# STANDARD ALLOYS AND MANUFACTURING SALES CO.
# PORT ARTHUR, TX FACILITY

## GRAY IRON MELTING SPECIATION

| ID | SPECIE_ID | CAS | Chemical | WEIGHT_PER | HAP | Emission Factor (lbs/ton) |
|---|---|---|---|---|---|---|
| 118402 | 292 | 7429-90-5 | Aluminum | 0.001 | | 0.0000 |
| | | | Carbon | 0.872 | | 0.0078 |
| 118410 | 347 | 7440-47-3 | Chromium | 12.68 | | 0.1141 |
| 118413 | 379 | 7440-48-4 | Cobalt | 0.023 | Y | 0.0002 |
| 118415 | 380 | 7440-50-8 | Copper | 0.832 | | 0.0075 |
| 118412 | 488 | 7439-89-6 | Iron | 76.65 | | 0.6899 |
| 118423 | 520 | 7439-92-1 | Lead | 0 | Y | 0.0000 |
| 118411 | 526 | 7439-96-5 | Manganese | 1.03 | Y | 0.0093 |
| | 525 | 7439-95-4 | Magnesium | 0.001 | | 0.0000 |
| | 586 | 7439-98-7 | Molybdenum | 1.156 | | 0.0104 |
| 118414 | 612 | 7440-02-0 | Nickel | 5.287 | Y | 0.0476 |
| | | | Niobium | 0.006 | | 0.0001 |
| 118406 | 669 | 7440097 | Phosphorus | 0.0525 | Y | 0.0005 |
| 118403 | 694 | 7440-21-3 | Silicon | 1.34 | | 0.0121 |
| 118404 | 700 | 7704-34-9 | Sulfur | 0.037 | | 0.0003 |
| | | | Tungsten | 0.024 | | 0.0002 |
| 118409 | 767 | 7440-62-2 | Vanadium | 0.002 | | 0.0000 |

Emission Factor is based on 0.90 lbs/ton metal from AP-42 12.10.
Speciation a weighted average of all gray iron produced at Standard Alloys to create a "Super Steel" profil

STANDARD ALLOYS AND MANUFACTURING SALES CO.
PORT ARTHUR, TX FACILITY

GRAY IRON MELTING SPECIATION

e.

STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
PORT ARTHUR, TX FACILITY
TABLE 3-1
CRITERIA POLLUTANTS SUMMARY

| | EMISSIONS (LB/HR) | | | | | | EMISSIONS (TONS/YR) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ACTIVITY** | **PM** | **PM10** | **Pb** | **VOC** | **NOX** | **SOX** | **PM** | **PM10** | **Pb** | **VOC** | **NOX** | **SOX** |
| **Furnaces** | | | | | | | | | | | | |
| Furnaces Charging | 1.86 | 0 | | | | | 0.095 | 0 | | | | |
| Furnaces Melting | 8.35 | 7.98 | 0.00 | | | | 0.428 | 0.409 | 0.00 | | | |
| Magnesium Treatment | 3.71 | | | | | | 0.19 | | | | | |
| Refining | 37.10 | | | | | | 0.03 | | | | | |
| Pouring, Cooling | 43.05 | 21.115 | | | | | 2.10 | 1.03 | | | | |
| Brass & Bronze | 19.5 | 19.54 | 0 | | | | 0.50 | 0.501 | 0 | | | |
| **Furnace Total** | **113.57** | **48.635** | **0** | **0** | **0** | **0** | **3.343** | **1.94** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | | | |
| **Cores** | | | | | | | | | | | | |
| Core Making | 0.55 | | | 0.28 | | | 0.55 | | | 0.28 | | |
| Core Wash | | | | 7.50 | | | | | | 7.50 | | |
| **Core Room Total** | **0.55** | | | **7.78** | | | **0.55** | | | **7.78** | | |
| | | | | | | | | | | | | |
| **Molds** | | | | | | | | | | | | |
| Mold Making | 0.55 | | | 0.05 | | | 0.55 | | | 0.05 | | |
| Mold Storage | | | | 0.01 | | | | | | 0.01 | | |
| Mold Wash | | | | 7.50 | | | | | | 7.50 | | |
| Casting Shakeout | 32.80 | 22.96 | | | | | 1.60 | 1.12 | | | | |
| Grinding Cleaning | 1.03 | 1.03 | | | | | 0.05 | 0.05 | | | | |
| Sand Grind/Handling | 0.24 | | | | | | 0.24 | | | | | |
| **Mold Room Total** | **34.62** | **23.99** | **0** | **7.56** | **0.00** | **0.00** | **2.44** | **1.17** | **0** | **7.56** | **0** | **0** |
| Total Per Year | | | | | | | **6.33** | **3.11** | **0.00** | **15.34** | **0.00** | **0.00** |
| Total Emissions Per Year | | | | | | | | | | | | **21.67** |

STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
PORT ARTHUR, TX FACILITY
HAZARDSOUS AIR POLLUTANTS SUMMARY

| HAP | CAS | Furnaces (tons/yr) | Cores (tons/yr) | Total (tons/yr) |
|---|---|---|---|---|
| **VOC** | | | | |
| Phenol | 108-95-2 | | 0.0162 | **0.0162** |
| Napthalene | 91-20-3 | | 0.0262 | **0.0262** |
| Diphenylmethane, 4,4'-Diisocyanate | 101-68-8 | | 0.1071 | **0.1071** |
| Total VOC | | | 0.150 | **0.1495** |
| | | | | |
| **Particulates** | | | | |
| Cobalt | 7440-48-4 | 0.0001 | | **0.0001** |
| Manganese | 7439-96-5 | 0.0044 | | **0.0044** |
| Nickel | 7440-02-0 | 0.0226 | | **0.0226** |
| Phosphorus | 7440-09-7 | 0.0002 | | **0.0002** |
| Total PM | | | | **0.0273** |

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## FURNACES CHARGING

| Furnace Name | ID # | Capacity (lbs/hr) | Emission Factors SCC 30400315 (lb/ton metal) | Emissions (lb/hr) |
|---|---|---|---|---|
| | | | PM | PM |
| Furnace 1Gas | 1Gas | NA | | |
| Furnace 1 | 1 | 5,000 | 0.20 | 0.50 |
| Furnace 1A | 1A | 5,000 | 0.20 | 0.50 |
| Furnace 2 | 2 | 2,400 | 0.20 | 0.24 |
| Furnace 3 | 3 | 2,400 | 0.20 | 0.24 |
| Furnace 5 | 5 | 1,100 | 0.20 | 0.11 |
| Furnace 5A | 5A | 1,100 | 0.20 | 0.11 |
| Furnace 6 | 6 | 600 | 0.20 | 0.06 |
| Furnace 6A | 6A | 600 | 0.20 | 0.06 |
| Furnace 7 | 7 | 350 | 0.20 | 0.04 |
| Total for all furnaces | | | | 1.86 |
| **Total for all furnaces (Tons/Yr) - 950 tons metal/yr** | | | | **0.095** |

Emissions (lbs/hr)= Capacity (lbs/hr) x Emissions Factor (lb/ton metal)/2000 (Lbs/ton)
Total Emissions are based on 950 tons of metal/yr.

Note: Furnace 1Gas is no longer in service and has been dismantled.

PM Emissions factor is from EPA's WebFIRE database and AP-42 12.10

Operations and Fugitive Sources at Gray Iron Foundries
Emission Factor for PM (SCC 30400315) are based on tons of metal charged, Emitted To Atmosphere.

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## FURNACES MELTING

| Furnace Name | ID # | Capacity (lbs/hr) | Emission Factors (lb/ton metal) | | | | Emissions (lb/hr) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | PM | PM10 | Mn | Pb | PM | PM10 | Mn | Pb |
| Furnace 1Gas | 1Gas | NA | | | | | | | | |
| Furnace 1 | 1 | 5,000 | 0.90 | 0.86 | 0.0093 | 0.00 | 2.25 | 2.15 | 0.02 | 0.00 |
| Furnace 1A | 1A | 5,000 | 0.90 | 0.86 | 0.0093 | 0.00 | 2.25 | 2.15 | 0.02 | 0.00 |
| Furnace 2 | 2 | 2,400 | 0.90 | 0.86 | 0.0093 | 0.00 | 1.08 | 1.03 | 0.01 | 0.00 |
| Furnace 3 | 3 | 2,400 | 0.90 | 0.86 | 0.0093 | 0.00 | 1.08 | 1.03 | 0.01 | 0.00 |
| Furnace 5 | 5 | 1,100 | 0.90 | 0.86 | 0.0093 | 0.00 | 0.50 | 0.47 | 0.01 | 0.00 |
| Furnace 5A | 5A | 1,100 | 0.90 | 0.86 | 0.0093 | 0.00 | 0.50 | 0.47 | 0.01 | 0.00 |
| Furnace 6 | 6 | 600 | 0.90 | 0.86 | 0.0093 | 0.00 | 0.27 | 0.26 | 0.00 | 0.00 |
| Furnace 6A | 6A | 600 | 0.90 | 0.86 | 0.0093 | 0.00 | 0.27 | 0.26 | 0.00 | 0.00 |
| Furnace 7 | 7 | 350 | 0.90 | 0.86 | 0.0093 | 0.00 | 0.16 | 0.15 | 0.00 | 0.00 |
| Total for all furnaces | | | | | | | **8.348** | **7.977** | **0.086** | **0.000** |
| **Total for all furnaces (Tons/Yr) - 950 tons metal/yr** | | | | | | | **0.428** | **0.409** | **0.004** | **0.00** |

Emissions (lbs/hr)= Capacity (lbs/hr) x Emissions Factor (lb/ton metal)/2000 (Lbs/ton)
Note: Furnace 1Gas is no longer in service and has been dismantled.

