

**Inspection Report: FOL Tape, LLC, Clean Air Act Stationary Source**

**Facility Name:** FOL Tape, LLC

**Inspection Date:** September 28, 2023

**Facility Address:** 2025 Hitzert Court, Fenton, MO 63026

**FRS ID #:** 110018005433

**Federal Facility:** No

**NCI:** Creating Clean Air for Communities

**Facility size:** Synthetic Minor

**Activity:** Partial Compliance Evaluation

**State Referral:** No

**EJ:** Yes

**NAICS codes:** 332812 – Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers  
327215 – Glass Product Manufacturing Made of Purchased Glass  
332999 – All Other Miscellaneous Fabricated Metal Product Manufacturing

**Lead Inspector:** Bryan Lange, ERG Inspector, (919) 622-2374

**Asst. Inspector:** Elizabeth Hubbard, ERG Inspector Trainee, (919) 468-7894

**Facility Contact:** Molly Swift, EHS Manager, (636) 343-9422, mswift@foltape.com  
Victor Griffin, Machine Operator, (888) 365-8273, vgriffin@foltape.com

## 1. Plant Description:

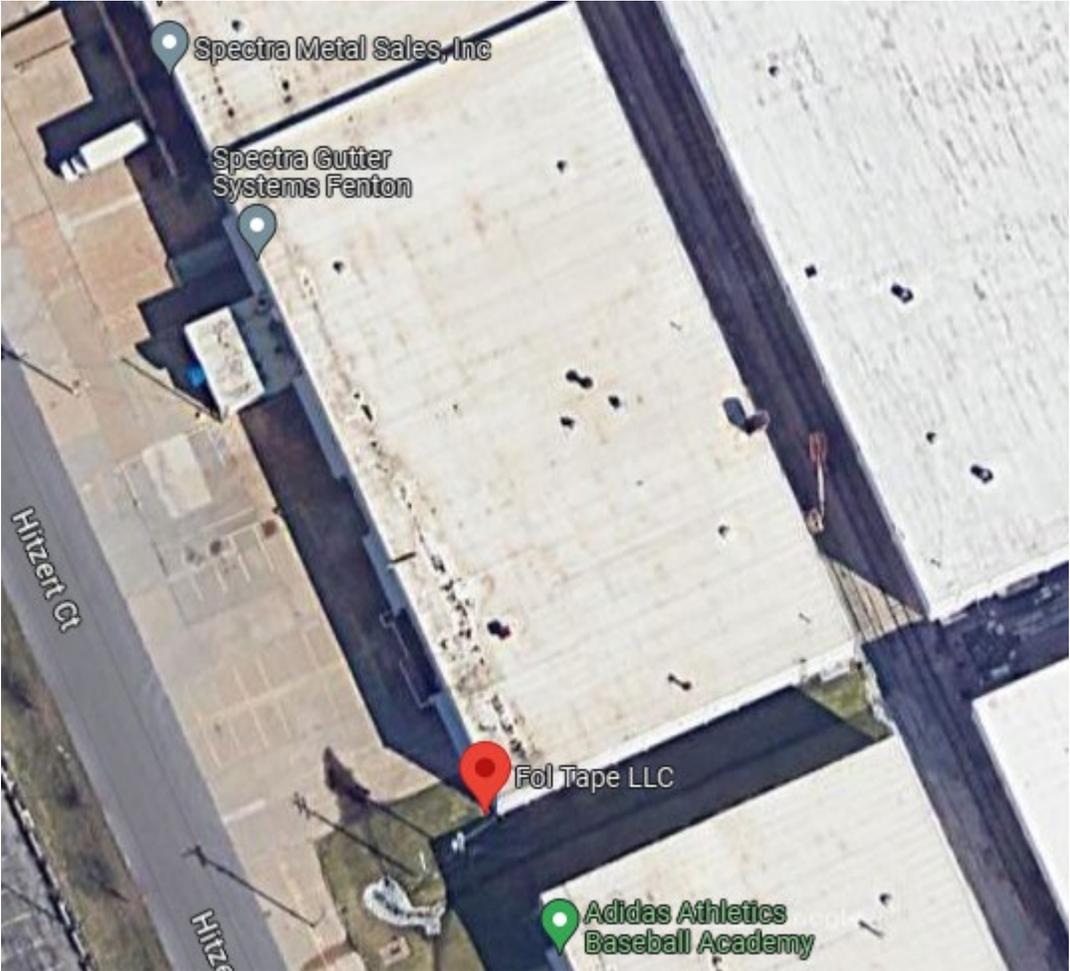
According to the facility's 2019 operating permit, "FOL Tape, LLC is a major source for volatile organic compounds (VOCs) and hazardous air pollutants (HAPs), but is limited below the major source thresholds in Construction Permit 3039 and 6987 issued by St. Louis County Air Pollution Control Program."

