



Emission Calculation Fact Sheet

Michigan Department of Environmental Quality ♦ Environmental Science and Services Division ♦ (800) 662-9278

HOT MIX ASPHALT PLANTS

This document lists Source Classification Codes (SCC) and emission factors for various activities at hot mix asphalt (HMA) plants. They are provided as an aid in calculating emissions from HMA facilities. The emission factors were obtained from the Factor Information Retrieval (FIRE) Data System, Version 6.23 and 6.24 or the U.S. Environmental Protection Agency's (EPA) *Compilation of Air Pollutant Emission Factors (AP-42)*. Both are available on the Internet at www.epa.gov/ttn/chief/index.html.

It is not required that facilities use these listed factors to quantify their emissions. If a facility disagrees with any emission factor in this document, it may use other emission factors or another method of calculating emissions providing the emission factor or method correctly characterizes the processes at the facility and the resulting emissions. A facility doing so must submit calculations and documentation showing the source of the factors or method used and justification for their use. **The use of emission factors listed in this fact sheet will satisfy the annual reporting required by the DEQ, Air Quality Division's General Permit to Install Addendum for Hot Mix Asphalt Plants.**

The use of equations most recently published in EPA's AP-42 or the Michigan Asphalt Paving Association's (MAPA) fugitive dust worksheet may provide more accurate, site-specific emission rates from fugitive emission sources (e.g. hauling and storage piles). MAPA publications and information can be obtained by calling (800) 292-5959.

Portable Sources

Portable sources must submit a Supplemental Portable Form (SP-101) when reporting their emissions. For information about the SP-101 form and other portable source requirements, refer to the *MAERS General Instructions*.

Control factors

The listed emission factors are for uncontrolled emissions. If a facility has control equipment, such as a fabric filter, the emissions can be multiplied by the control factor. Calculate the control factor by subtracting the percent control efficiency from 100 and then divide that number by 100. For example, if the control efficiency is 87%, the control factor would be $(100 - 87)/100 = 0.13$. Control efficiencies may be listed on the equipment or in the equipment documentation. Alternatively, equipment suppliers can provide control efficiency values. Facilities with a DEQ, Air Quality Division approved Fugitive Dust Plan are allowed to use an 80% control efficiency for fugitive dust sources.

Scientific notation

The emission factors are expressed in scientific notation, which means that the decimal point has been moved. If the exponent is negative, move the decimal point to the left. If the exponent is positive, move the decimal point to the right. If the exponent is zero, the decimal point does not move. For example, if a number is expressed as 2.0E-1, move the decimal point one place to the left to get 0.20. If a number is expressed as 2.0E2, move the decimal point 2 places to the right to get 200. If a number is expressed as 2.0E0, the decimal point does not move – the number is 2.0. A number expressed as E3 is 1,000.

DRUM MIX ASPHALT PLANTS

SCC	DESCRIPTION	POLLUTANT	EMISSION FACTORS
3-05-002-55	Rotary Drum Dryer/Mixer, Natural Gas Fired <i>(Use this SCC Code for LPG Fired Dryer/Mixers)</i>	CO LEAD NOX PM10,PRIMARY PM2.5,FLTRBL SO2 VOC	1.3E-1 LB/TON ASPHALT MIX 1.75E-4 LB/TON ASPHALT MIX 2.6E-2 LB/TON ASPHALT MIX 6.5E0 LB/TON ASPHALT MIX 1.5E0 LB/TON ASPHALT MIX 3.4E-3 LB/TON ASPHALT MIX 3.2E-2 LB/TON ASPHALT MIX
3-05-002-58	Rotary Drum Dryer/Mixer, Oil Fired <i>(Use this SCC Code for waste oil fired Dryer/Mixers)</i>	CO LEAD NOX PM10,PRIMARY PM2.5,FLTRBL SO2 VOC	1.3E-1 LB/TON ASPHALT MIX 5.4E-4 LB/TON ASPHALT MIX 5.5E-2 LB/TON ASPHALT MIX 6.5E0 LB/TON ASPHALT MIX 1.5E0 LB/TON ASPHALT MIX 1.1E-2 LB/TON ASPHALT MIX 3.2E-2 LB/TON ASPHALT MIX

BATCH MIX ASPHALT PLANTS

SCC	DESCRIPTION	POLLUTANT	EMISSION FACTORS
3-05-002-45	Hot elevators / screens / bins / mixer / natural gas rotary dryer (Use this SCC Code for LPG Fired Dryers) 3-05-002-51 Revoked by EPA 12/1/2000 not available for use	CO LEAD NOX PM10,PRIMARY PM2.5,FLTRBL SO2 VOC	4.0E-1 LB/TON ASPHALT MIX 1.49E-4 LB/TON ASPHALT MIX 2.5E-2 LB/TON ASPHALT MIX 4.5E0 LB/TON ASPHALT MIX 2.7E-1 LB/TON ASPHALT MIX 4.6E-3 LB/TON ASPHALT MIX 8.2E-3 LB/TON ASPHALT MIX
3-05-002-46	Hot elevators / screens / bins / mixer /#2 oil rotary dryer (Use this SCC Code for waste oil Fired Dryers) 3-05-002-52 Revoked by EPA 12/1/2000 not available for use	CO LEAD NOX PM10,PRIMARY PM2.5,FLTRBL SO2 VOC	4.0E-1 LB/TON ASPHALT MIX 1.49E-4 LB/TON ASPHALT MIX 1.2E-1 LB/TON ASPHALT MIX 4.5E0 LB/TON ASPHALT MIX 2.7E-1 LB/TON ASPHALT MIX 8.8E-2 LB/TON ASPHALT MIX 2.7E-3 LB/TON ASPHALT MIX
3-05-002-47	Hot elevators / screens / bins / mixer /waste / drain / #6 Oil Rotary Dryer 3-05-002-02 Revoked by EPA 12/1/2000 not available for use	CO LEAD NOX PM10,PRIMARY PM2.5,FLTRBL SO2 VOC	4.0E-1 LB/TON ASPHALT MIX 1.49E-4 LB/TON ASPHALT MIX 1.2E-1 LB/TON ASPHALT MIX 4.5E0 LB/TON ASPHALT MIX 2.7E-1 LB/TON ASPHALT MIX 8.8E-2 LB/TON ASPHALT MIX 3.6E-2 LB/TON ASPHALT MIX

