



Emission Unit	Description	Emission Control Equipment
MKVB-FM Blast Machine	Shot Blast and tumbling of dirty castings	DC-29
DC.30	Controls: MKV-FC Fischer Converter	Efficiency = 99.99%
DC.24	Controls: Mark V pouring and cooling Line, MKVB pouring and cooling line, Mark V Disamatic Sand System # 5 and 6 prepare and return sand system	Efficiency = 99.99%
DC.25	Controls: MKV cooling line, MKV Didion, MKVB Didion, #5 and 6 Shakeout and #5 sand return	Efficiency = 99.99%
DC.29	Controls: MKVB-FM Blast Machine	Efficiency = 99%

### 3. Applicability Provisions and Applicable Regulations

- a. An "affected foundry equipment" for the purpose of these unit-specific conditions, is each piece of equipment as described in Conditions 1 and 2 unless otherwise stated in the following conditions as unit specific.
- b. The affected foundry equipment is subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321, [35 IAC 212.321(a)].
  - i. The emissions of particulate matter into the atmosphere in any one hour period from each of the affected coating lines shall not exceed the allowable emission rates specified in the following equation

$$E = A(P)^B$$

where:

P = process weight rate; and,

E = allowable emission rate; and,

A. For process weight rates up to 408 MG/hr (450 T/hr):

	<u>Metric</u>	<u>English</u>
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	1.214	2.54
B	0.534	0.534

B. For process weight rates in excess of 408 MG/hr (450 T/hr):

	<u>Metric</u>	<u>English</u>
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	11.42	24.8
B	0.16	0.16

where:

P = Process weight rate in metric or English tons per hour, and

E = Allowable emission rate in kilograms or pounds per hour.

[35 IAC 212.321]

- c. No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm, [35 IAC 214.301].
- d. The affected foundry equipment is subject to 35 IAC 215 Subpart K, Use of Organic Material, which provides that:
  - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 3(d)(ii) (see also 35 IAC 215.302) and the following exception: If no odor nuisance exists the limitation of this Condition shall apply only to photochemically reactive material [35 IAC 215.301].
  - ii. Emissions of organic material in excess of those permitted by Condition 3(d)(i) (see also 35 IAC 215.301) are allowable if such emissions are controlled by flame, thermal or catalytic incineration so as either to reduce such emissions to 10 ppm equivalent methane (molecular weight 16) or less, or to convert 85 percent of the hydrocarbons to carbon dioxide and water [35 IAC 215.302(a)].

4. Non-Applicability of Regulations of Concern

The affected foundry equipment is not subject to 40 CFR 60 Subpart AAA, since the affected equipment is not either an electric arc furnace or Oxygen-Argon Decarburization Vessel, AOD.

5. Operational and Production Limits and Work Practices

a. The affected foundry equipment shall not exceed the following material throughput limits:

Affected Equipment	Material	Throughput Lb/hr	Throughput Tons/Year
MKVB-SS Disamatic Sand System	Sand	193,000	845,340
	Bond	2,000	8,760
MKVB-Didion Shakeout	Castings	14,400	63,072
	Fines	975	4,270
	Sprue	9,600	72,048
FM-12 Pangborn Blast	Dirty Casting	3,500	15,330
	Steel Shot	7	30.7
MKVB-FM Blast Machine	Castings	14,328	62,576
	Fines	72	315.4
MKVB-PP Presspour- hot material transfer	Ductile Iron	24,000	105,120
MKVB-ML pouring line	Poured molds	24,000	105,120
MKVB-CL cooling line	Cools castings in molds	24,000	105,120

6. Emission Limitations

The affected foundry equipment is subject to the following:

a. Emissions from the affected foundry equipment shall not exceed the following limits:

Item of Equipment	PM	PM	PM <sub>10</sub>	PM <sub>10</sub>
	Lb/Hour	Tons/Year	Lb/Hour	Tons/Year
MKVB-PP Presspour-hot material transfer	2.75	12.05	0.275	1.21
Control Unit DC.30	4.08	17.85	0.332	1.42
Mark V sand system collector DC.24	1.46	6.37	1.3	5.4
MKV Smoke System Collector DC.25	0.828	3.63	0.66	2.87
Goff Blast Machine Collector DC.29	2.15	9.4	0.215	0.94

MKVB-ML pouring line	Emissions Lb/Hour	Emissions Tons/year
NO <sub>x</sub>	0.26	1.13
SO <sub>x</sub>	0.12	0.51
VOM	5.8	18.2
Ammonia	0.03	0.14
Hydrogen Sulfide	0.38	1.68
Benzene	0.35	1.54
HAP's*	0.1	0.4

\*The HAPS included in this negligible category include: Acrolein, Formaldehyde, Hydrogen Cyanide, M-Xylene, Napthalene, O-Xylene, Phenol, Toluene, Aromatic Amines and C2-C5 Aldehydes.

