	0.00000549	0.00000320	0.0000067	0.0000067	0.00003	0.000029
VOC	VOC (Volatile Organic Compounds)	5.500	KEIS	None	0.0	0.0	0.00888250	0.00888250	0.04724049	0.0107855	0.0107855	0.04724	0.047240
1314-13-2	Zinc (Fume Or Dust)	0.029	KEIS	None	0.0	0.0	0.00004684	0.00004684	0.00024909	0.0000569	0.0000569	0.00025	0.000249

1. Emission factors are Department previously approved factors from Air Emission Survey. These are from AP-42 Section 1.4 Natural Gas Combustion

The EF for NO2 is for low NOx and small unit heaters

2. Actual emissions represent emission estimates for 2022 as reported in the annual air survey - annual thruput in MMScf x EF/2000lb/ton

3. PTE Emissions & Controlled Potential (TPY) = max hourly rate (MMscf/hr) x 8760 hour/yr x EF (lbs/MMscf) / 2000 lbs/ton

Stack information from Air Survey- Unchanged

Prepared JJS  
Checked Mar 12.5.23