According to the Statement of Basis ("SOB") associated with the 2019 operating permit, "FOL Tape, LLC was formed in July 2005. The company acquired certain assets related to the pavement tape operation of Allsafe Services and Materials on December 31, 2005. FOL Tape is a global provider of pavement-marking tapes and non-skid materials under the Flex-O-Line brand name. Flex-O-Line™ brand non-skid tape is a high friction, textured material designed for firm traction and durable protection; and provides excellent nighttime delineation during either dry or light-to-moderate rainfall. The tape is precoated with a pressure sensitive adhesive for convenient application. The markings readily conform to surfaces when tamped and are immediately ready for pedestrian traffic following application."

The SOB continues, "The manufacturing process begins with a thin sheet of raw aluminum which is approximately five feet wide and brought to the installation in large rolls. The aluminum roll is placed on the reflective tape manufacturing machine and paint (yellow, white, or black) is applied to the length of it. The paint is pumped onto the aluminum sheet from 55 gallon drum and is not mixed or thinned prior to application. Once the paint is applied the entire process becomes enclosed. Small glass beads are dropped onto the wet paint from hoppers which are filled by hand. The paint material is then dried with infrared lamps to a temperature of 800 degrees Fahrenheit (°F), then by a natural gas oven which is set to 320°F. The aluminum sheet is then placed back on a roll and taken to reflective tape manufacturing machine to have adhesive placed on the opposite side from the paint and glass beads. The aluminum sheet is unrolled so that the tape underside is up and an adhesive is pumped onto it in the same manner as paint was to the opposite side. The material then travels through five enclosed infrared ovens which heat the adhesive to approximately 1060°F. Heating the adhesive is performed so that it will not flow off the aluminum. The product is then rolled up and taken to a machine which slices the material to the width of roadway lines. The adhesive and paint roller-coating machines are vented to a thermal oxidizer. Preventative maintenance and inspections of the thermal oxidizer are performed quarterly by an outside firm."

"This installation no longer performs paint mixing or thinning. All paints are applied as they come from the paint manufacturer. Acetone is used for clean-up."

Figure 1: Satellite image of the FOL Tape, LLC facility in Fenton, MO.



## **2. Facility Entry:**

The representatives of the United States Environmental Protection Agency (“EPA”), Bryan Lange and Elizabeth Hubbard from Eastern Research Group, Inc. (“ERG”) arrived at the FOL Tape, LLC facility at 2025 Hitzert Court, Fenton, MO (“FOL Tape”, or “the facility”), at approximately 9:00 am. The ERG representatives (“the inspectors”) were met at the office by Deanna Watkins, Sales, Purchasing, and Production Representative. The inspectors had communicated with Molly Swift, EHS Manager, prior to the inspection to inform her that an inspection would occur on September 28, 2023. Ms. Swift had informed the inspectors that she was unable to attend but that Steve Thurman, Warehouse Manager, would meet with them. Ms. Watkins informed the inspectors that Mr. Thurman was also unable to attend, so they would instead be meeting with Victor Griffin, Machine Operator. Ms. Watkins led the inspectors to the process area where they met with Mr. Griffin. The inspectors presented their identification credentials to Mr. Griffin and provided an overview and scope of the inspection. The inspectors explained that ERG worked as contractors to conduct facility inspections for EPA.