These limits are based on the usage limits in Condition 5(d) and emission factors as listed in condition 12.

- c. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).
- d. The source has addressed the applicability and compliance of 40 CFR 52.21, PSD (See Attachment 1). These limits continue to ensure that the construction and/or modification addressed in this construction permit does not constitute a new major source or major modification pursuant to these rules.

7. Testing Requirements

None

8. Monitoring Requirements

None

9. Recordkeeping Requirements

The Permittee shall maintain records of the following items for the affected foundry equipment to demonstrate compliance with Conditions 3, 5, and 6, pursuant to Section 39.5(7)(b) of the Act:

- a. Material Throughput Lb/hour and Tons/year
- b. Emissions of: PM, PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>x</sub>, VOM, Ammonia, Hydrogen sulfide, Formaldehyde, and all HAPs listed in condition 6 in Lb/hour and Tons/year

10. Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of noncompliance of an affected foundry equipment with the permit requirements, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

11. Operational Flexibility/Anticipated Operating Scenarios

None

12. Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 9 and the emission factors and formulas listed below:

- a. To determine compliance with Condition 6, emissions from the affected foundry equipment shall be calculated based on the following emission factors:

Emission Point	Controlled Units	PM LB/Ton	PM <sub>10</sub> LB/Ton
MKVB-PP Presspour-Hot Material Transfer	N/A	2.8	1.03
Control Unit DC.30	MKVB-CL Cooling Line	1.4	1.4
	FM-12 Pangborn Blast Castings	17	1.7
	FM-12 Pangborn Blast Shot	17	1.7
Mark V Sand System Collector DC.24	MKVB-SS Disamatic Sand System	2.8	2.8
	MKVB-ML Pouring Line	0.65	0.54
MKV Smoke System Collector DC.25	MKVB-Didion Shakeout	3.2	2.24
Goff Blast Machine Collector DC.29	MKVB-FM Blast Machine Castings	17	1.7
	MKVB-FM Blast Machine Shot	17	1.7

Emissions shall be calculated using the following equation:

$$\text{Throughput} \times \text{Emission Factor} \times (1 - \text{Control Efficiency}) = \text{Emissions}$$

Emission Point	NO <sub>x</sub>	SO <sub>x</sub>	VOM Cooling	VOM Shakeout
MKVB-ML Pouring Line	0.01 LB/Ton	0.02 LB/Ton	0.58 LB/Ton	0.44 LB/Ton

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Emissions shall be calculated using the following equation:

Throughput x Emission Factor x (1-Control Efficiency) = Emissions

If you have any questions on this, please call Kevin Smith at 217/782-2113.

Donald E. Sutton, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

DES:KLS:psj\8

cc: Region 3

Attachment 1

## PSD Applicability

**Table I - Emissions Increases Associated With The Proposed Modification**

<u>Item of Equipment</u>	<u>Installation Date</u>	Permitted Emission Increases (Tons/Year)			
		<u>VOM</u>	<u>NO<sub>x</sub></u>	<u>PM</u>	<u>PM<sub>10</sub></u>
Foundry Equipment	1999	18.2	1.13	51.25	12.05

**Table II - Source-Wide Creditable Contemporaneous Emission Decreases**

<u>Item of Equipment</u>	<u>Removal Date</u>	Emission Decreases (Tons/Year) Based on average emissions form 95-96			
		<u>VOM</u>	<u>NO<sub>x</sub></u>	<u>PM</u>	<u>PM<sub>10</sub></u>
Malleable Line	1996	31	0	77.06	41.99

**Table III - Source-Wide Creditable Contemporaneous Emission Increases**

<u>Item of Equipment</u>	<u>Year</u>	Emission Increases (Tons/Year)			
		<u>VOM</u>	<u>NO<sub>x</sub></u>	<u>PM</u>	<u>PM<sub>10</sub></u>
Mark V Line	1996	33.73	5.97	49.72	22.58

**Table IV - Net Emissions Change (Tons/Year)**

	<u>VOM</u>	<u>NO<sub>x</sub></u>	<u>PM</u>	<u>PM<sub>10</sub></u>
Table I	18.2	1.13	51.25	12.05
Table II	-(31)	0	77.06	41.99)
Table III	<u>33.73</u>	<u>5.97</u>	<u>49.72</u>	<u>22.58</u>
Totals	20.93	7.1	23.91	-7.36

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