DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection U-63-14-14113

U63141411335471

FACILITY: Glass and Mirror Craft Industries	**SRN / ID:** U631414113
LOCATION: 48230 West Road, Wixom	**DISTRICT:** Southeast Michigan
CITY: Wixom	**COUNTY:** OAKLAND
CONTACT:	**ACTIVITY DATE:** 06/29/2016
STAFF: Iranna Konanahalli **COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:**
SUBJECT: FY 2016 initiated inspection of Glass and Mirror Craft Industries	
RESOLVED COMPLAINTS:	

U 63 14 14113 _ SAR_ 2016 06 29

Glass and Mirror Craft Industries (U-63-14-14113)
48230 West Road
Wixom, Michigan 48393-3675

Rule 336.1287(c) paint spray booths (1. 5 ft. width x 5 ft. depth * 5 ft. height color matching booth [production outsourced] and 2. 20 ft. width x 5 ft. depth 5 ft. height silicone paint booth)

Not Subject to: NESHAP/ MACT T, area source National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T; NESHAP/ MACT T); Correction; 29484 Federal Register / Vol. 60, No. 107 / Monday, June 5, 1995 / Rules and Regulations; amended National Air Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T); Final Rule; Page 25138 Federal Register / Vol. 72, No. 85 / Thursday, May 3, 2007 / Rules and Regulations. Solvents containing halogenated compounds are not used.

On June 29, 2016, I conducted a level 2 self-initiated inspection of Glass and Mirror Craft Industries ("GMC Industries"), located at 48230 West Road, Wixom, Michigan 48393-3675. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451 and Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules.

During the inspection, Mr. Tony Moore (Phone: 248-624-5050-ext. 218; Fax: 248-624-6988; Cell: 248-303-2631) E-mail: tMoore@GlassAndMirrorCraft.com), Plant Manager, assisted me.

Glass and Mirror Craft Industries ("GMC Industries") moved into this building about 2002. GMC Industries is in the business of glass fabrication involving cutting, polishing, insulating, tempering (heat treatment), laminating, etc. Predominantly, glasses are for architectural and commercial buildings. Glass pieces (large enough that the pieces cannot be air-borne and settle to ground quickly via gravity settling) are spilled in some areas of the plant. GMC Industries employs about 150 people (2016).

Glass tempering – heating in furnace and air quenching

As one more is added about April 2016, two glass tempering furnaces (electrically heated) are present: existing or old Eastside IANUA and new Westside LandGlass located at opposite sides of the building (East & West).

One IANUA (Eastside) electrically heated glass tempering furnace is present. The process consists of heating and cooling (air quenching) sections. The furnace operates at 670 °C (average). 12 fans are present for forced convection heating. The residence time in the furnace depends on thickness of glass. The hot glass is air quenched; liquid quenching breaks glass due thermal stresses.

One LandGlass (Westside) electrically heated glass tempering furnace (installed about April 2016) is present. The process consists of heating and cooling (air quenching) sections. The furnace operates at 670 °C (average). 7 fans are present for forced convection heating. The residence time in the furnace depends on thickness of glass. The hot glass is air quenched; liquid quenching breaks glass due thermal stresses.

As stated above, tempering involves heating glass in a furnace to ≈650 °C with a prescribed residence time depending upon the thickness and then quenching using high pressure array of air nozzles. In such accelerated air quenching, variables such as air temperature, volume, velocity, nozzle size & nozzle location, etc. are considered. Obviously, quenching cools outer surfaces of glass much more rapidly than the center based upon resistance to heat transfer. As the center cools, it tries to pull back from the outer surfaces. As a consequence, the center remains in tension and outer surfaces go into compression. Such compressive and tensile forces, give glass its strength. According to federal regulations, tempered glass must have surface compression of 10,000 psi or greater. Chemical tempering is more expensive and generally not used. Tempered glass should not be confused with heat-treated glass and annealed glass. While annealed glass is ordinary glass, heat-treated glass (surface compression of 3,500 – 7,500 psi) is cooled slower than tempered glass. In other words, heat-treated glass surface compression is lower than that of tempered glass. However, heat-treated glass is twice as strong as annealed (untreated) glass.