Emission Factors for PM, PM10, and Manganese are from AP-42 12.10 and WebFIRE Factors for SCC 3-04-003-03.
Emission Factors for Lead (Pb) can be found in the SPECIATE 4.0 Database for PM Profile 90010C or AP-42 12.10. However, lead is not in the clean metal that is used by the facility.

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## FURNACES MELTING

| Furnace Name | ID # | Capacity (lbs/hr) | Emission Factors (lb/ton metal) | | | Emissions (lb/hr) | | |
|---|---|---|---|---|---|---|---|---|
| | | | PM | PM10 | Pb | PM | PM10 | Pb |
| Fugitives | 4 | 1500 | 0 | 0.04 | 0 | 0 | 0.03 | 0 |
| Fugitives | 8 | 450 | 0 | 0.04 | 0 | 0 | 0.01 | 0 |
| Furnace 4 | 4 | 1,500 | 20.00 | 20.00 | 0.00 | 15.00 | 15.00 | 0.00 |
| Furnace 8 | 8 | 450 | 20.00 | 20.00 | 0.00 | 4.50 | 4.50 | 0.00 |
| Total for all furnaces | | | | | | **19.50** | **19.54** | **0.00** |
| **Total for all furnaces (Tons/Yr) - 50 tons metal/yr** | | | | | | **0.5** | **0.501** | **0.000** |

Emissions (lbs/hr)= Capacity (lbs/hr) x Emissions Factor (lb/ton metal)/2000 (Lbs/ton)

Emission Factors for PM, PM10, are from AP-042 12.9 (Secondary Copper Smelting) for Brass and Bronze Induction Furnaces .
SCC Codes 30400224 and 30400238

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## METAL TREATMENT

| Furnace Name | ID # | Capacity (lbs/hr) | Magnesium Treatment Emission Factors (lb/ton metal) | Emissions (lb/hr) |
|---|---|---|---|---|
| | | | PM | PM |
| Furnace 1Gas | 1Gas | NA | | |
| Furnace 1 | 1 | 5,000 | 0.40 | 1.00 |
| Furnace 1A | 1A | 5,000 | 0.40 | 1.00 |
| Furnace 2 | 2 | 2,400 | 0.40 | 0.48 |
| Furnace 3 | 3 | 2,400 | 0.40 | 0.48 |
| Furnace 5 | 5 | 1,100 | 0.40 | 0.22 |
| Furnace 5A | 5A | 1,100 | 0.40 | 0.22 |
| Furnace 6 | 6 | 600 | 0.40 | 0.12 |
| Furnace 6A | 6A | 600 | 0.40 | 0.12 |
| Furnace 7 | 7 | 350 | 0.40 | 0.07 |
| Total for all furnaces | | | | **3.71** |
| **Total for all furnaces** | **(Tons/Yr) - 950 tons metal/yr** | | | **0.19** |

**Emissions factors are from EPA's WebFIRE Database/AP-42 12.10.**
Operations and Fugitive Sources at Gray Iron Foundries

Magnesium Treatment (SCC 30400321) Emission Factors are based on Gray Iron Produced.
Emission Factor is based on Emissions emitted to the Atmosphere (Table 12.10-7).

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## METAL FUGITIVES

| Furnace Name | ID # | Capacity (lbs/hr) | Refining Emission Factors (lb/ton metal) | Refining Emissions (lb/hr) | Pouring, Cooling Emission Factors (lb/ton metal) | | Pouring, Cooling Emissions (lb/hr) | |
|---|---|---|---|---|---|---|---|---|
| | | | PM | PM | PM | PM 10 | PM | PM 10 |
| Furnace 1Gas | 1Gas | NA | | | | | | |
| Furnace 1 | 1 | 5,000 | 4.00 | 10.00 | 4.20 | 2.06 | 10.50 | 5.15 |
| Furnace 1A | 1A | 5,000 | 4.00 | 10.00 | 4.20 | 2.06 | 10.50 | 5.15 |
| Furnace 2 | 2 | 2,400 | 4.00 | 4.80 | 4.20 | 2.06 | 5.04 | 2.47 |
| Furnace 3 | 3 | 2,400 | 4.00 | 4.80 | 4.20 | 2.06 | 5.04 | 2.47 |
| Furnace 4 | 4 | 1,500 | 0.00 | 0.00 | 4.20 | 2.06 | 3.15 | 1.55 |
| Furnace 5 | 5 | 1,100 | 4.00 | 2.20 | 4.20 | 2.06 | 2.31 | 1.13 |
| Furnace 5A | 5A | 1,100 | 4.00 | 2.20 | 4.20 | 2.06 | 2.31 | 1.13 |
| Furnace 6 | 6 | 600 | 4.00 | 1.20 | 4.20 | 2.06 | 1.26 | 0.62 |
| Furnace 6A | 6A | 600 | 4.00 | 1.20 | 4.20 | 2.06 | 1.26 | 0.62 |
| Furnace 7 | 7 | 350 | 4.00 | 0.70 | 4.20 | 2.06 | 0.74 | 0.36 |
| Furnace 8 | 8 | 450 | 0.00 | 0.00 | 4.20 | 2.06 | 0.95 | 0.46 |
| Total for all furnaces | | | | **37.10** | | | **43.05** | **21.12** |
| **Total for all furnaces (Tons/Yr) - 14.63 tons metal/yr** | | | | **0.03** | **1,000 tons/yr** | | **2.10** | **1.03** |

Emissions (lbs/hr)= Capacity (lbs/hr) x Emissions Factor (lb/ton metal)/2000 (Lbs/ton)
Note: Furnace 1Gas is no longer in service and has been dismantled.