ASPHALT HEATERS

SCC	DESCRIPTION	POLLUTANT	EMISSION FACTORS
3-05-002-06	Asphalt heater, natural gas – uncontrolled	NOX SOX VOC	1.4E2 LB/MMCF NATURAL GAS 6.0E-1 LB/MMCF NATURAL GAS 2.8E0 LB/MMCF NATURAL GAS
3-05-002-07	Asphalt heater, residual oil – uncontrolled	NOX SOX VOC	5.5E1 LB/E3 GAL RESIDUAL OIL 1.59E2 LB/KGAL-%S RESIDUAL OIL KGAL-%S = (E3 GAL OIL) x (%S) [%S = wt. % sulfur] 2.8E-1 LB/E3 GAL RESIDUAL OIL
3-05-002-08	Asphalt heater, distillate – uncontrolled	NOX SOX VOC	2.0E-2 LB/GAL DISTILLATE 1.436E-1 LB/GAL-%S DISTILLATE GAL-%S = (GAL OIL) x (%S) [%S = wt. % sulfur] 2.0E-4 LB/GAL DISTILLATE
3-05-002-09	Asphalt heater, LPG – uncontrolled	CO NOX PM10 VOC	1.9E0 LB/E3 GAL LPG 1.4E1 LB/E3 GAL LPG 4.0E-1 LB/E3 GAL LPG 5.0E-1 LB/E3 GAL LPG
3-05-002-10	Asphalt heater, waste oil – uncontrolled	CO NOX SO2 VOC	2.01E-1 LB/TON ASPHALT MIX 1.225E-1 LB/TON ASPHALT MIX 2.4E-1 LB/TON ASPHALT MIX 5.75E-2 LB/TON ASPHALT MIX

FUGITIVE EMISSIONS: Facilities with a DEQ, Air Quality Division approved Fugitive Dust Plan are allowed to use an 80% control efficiency for fugitive dust emissions.

SCC	DESCRIPTION	POLLUTANT	EMISSION FACTORS
3-05-025-02	Storage piles – uncontrolled 3-05-002-03 Revoked by EPA 12/1/2000 not available for use	PM10,FLTRBLE (As an alternative, use AP-42 formulas or MAPA fugitive dust worksheet.)	1.2E-1 LB/TON PRODUCT
3-05-025-04	Haul roads – general – uncontrolled Most Permit to Install fugitive dust control plans state that haul roads must be paved. Aggregate handling areas traversed by front-end loaders and dump trucks are most often unpaved. The emission factors cover all paved and unpaved areas. Vehicle miles are defined as the amount of miles all vehicles (whether it is a truck or a front-end loader) may travel during a year. 3-05-002-90 Revoked by EPA 12/1/2000 not available for use	PM10,FLTRBLE (As an alternative, use AP-42 formulas or MAPA worksheet.)	6.2E0 LB/MILE DEVICE

GENERATORS

SCC	DESCRIPTION	POLLUTANT	EMISSION FACTORS
2-02-001-02	Distillate oil combustion sources – uncontrolled	CO NOX PM10,FLTRBLE PM2.5,FLTRBL SOX TOC	1.3E2 LB/E3 GAL DIESEL FUEL 6.04E2 LB/E3 GAL DIESEL FUEL 4.25E1 LB/E3 GAL DIESEL FUEL 4.25E1 LB/E3 GAL DIESEL FUEL 3.97E1 LB/E3 GAL DIESEL FUEL 4.93E1 LB/E3 GAL DIESEL FUEL
2-02-002-02	Natural gas combustion sources – uncontrolled	CO NOX PM10,PRIMARY PM2.5,PRIMRY SOX VOC	3.99E2 LB/MMCF NATURAL GAS 2.84E3 LB/MMCF NATURAL GAS 2.011E1 LB/MMCF NATURAL GAS 2.011E1 LB/MMCF NATURAL GAS 6.0E-1 LB/MMCF NATURAL GAS 1.16E2 LB/MMCF NATURAL GAS
2-02-005-01	Residual oil combustion sources – uncontrolled	CO NOX PM10,FLTRBLE SOX TOC	1.3E2 LB/E3 GAL RESIDUAL OIL 6.04E2 LB/E3 GAL RESIDUAL OIL 4.25E1 LB/E3 GAL RESIDUAL OIL 1.55E2 LB/KGAL-%S RESIDUAL OIL* 4.93E1 LB/E3 GAL RESIDUAL OIL
2-02-010-01	Liquefied Petroleum Gas (LPG) – uncontrolled	CO NOX PM10 VOC	3.57E1 LB/E3 GAL LPG 2.54E2 LB/E3 GAL LPG 8.95E-1 LB/E3 GAL LPG 1.04E1 LB/E3 GAL LPG

* KGAL-%S = (E3 GAL OIL)x(%S) [%S = wt. % sulfur]

The Michigan Department of Environmental Quality (MDEQ) will not discriminate against any individual or group on the basis of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. Questions or concerns should be directed to the MDEQ Office of Personnel Services, PO Box 30473, Lansing, MI 48909.