The glass tempering furnaces (2) are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1282(a) because the furnace is electrically heated and, also, emissions are discharged to in-plant environment (Rule 336.1285(l) although not listed).

CNC tables (2)

Large glass pieces are cut using CNC cutters (2). No emissions controls and the emissions are released to in-plant environment.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285 (l).

Polishing machines (5)

Five (reduced from 6 to 5: 1 of 6 removed about April 2015) glass polishing machines are present. No emissions controls and the particulate emissions are released to in-plant environment.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285 (l).

287(c) paint spray booths (2)

Two paint booths (1. 5 ft. width x 5 ft. depth * 5 ft. height and 2. 20 ft. width x 5 ft. depth 10 ft. height) with back-draft dry filter systems are present. While the small booth is mostly used for

color matching (production painting is outsourced), the large booth is used for spray painting silicone based paint in the glass insulation department. Both small and large booths are made by Global Finishing Systems (GFS: 800-848-8738). Pressure differential (ΔP) measuring instrument for ΔP across filters, such as inclined manometer, magneheilic gauge, is not present.

15-20 gallons per month (<< 200 gallons per month) of the paint materials are sprayed. The booths are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1287(c). The booths are a source of VOC emissions. Most paints are water based although some paints are solvent based.

I asked Mr. Moore to install the filters such that they fit, at all times, snugly without gaps and holes. I also asked him to keep records of paint and solvent usage. I asked him to change or check filters when the pressure drop is out of the ordinary for good working conditions.

Glass drilling and milling machines (2)

Glass pieces are drilled and milled using CNC machines (2). Soaking water flow is used for cooling tools and glass as well as for particulate emissions control. The particulate emissions are released to in-plant environment.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285 (l).

Glass insulation manufacturing lines (2)

Two glass insulation lines (one manual and one automated) are present. No emissions controls and the particulate emissions are released to in-plant environment.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285 (l).

Silkscreen printing machine (one table)

Silkscreen printing machine (one table) is present. All paints are water based. A digital printing machine is not installed yet.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1287 (e).

Sandblast machine (1)

One sandblast machine is present. The machine, with full enclosure, has its own capture device for particulate matter emissions. The captured grit is collected using a filter system and recycled / reused. The sandblast machine is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(l). The machine is idled at this time (July 2016).

Cold-cleaner

There is one 3 ft. x2 ft. parts cold-cleaner with spray a brush and a solvent tank. The cleaner is only equipped with a soaker tank but no drum to collect drained solvents. The cold-cleaner is subject rule 336.611 or 336.1707 depending on if it is new or existing. A cold-cleaner is exempt from Rule 336.1201 pursuant to Rule 281(h) or Rule 285(r)(iv). Existing cold cleaners

were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

Mechanically assisted lid was closed during the FY 2016 inspection.

The Cold-cleaner is NOT Subject to: 40 CFR, Part 63, Subpart T, NESHAP/ MACT T, since solvents containing halogenated compounds are not used.

Gray Mills 2RE49 solvent (Graymills Corporation of Chicago 800-424-9300) is used

About October 2014, I gave DEQ's decals for "cold-cleaner operating procedures" for posting and complying with work-practice rules. I asked the company to follow the common sense work practice in the procedures. The procedures were posted during the FY 2016 inspection.

100% VOC solvent; 97% aliphatic petroleum distillates. Flash Point (FP) = 145 °F Tag CC. Auto Ignition = NA °F. Boiling Point (BP) = 360-410 °F @ 760 mm Hg. Vapor Pressure (VP) = NA mm Hg at 68 °F. Specific Gravity (SG, Water = 1.0) = 0.8. Density (ρ) @ 68 °F = 800 grams / liter. Flammability range = 0.9 %v (LEL) – 7%v (UEL).

Conclusion

Two paint spray booths, several glass cutting / grinding CNC machines, etc. and two glass tempering furnaces are present. All process equipment and processes are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rules 336.1285, 336.1287, 336.1282, etc.

NAME D S Mcnamara DATE 07/11/2016 SUPERVISOR CTE