**Emissions factors are from EPA's WebFIRE Database/AP-42 12.10.**
Operations and Fugitive Sources at Gray Iron Foundries

Refining (SCC 30400322) is based on Ductile Iron Produced.
Pouring/Cooling (SCC 30400318) Emission Factors are based on Gray Iron Produced.

Ductile Iron Average Production = 6,950 lbs/yr
Avg. % of Total Steel Production = 6950 (lb/yr)/451,913 (lbs/yr) = .0154 Tons/Yr
Extrapolated Ductile Iron Production for 950 tons/Yr = .0154 (Tons/Yr) x 950 (Tons/Yr) = 14.63 Tons/Yr

STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
PORT ARTHUR, TX FACILITY

HOURLY EMISSION CALCULATIONS
CASTING SHAKEOUT

| Furnace Name | ID # | Capacity (lbs/hr) | Casting Shakeout Emission Factors (lb/ton metal) | | Emissions (lb/hr) | |
|---|---|---|---|---|---|---|
| | | | PM | PM10 | PM | PM10 |
| Furnace 1Gas | 1Gas | NA | | | | |
| Furnace 1 | 1 | 5,000 | 3.20 | 2.24 | 8.00 | 5.60 |
| Furnace 1A | 1A | 5,000 | 3.20 | 2.24 | 8.00 | 5.60 |
| Furnace 2 | 2 | 2,400 | 3.20 | 2.24 | 3.84 | 2.69 |
| Furnace 3 | 3 | 2,400 | 3.20 | 2.24 | 3.84 | 2.69 |
| Furnace 4 | 4 | 1,500 | 3.20 | 2.24 | 2.40 | 1.68 |
| Furnace 5 | 5 | 1,100 | 3.20 | 2.24 | 1.76 | 1.23 |
| Furnace 5A | 5A | 1,100 | 3.20 | 2.24 | 1.76 | 1.23 |
| Furnace 6 | 6 | 600 | 3.20 | 2.24 | 0.96 | 0.67 |
| Furnace 6A | 6A | 600 | 3.20 | 2.24 | 0.96 | 0.67 |
| Furnace 7 | 7 | 350 | 3.20 | 2.24 | 0.56 | 0.39 |
| Furnace 8 | 8 | 450 | 3.20 | 2.24 | 0.72 | 0.50 |
| Total for all furnaces | | | | | **32.80** | **22.96** |
| **Total for all furnaces (Tons/Yr) - 1,000 tons metal/yr** | | | | | **1.60** | **1.12** |

Emissions (lbs/hr)= Capacity (lbs/hr) x Emissions Factor (lb/ton metal)/2000 (Lbs/ton)
Note: Furnace 1Gas is no longer in service and has been dismantled.

**Emissions factors are from EPA's WebFIRE Database/AP-42 12.10.**
Operations and Fugitive Sources at Gray Iron Foundries

Pouring/Casting (SCC 30400331) Emission Factors are based on Gray Iron Produced/metal charged.

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## CASTING FUGITIVES

| Furnace Name | ID # | Capacity (lbs/hr) | Grinding Cleaning Emission Factors (lb/ton metal) | | Grinding Cleaning Emissions (lb/hr) | |
|---|---|---|---|---|---|---|
| | | | PM | PM10 | PM | PM10 |
| Furnace 1Gas | 1Gas | NA | | | | |
| Furnace 1 | 1 | 5,000 | 0.10 | 0.10 | 0.25 | 0.25 |
| Furnace 1A | 1A | 5,000 | 0.10 | 0.10 | 0.25 | 0.25 |
| Furnace 2 | 2 | 2,400 | 0.10 | 0.10 | 0.12 | 0.12 |
| Furnace 3 | 3 | 2,400 | 0.10 | 0.10 | 0.12 | 0.12 |
| Furnace 4 | 4 | 1,500 | 0.10 | 0.10 | 0.08 | 0.08 |
| Furnace 5 | 5 | 1,100 | 0.10 | 0.10 | 0.06 | 0.06 |
| Furnace 5A | 5A | 1,100 | 0.10 | 0.10 | 0.06 | 0.06 |
| Furnace 6 | 6 | 600 | 0.10 | 0.10 | 0.03 | 0.03 |
| Furnace 6A | 6A | 600 | 0.10 | 0.10 | 0.03 | 0.03 |
| Furnace 7 | 7 | 350 | 0.10 | 0.10 | 0.02 | 0.02 |
| Furnace 8 | 8 | 450 | 0.10 | 0.10 | 0.02 | 0.02 |
| Total for all furnaces | | | | | **1.03** | **1.03** |
| **Total for all furnaces (Tons/Yr) - 1,000 tons/yr** | | | | | **0.05** | **0.05** |

Emissions (lbs/hr)= Capacity (lbs/hr) x Emissions Factor (lb/ton metal)/2000 (Lbs/ton)
Note: Furnace 1Gas is no longer in service and has been dismantled.