The inspectors explained that they were at the facility to conduct a routine Clean Air Act (“CAA”) inspection that was part of a national initiative to look at facilities located close to residential neighborhoods, including a focus on volatile organic compounds (“VOCs”) and hazardous air pollutants (“HAPs”). The inspectors explained that during the facility walkthrough, they would capture digital images of the facility’s processes and emission points using a digital point and shoot camera, as well as an optical gas imaging, forward looking infrared (“FLIR”) video camera, model GF320, that were not intrinsically safe. Therefore, they requested that Mr. Griffin inform them of any areas where there could be a potentially explosive atmosphere. Mr. Griffin explained that there were no areas of the facility where flammability would be a concern.

Mr. Griffin expressed that he would prefer to conduct the facility walkthrough first to provide the inspectors with an overview of the process, then proceed with the technical discussion. The inspectors agreed and at approximately 9:15 am, Mr. Griffin led the inspectors on a tour of the facility.

## **3. Facility Tour/Walkthrough:**

The list of digital images and FLIR videos taken during the inspection are included in Appendix A.

Mr. Griffin explained that there were two production lines at the facility: Line 1 was operating during the walkthrough, but Line 2 was not. Mr. Griffin informed the inspectors that Line 1 applied coatings to aluminum coils, while Line 2 applied adhesive. He noted that the thickness of the aluminum coils coated at the facility could vary, but the coil they were coating during the walkthrough was 0.0025 inches thick. The coils were cleaned prior to coating application but were not food grade. The primary use of the facility’s products was as pavement marking tapes in construction zones.

All of the facility’s production equipment was located indoors. The inspectors noted that there was a paint odor near the end of the coating line where paint was being applied. They also noted that a large roll-up door at the front of the facility was open while the coating process was ongoing. See photo CBI\_DSCN7562.JPG.

The inspectors observed coating being applied to a coil. As the aluminum coil was unwound, paint was pumped from a drum and poured out of nozzles onto the coil. Using the FLIR, the inspectors observed indications of minimal VOC emissions where the coating was being applied. See photo CBI\_DSCN7561.JPG and video MOV\_2766.mp4. Mr. Griffin estimated the final thickness of the coating was 0.0005 inches. The paint being applied to the coil during the walkthrough was white, but Mr. Griffin informed the inspectors that they also applied yellow and black coatings, depending on the product. Mr. Griffin pointed out a digital scale that indicated the pounds of paint remaining in the drum. See photo CBI\_DSCN7563.JPG.

Once the coating was applied, the aluminum coil traveled parallel to the floor at a height of approximately four feet off the ground down a 30-yard-long path. Directly after the coating application, the aluminum was conveyed under a shower of glass beads which adhered to the wet coating. Mr. Griffin explained that the glass beads were applied for reflectivity. Using the FLIR, the inspectors observed indications of minimal VOC emissions where the glass beads were being applied. See photo CBI\_DSCN7564.JPG and video MOV\_2767.mp4.

After glass bead application, the aluminum coil passed under a series of infrared lamps which began to dry the coating. The infrared lamps were enclosed by a black cloth with observation windows and slits with hook and loop closures to make the lamps accessible. Using the FLIR, the inspectors observed apparent VOC emissions coming from the black cloth where the infrared lamps were located. See photos CBI\_DSCN7566.JPG, CBI\_DSCN7568.JPG, and CBI\_DSCN7571.JPG and videos MOV\_2768.mp4 and MOV\_2769.mp4.

After passing under the infrared lamps, the aluminum coil passed into a natural gas-fired oven which was set to 320 degrees Fahrenheit (“°F”) and would further dry the coating. The inspectors did not observe any indications of emissions coming from the oven using the FLIR camera. See photos CBI\_DSCN7565.JPG and CBI\_DSCN7569.JPG.