**Emissions factors are from EPA's WebFIRE Database/AP-42 12.10 (Table 12.10-7) Emitted to Atmosphere.**
Operations and Fugitive Sources at Gray Iron Foundries

Cleaning and Finishing (SCC 30400340) Emission Factors
are based on Gray Iron Produced/metal charged.

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## SAND EMISSIONS

| Sand Activity | Sand Handling Capacity (tons/year) | Emission Factors (lb/ton sand) | Emissions (lb/hr) | Emissions (tons/year) |
|---|---|---|---|---|
| | | PM | PM | PM |
| Sand Grinding/Handling | 2425 | 0.20 | 0.24 | 0.24 |
| **Total** | | **0.20** | **0.24** | **0.24** |

Emissions (tons/yr)= Capacity (tons/yr) x Emissions Factor (lb/ton sand handled)
Emissions (lb/hr) = (Sand Handling Capacity X Emissions Factor)/2000 hrs/yr
Emissions (lb/hr) is based on 2000 hours/year.

**Emissions factors are from EPA's WebFIRE Database/AP-42 12.10.**
Operations and Fugitive Sources at Gray Iron Foundries

Sand Grinding/Handling (SCC 30400350) Emission - Baghouse
Factors are based on tons of sand handled.

| | Core (tons/yr) | Mold (tons/yr) | Total Sand (lbs/yr) | Metal Produced (lbs/yr) |
|---|---|---|---|---|
| Sand Used in 2006 | 159.881 | 350 | 1019762 | 478,055 |
| Sand Used in 2007 | 208.116 | 350 | 1116232 | 530,000 |
| Sand Used in 2008 | 281.7145 | 500 | 1563429 | 517,675 |
| Total | 649.7115 | 1200 | 3699423 | 1,525,730 |
| Yearly Average | 216.5705 | 400 | 1233141 | 508576.66667 |
| | | | | |
| **Sand Usage/Metal Produced (lbs sand/lb metal)** | **0.852** | **1.573** | | **2.425** |
| | | | | |
| **Sand Used in Maximum Metal Produced 1000 tons/yr** | **1703346** | **3146035** | | **4849381** |
| Tons Sand Used/Yr based on 1000 tons metal produced | **852** | **1573** | | **2425** |

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## CORE AND MOLD EMISSIONS

| Activity | | Usage Rate (tons/yr) | Emission Factors (lb VOC/ton chemical) | | Emissions (lb/hr) | | Emissions (tons/year) | |
|---|---|---|---|---|---|---|---|---|
| | | | PM | VOC | PM | VOC | PM | VOC |
| Core Wash (Isopropanol) | | 7.50 | | 2000.00 | | 7.50 | | 7.50 |
| Mold Wash (Isopropanol) | | 7.50 | | 2000.00 | | 7.50 | | 7.50 |
| **Total** | | | | | | **15.00** | | **15.00** |
| | | | | | | | | |
| | | | Emission Factors | | Emissions (lb/hr) | | Emissions (tons/year) | |
| | Metal Usage Rate (tons/yr) | Sand Usage Rate (tons/yr) | PM (lbs/ton) | VOC (lbs/ton) | PM | VOC | PM | VOC |
| Mold Making | 1000 | 1,573 | 1.1 | 0.0601 | 0.55 | 0.05 | 0.55 | 0.05 |
| Mold Storage | 1000 | 1,573 | | 0.0095 | 0 | 0.01 | 0 | 0.01 |
| Core Making | 1000 | 852 | 1.1 | 0.65 | 0.55 | 0.28 | 0.55 | 0.28 |
| | | | | | | | | |

Emissions (lb/hr) = Usage Rate X Emission Factor/2000 hrs/yr.
Emissions (tons/yr) = Usage Rate X Emission Factor/2000 lbs/yr.

Mold and Core Making PM Emission Factor is lb/ton metal. VOC Emission Factors are lb/ton sand.
Hourly emissions is based on 2,000 hours/year.

Mold Making VOC factor is from CERP report "Emission Factors for VOC and HAPs from Product Test: HA International Enviroset®22 Furan No-Bake®; Mix/Make/Cure; Storage; Pouring/Cooling/Shakeout Technikon # 1411-113 GI".
Mold Making PM Emission Factor (SCC 30400319) is from EPA's WebFIRE database.

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
# PORT ARTHUR, TX FACILITY

## HOURLY EMISSION CALCULATIONS
## CORE AND MOLD EMISSIONS

Isopropanol is used as both a core and mold wash.  Isopropanol is assumed to be 100% VOC.  Density is 6.6 lbs/gal.

# STANDARD ALLOYS AND MANUFACTURING SALES COMPANY

## RESIN USAGE

| **Production:** | **Pounds** | Avg Lb/month | | |
|---|---|---|---|---|
| 2006 | 478,055 | 39838 | | |
| 2007 | 530,000 | 44167 | | |
| 2008 | 517,675 | 43140 | | |
| 2009 (through October) | 362,545 | 36255 | | |
| | | **40850** | | |
| | | | | |
| **Enviroset 00 + Catalysts** | | | | |
| 2006 | 20,000 | 1667 | | |
| 2007 | 25,000 | 2083 | | |
| 2008 | 25,000 | 2083 | | |
| 2009 | 15,000 | 1500 | | |
| | | **1833** | **0.04488** | **Pound mold resin/Pound metal produced** |
| | | | **89,760** | **Pounds mold resin used based on 1000 tons metal produced** |
| | | | | |
| **Techniset 6100 + 6500 + Activator** | | | | |
| 2006 | 4,800 | 400 | | |
| 2007 | 4,800 | 400 | | |
| 2008 | 400 | 33 | | |
| 2009 | - | 0 | | |
| | | **208** | | |
| | | | | |
| | | | **0.0051** | **Pound core resin/Pound metal produced.** |
| | | | **10,200** | **Pounds core resin used based on 1000 tons metal produced** |

STANDARD ALLOYS MANUFACTURING COMPANY
SUPER STEEL

| ALLOY TYPE | Copper (Cu) | Cu lbs | Tin (Sn) | Lead (Pb) | Zinc (Zn) | Aluminum (Al) | Al Lbs | Silicon (Si) | Si Lbs. | Iron (Fe) | Fe Lbs. | Manganese (Mn) | Mn Lbs. | Magnesium (Mg) | Mg Lbs. | Titanium (Ti) | Carbon (C) | C Lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DUCTILE IRON | 0.50 | 34.75 | | | | | 0 | 2.35 | 163.33 | 92.26 | 6412.1 | 0.30 | 20.85 | 0.03 | 2.09 | | 3.40 | 236.30 |
| CAST IRON | 0.20 | 132.30 | | | | | 0 | 2.20 | 1455.30 | 92.70 | 61321.1 | 0.50 | 330.75 | | 0.00 | | 3.30 | 2182.95 |
| NI RESIST | 0.50 | 85.81 | | | | | 0 | 2.30 | 394.74 | 69.78 | 11976.0 | 1.00 | 171.63 | | 0.00 | | 3.00 | 514.88 |
| CHROME IRON | 1.00 | 329.88 | | | | | 0 | 2.00 | 659.75 | 62.90 | 20749.1 | 1.50 | 494.81 | | 0.00 | | 1.60 | 527.80 |
| NI HARD | | 0.00 | | | | | 0 | 0.70 | 5.78 | 85.50 | 705.4 | 0.90 | 7.43 | | 0.00 | | 3.50 | 28.88 |
| CARBON STEEL | 0.50 | 351.88 | | | | | 0 | 0.45 | 316.69 | 96.42 | 67855.6 | 1.10 | 774.13 | | 0.00 | | 0.30 | 211.13 |
| LOW ALLOY STEEL | 0.50 | 28.31 | | | | | 0 | 0.80 | 45.30 | 95.66 | 5416.7 | 0.95 | 53.79 | | 0.00 | | 0.25 | 14.16 |
| HEAT RESISTANT STEEL | | 0.00 | | | | | 0 | 2.00 | 158.50 | 46.97 | 3722.4 | 2.00 | 158.50 | | 0.00 | | 0.45 | 35.66 |
| 300 SERIES STAINLESS STEEL | 0.30 | 228.60 | | | | | 0 | 1.70 | 1295.40 | 62.78 | 47838.4 | 1.30 | 990.60 | | 0.00 | | 0.06 | 45.72 |
| 400 SERIES STAINLESS STEEL | 0.40 | 210.04 | | | | | 0 | 1.00 | 525.10 | 82.69 | 43420.5 | 0.80 | 420.08 | | 0.00 | | 0.15 | 78.77 |
| CA6NM STAINLESS STEEL | 0.40 | 194.25 | | | | | 0 | 0.80 | 388.50 | 78.40 | 38073.0 | 0.80 | 388.50 | | 0.00 | | 0.03 | 14.57 |
| CD4MCU STAINLESS STEEL | 3.25 | 1511.74 | | | | | 0 | 1.00 | 465.15 | 59.88 | 27853.2 | 1.00 | 465.15 | | 0.00 | | 0.04 | 18.61 |
| 20A STAINLESS STEEL | 4.00 | 416.00 | | | | 0.05 | 5.2 | 1.00 | 104.00 | 36.31 | 3776.2 | 1.00 | 104.00 | | 0.00 | | 0.02 | 2.08 |
| 17-4 PH STAINLESS STEEL | 3.00 | 237.75 | | | | | 0 | 0.80 | 63.40 | 73.58 | 5831.2 | 0.60 | 47.55 | | 0.00 | | 0.06 | 4.76 |
| BRA STAINLESS STEEL | | 0.00 | | | | | 0 | 1.00 | 17.63 | 80.44 | 1417.8 | 14.00 | 246.75 | | 0.00 | | 1.40 | 24.68 |
| WEIGHT TOTAL | | 3761.30 | | | | | 5.2 | | 6058.55 | | 346368.6 | | 4674.51 | | 2.09 | | | 3940.91 |
| WEIGHT % | | 0.83 | | | | | 0.001 | | 1.34 | | 76.65 | | 1.03 | | 0.0005 | | | 0.872 |