The inspectors asked how emissions were captured from the coating line. Mr. Griffin explained that vapors coming from the infrared lamps and the oven were routed to a thermal oxidizer (“TO”) located above the oven. He pointed out fume mitigation ducts located on top of the infrared lamp enclosure and the oven that led to the TO. See photos CBI\_DSCN7566.JPG, CBI\_DSCN7567.JPG, and CBI\_DSCN7570.JPG.

Mr. Griffin showed the inspectors the control boxes for the TO and the drying oven and presented a print-out of the oven’s start-up and shutdown procedures. See photos CBI\_DSCN7572.JPG through CBI\_DSCN7574.JPG.

The inspectors asked whether the facility’s products were required to meet any specific standards. Mr. Griffin explained that the facility was required by the Department of Transportation (“DOT”), its main customer, to meet an ASTM International (formerly American Society for Testing and Materials) standard, but he did not know the standard number.

The inspectors stepped outside into the parking lot to view the open roll-up door and dumpsters with the FLIR camera. The inspectors did not see any apparent emissions from the dumpsters or the open door using the FLIR camera. See photos CBI\_DSCN7578.JPG and CBI\_DSCN7580.JPG and video MOV\_2770.mp4.

The inspectors asked Mr. Griffin if there was somewhere they could sit down with Mr. Griffin and explained that they had additional questions they would like to ask. At approximately 10:00 am, Mr. Griffin led the inspectors to the break room, where they continued their technical discussion.

#### **4. Technical Discussion:**

The inspectors thanked Mr. Griffin for the tour. They explained that they had remaining questions about the facility's operations, as well as questions related to the facility's 2019 operating permit and HAP and VOC emissions. The following is a summary of the discussion.

The inspectors inquired about the number of employees at the facility, its operating hours, and the facility's history. Mr. Griffin said that the facility had 10 employees and that this was FOL Tape's only facility. The facility operated from 6 am to 10 pm, Monday through Friday. He said that he had been working at FOL Tape for about five years, but that both production lines had been at the facility longer than that. He was not sure when any of the equipment was installed, but said the facility had been operating for about 30 years.

The inspectors noted that 40 CFR Part 63 Subpart JJJJ, *National Emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating* limited organic HAP emissions from the facility to no more than 4 percent of the mass of coating materials applied for each month. The facility's 2019 operating permit had additional requirements related to emissions of HAP and VOC:

- Permit Condition PW001 required the facility to limit total VOC emissions to less than 100 tons per year and HAP emissions to less than 10 tons per year of any individual HAPs and 25 tons per year of total HAPs.
- Permit Condition (EU002 and EU003) – 001 limited emissions of VOCs in excess of 2.6 pounds of VOC per gallon of coating (minus water and exempt compounds) as delivered to the coating applicator(s).

The inspectors asked how the facility calculated HAP and VOC emissions to ensure compliance with these limitations. Mr. Griffin did not know how the emissions were calculated, but he said the facility maintained monthly emissions logs. He presented the emissions log for September 2022 through August 2023. See photos CBI\_DSCN7575.JPG and CBI\_DSCN7576.JPG. Mr. Griffin said if the inspectors had additional questions about how emissions were calculated, he recommended contacting Dusan Kruij, Co-Owner, at [kruij@sbcglobal.net](mailto:kruij@sbcglobal.net).

The inspectors noted that an inspection report from 2018 stated, "There are many separate ducts from each line (3039 and 6987) which direct emissions to the RTO." The inspectors asked whether any of the ducts to the TO were ever closed, such as when only one of the lines was running. Mr. Griffin responded that the ducts to the TO were always open.

The inspectors asked whether any of the painting operations at the facility had been modified. Mr. Griffin said that he was not aware of whether the operations had been modified but recommended speaking with Molly Swift, EHS Manager, about this question.