STANDARD ALLOYS MANUFACTURING COMPANY
SUPER STEEL

| Chromium (Cr) | Cr Lbs. | Molybdenum (Mo) | Mo Lbs. | Nickel (Ni) | Ni Lbs. | Phosphorus (P) | P Lbs. | Sulfur (S) | S Lbs. | Tungsten (W) | W Lbs. | Cobalt (Co) | Co Lbs. | Vanadium (V) | V Lbs. | Niobium (Nb) | Nb Lbs. | Nitrogen (N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.15 | 10.43 | 0.20 | 13.90 | 0.75 | 52.13 | 0.04 | 2.78 | 0.02 | 1.39 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 0.20 | 132.30 | 0.20 | 132.30 | 0.50 | 330.75 | 0.15 | 99.23 | 0.05 | 33.08 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 2.20 | 377.58 | | 0.00 | 21.00 | 3604.13 | 0.10 | 17.16 | 0.12 | 20.60 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 27.00 | 8906.63 | 2.00 | 659.75 | 2.00 | 659.75 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 3.90 | 32.18 | | 0.00 | 4.90 | 40.43 | 0.30 | 2.48 | 0.30 | 2.48 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 0.40 | 281.50 | 0.25 | 175.94 | 0.50 | 351.88 | 0.04 | 28.15 | 0.04 | 28.15 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 0.70 | 39.64 | 0.25 | 14.16 | 0.70 | 39.64 | 0.04 | 2.27 | 0.05 | 2.83 | 0.10 | 5.66 | | 0.00 | | 0.00 | | 0.00 | |
| 27.00 | 2139.75 | 0.50 | 39.63 | 21.00 | 1664.25 | 0.04 | 3.17 | 0.04 | 3.17 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 20.00 | 15240.00 | 2.80 | 2133.60 | 11.00 | 8382.00 | 0.03 | 22.86 | 0.03 | 22.86 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 14.00 | 7351.40 | 0.40 | 210.04 | 0.50 | 262.55 | 0.03 | 15.75 | 0.03 | 15.75 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 14.00 | 6798.75 | 1.00 | 485.63 | 4.50 | 2185.31 | 0.04 | 19.43 | 0.03 | 14.57 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 26.50 | 12326.48 | 2.25 | 1046.59 | 6.00 | 2790.90 | 0.04 | 18.61 | 0.04 | 18.61 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 22.00 | 2288.00 | 3.00 | 312.00 | 30.50 | 3172.00 | 0.01 | 1.04 | 0.01 | 1.04 | 1.00 | 104.00 | 1.00 | 104.00 | 0.10 | 10.40 | | 0.00 | |
| 17.00 | 1347.25 | | 0.00 | 4.50 | 356.63 | 0.03 | 2.38 | 0.03 | 2.38 | | 0.00 | | 0.00 | | 0.00 | 0.35 | 27.74 | 0.05 |
| 3.00 | 52.88 | | 0.00 | | 0.00 | 0.10 | 1.76 | 0.06 | 1.06 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| | 57324.74 | | 5223.52 | | 23892.33 | | 237.05 | | 167.95 | | 109.66 | | 104.00 | | 10.40 | | 27.74 | |
| | 12.68 | | 1.156 | | 5.287 | | 0.0525 | | 0.037 | | 0.024 | | 0.023 | | 0.002 | | 0.006 | |

STANDARD ALLOYS MANUFACTURING COMPANY
SUPER STEEL

| 2007 PRODUCTION LBS. | 2008 PRODUCTION LBS. | AVERAGE PRODUCTION LBS. |
|---|---|---|
| | | |
| 9,400 | 4,500 | 6,950 |
| 94,000 | 38,300 | 66,150 |
| 16,925 | 17,400 | 17,163 |
| 31,775 | 34,200 | 32,988 |
| 300 | 1,350 | 825 |
| 57,125 | 83,625 | 70,375 |
| 3,550 | 7,775 | 5,663 |
| 9,300 | 6,550 | 7,925 |
| 80,825 | 71,575 | 76,200 |
| 47,145 | 57,875 | 52,510 |
| 45,175 | 51,950 | 48,563 |
| 36,555 | 56,475 | 46,515 |
| 8,900 | 11,900 | 10,400 |
| 7,650 | 8,200 | 7,925 |
| 2,875 | 650 | 1,763 |
| **451,500** | **452,325** | **451,913** |
| | | **100.00** |

STANDARD ALLOYS AND MANUFACTURING SALES COMPANY
PORT ARTHUR, TX FACILITY
HAZARDOUS AIR POLLUTANTS
EMISSIONS CALCULATIONS

| Activity | | Emission Factors | | | Emissions | |
|---|---|---|---|---|---|---|
| Cores | CAS | Resin lbs/yr | Weight % | Emission Factor (lb HAP/lb resin) | Total (lbs/yr) | Total (tons/yr) |
| Phenol | 108-95-2 | 10200 | 4.29 | 0.074 | 32.38 | 0.016 |
| Napthalene | 91-20-3 | 10200 | 6.94 | 0.074 | 52.38 | 0.026 |
| Diphenylmethane, 4,4'-Diisocyanate | 101-68-8 | 10200 | 28.39 | 0.074 | 214.29 | 0.107 |
| | | | | | | |

Emission factor is based on a combined core mixing, core make, and storage emission factor for newer technology phenolic urethane core binder at two different binder levels. American Foundry Society - Foundry Organic HAP Emissions.

| All Furnaces | CAS | Weight Percent (lbs/lb metal) | Emission Factor (lbs/ton metal) | Emissions (lbs/yr) | Emissions (tons/yr) |
|---|---|---|---|---|---|
| Cobalt | 7440-48-4 | 0.00023 | 0.9 | 0.1967 | 0.0001 |
| Manganese | 7439-96-5 | 0.0103 | 0.9 | 8.8065 | 0.0044 |
| Nickel | 7440-02-0 | 0.05287 | 0.9 | 45.2039 | 0.0226 |
| Phosphorus | 7440-09-7 | 0.00053 | 0.9 | 0.4489 | 0.0002 |

Speciation is from Standard Alloys "Super Steel" data and emissions are based on 950 tons/yr of gray iron metal produced.

# WebFire Emission Factors
# SCC Codes for Gray Iron Foundries

| SCC | SCCID | SCC_L4 | Applicability |
|---|---|---|---|
| 30400301 | 5165 | Cupola | Not applicable |
| 30400302 | 5166 | Reverberatory Furnace | Not applicable |
| 30400303 | 5167 | Electric Induction Furnace | All furnaces are induction furnaces |
| 30400304 | 5168 | Electric Arc Furnace | Not applicable |
| 30400305 | 5169 | Annealing Operation | Not applicable |
| 30400310 | 5170 | Inoculation | |
| 30400314 | 5171 | Scrap Metal Preheating | Facility uses mostly new metal. PBR's cover degreasing and Heat Treating Activities |
| 30400315 | 5172 | Charge Handling | |
| 30400316 | 5173 | Tapping | No emission factors |
| 30400317 | 5174 | Pouring Ladle | No emission factors |
| 30400318 | 5175 | Pouring, Cooling | |
| 30400319 | 5176 | Core Making, Baking | |
| 30400320 | 5177 | Pouring/Casting | |
| 30400321 | 5178 | Magnesium Treatment | |
| 30400322 | 5179 | Refining | |
| 30400325 | 5180 | Castings Cooling | |
| 30400330 | 5181 | Miscellaneous Casting-Fabricating ** | No emission factors |
| 30400331 | 5182 | Casting Shakeout | |
| 30400332 | 5183 | Casting Knock Out | |
| 30400333 | 5184 | Shakeout Machine | |
| 30400340 | 5185 | Grinding/Cleaning | |
| 30400341 | 5186 | Casting Cleaning/Tumblers | No emission factors |
| 30400342 | 5187 | Casting Cleaning/Chippers | No emission factors |
| 30400350 | 5188 | Sand Grinding/Handling | |
| 30400351 | 5189 | Core Ovens | PBR |
| 30400352 | 5190 | Sand Grinding/Handling | Not using |
| 30400353 | 5191 | Core Ovens | PBR |
| 30400354 | 5192 | Core Ovens | PBR |
| 30400355 | 5193 | Sand Dryer | Not applicable |
| 30400356 | 5194 | Sand Silo | No emission factors |
| 30400357 | 5195 | Conveyors/Elevators | Not applicable |
| 30400358 | 5196 | Sand Screens | Not applicable |
| 30400360 | 5197 | Castings Finishing | |
| 30400370 | 5198 | Shell Core Machine | Not applicable |
| 30400371 | 5199 | Core Machines/Other | PBR |
| 30400398 | 5200 | Other Not Classified | Not applicable |
| 30400399 | 5201 | Other Not Classified | Not applicable |