At approximately 10:30 am, the inspectors began the closing conference with Mr. Griffin.

#### **5. Closing Conference:**

The inspectors thanked Mr. Griffin for his time and cooperation during the inspection. They provided Mr. Griffin with a copy of EPA's "Small Business Resources Information Sheet."

The inspectors explained that EPA would provide FOL Tape with an inspection report in approximately 60 days. They explained that the report would be available to the public through the Freedom of Information Act, and therefore, if the company wanted to claim any notes or digital images as confidential business information ("CBI"), they could do so today or within 10 days following the inspection. They presented the EPA's confidentiality notice form to Mr. Griffin.

The inspectors summarized questions and concerns raised during the inspection. The inspectors noted that they had seen emissions from the coating line using the FLIR camera, which could potentially indicate a low capture efficiency for the incinerator. They explained that the FLIR could only indicate the presence or absence of VOC emissions, so it was not possible to know what the emission rate from the coating line was without further testing. However, the emissions they could see from the coating line, particularly from the infrared drying section, were an area of potential concern. They also noted that there were outstanding questions about construction dates, emission calculations, and regulatory applicability and explained that EPA may reach out to other facility contacts to follow up. The inspectors provided Mr. Griffin with a Notice of Preliminary Findings form and explained that EPA may follow up with additional questions.

Mr. Griffin reviewed the confidentiality notice form and the preliminary findings form and indicated he would be more comfortable if the inspectors took the forms to the office for Ms. Watkins to sign. He also noted that Ms. Watkins might be able to address some of their outstanding questions. The inspectors agreed to follow up with Ms. Watkins and thanked Mr. Griffin again for his time.

The inspectors proceeded to the office at approximately 10:45 am. They informed Ms. Watkins that they had some outstanding questions and a few forms for her to sign.

The inspectors asked Ms. Watkins if she knew how the facility calculated VOC and HAP emissions. Ms. Watkins explained that the facility had an emissions calculation spreadsheet that was created by a third party company. Each day, she entered the facility's coating and adhesive consumption into the spreadsheet and the spreadsheet calculated emissions based on that information. She explained that the spreadsheet checked for compliance daily, and if any emissions were out of compliance, management would be contacted immediately. Ms. Watkins said that emissions had never been out of compliance based on the spreadsheet. She showed the inspectors a few pages of the spreadsheet.

The inspectors asked Ms. Watkins where the emission factors used in the spreadsheet came from and what the control efficiency of the TO was. Ms. Watkins indicated that that she was not sure about the source of the emission factors or the control efficiency of the TO. She informed the inspectors that Dusan Kruij, Co-Owner, would likely be able to answer their questions and provided his email address.

The inspectors thanked Ms. Watkins for her time and cooperation during the inspection. They provided the same explanation about timing and the publication of the inspection report as they provided to Mr. Griffin and presented the EPA's confidentiality notice form. Ms. Watkins filled out and signed the form. See Appendix B.

The inspectors summarized questions and concerns raised during the inspection. They once again noted what they had seen with the FLIR camera and their potential concerns with the capture efficiency of the thermal oxidizer. They informed Ms. Watkins that EPA may reach out to other facility contacts to follow up on their outstanding questions related to dates, emissions calculations, and regulatory applicability. The inspectors provided Ms. Watkins with a Notice of Preliminary Findings form and explained that EPA may follow up with additional questions. Ms. Watkins signed the form. See Appendix C.

At approximately 11:00 am, the inspectors departed from the facility.

## **6. Appendices**

- A. Digital Image Log
- B. Confidentiality Notice Form
- C. Notice of Preliminary Findings Form

Inspection Report Sign-Off

Lead Inspector's Name: Bryan Lange, ERG

*Signed by Jason Sese for Bryan Lange*

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Lead Inspector

Assisting Inspector's Name: Elizabeth Hubbard, ERG

X

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Assisting Inspector

Supervisor's Name: Tracey Casburn, Air Branch Chief, ECAD

X

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Supervisor