measured by the temperature monitoring device, is less than 80 percent of the design temperature difference, or, (3) Each 3-hour period of operation during which the average VOC concentration level or reading of organics in the exhaust gases from a carbon adsorber is more than 20 percent greater than the design exhaust gas concentration level or reading.

(i) Each 3-hour period of operation during which the average VOC concentration level or reading of organics in the exhaust gases from a carbon adsorber is more than 20 percent greater than the design exhaust gas concentration level or reading.

(ii) Each occurrence when the carbon in a carbon adsorber system that is not regenerated directly onsite in the control device is not replaced at the predetermined interval specified in §60.695(a)(3)(ii).

(e) If compliance with the provisions of this subpart is delayed pursuant to §60.692–7, the notification required under 40 CFR 60.7(a)(4) shall include the estimated date of the next scheduled refinery or process unit shutdown after the date of notification and the reason why compliance with the standards is technically impossible without a refinery or process unit shutdown.

§60.699 Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under section 111(c) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities which will not be delegated to States:

§60.694 Permission to use alternative means of emission limitations.

§60.700 Applicability and designation of affected facility.

(a) The provisions of this subpart apply to each affected facility designated in paragraph (b) of this section that is part of a process unit that produces any of the chemicals listed in §60.707 as a product, co-product, by-product, or intermediate, except as provided in paragraph (c) of this section.

(b) The affected facility is any of the following for which construction, modification, or reconstruction commenced after June 29, 1990:

(1) Each reactor process not discharging its vent stream into a recovery system.

(2) Each combination of a reactor process and the recovery system into which its vent stream is discharged.

(3) Each combination of two or more reactor processes and the common recovery system into which their vent streams are discharged.

(c) Exemptions from the provisions of paragraph (a) of this section are as follows:

(1) Any reactor process that is designed and operated as a batch operation is not an affected facility.

(2) Each affected facility that has a total resource effectiveness (TRE) index value greater than 8.0 is exempt from all provisions of this subpart except for §§60.702(c); 60.704(d), (e), and (f); and 60.705(g), (l)(1), (l)(6), and (t).

(3) Each affected facility in a process unit with a total design capacity for all chemicals produced within that unit of less than 1 gigagram per year (1,100 tons per year) is exempt from all provisions of this subpart except for the recordkeeping and reporting requirements in §60.705(1), (l)(5), and (m).

(4) Each affected facility operated with a vent stream flow rate less than
0.011 scm/min is exempt from all provisions of this subpart except for the test method and procedure and the record-keeping and reporting requirements in §§ 60.704(g) and 70.705(h), (l)(4), and (o).

(5) If the vent stream from an affected facility is routed to a distillation unit subject to subpart NNN and has no other releases to the air except for a pressure relief valve, the facility is exempt from all provisions of this subpart except for § 60.705(r).

(6) Any reactor process operating as part of a process unit which produces beverage alcohols, or which uses, contains, and produces no VOC is not an affected facility.

(7) Any reactor process that is subject to the provisions of subpart DDD is not an affected facility.

(8) Each affected facility operated with a concentration of total organic compounds (TOC) (less methane and ethane) in the vent stream less than 300 ppmv as measured by Method 18 or a concentration of TOC in the vent stream less than 150 ppmv as measured by Method 25A is exempt from all provisions of this subpart except for the test method and procedure and the reporting and recordkeeping requirements in § 60.704(h) and paragraphs (j), (l)(8), and (o) of § 60.705.

(d) Alternative means of compliance—

(1) Option to comply with part 65. Owners or operators of process vents that are subject to this subpart may choose to comply with the provisions of 40 CFR part 65, subpart D, to satisfy the requirements of §§ 60.702 through 60.705 and 60.708. The provisions of 40 CFR part 65 also satisfy the criteria of paragraphs (c)(2), (4), and (8) of this section. Other provisions applying to an owner or operator who chooses to comply with 40 CFR part 65 are provided in 40 CFR 65.1.

(2) Part 60, subpart A. Owners or operators who choose to comply with 40 CFR part 65, subpart D, must also comply with §§ 60.1, 60.2, 60.5, 60.6, 60.7(a)(1) and (4), 60.14, 60.15, and 60.16 for those process vents. All sections and paragraphs of subpart A of this part that are not mentioned in this paragraph (d)(2) do not apply to owners or operators of process vents complying with 40 CFR part 65, subpart D, except that provisions required to be met prior to implementing 40 CFR part 65 still apply. Owners and operators who choose to comply with 40 CFR part 65, subpart D, must comply with 40 CFR part 65, subpart A.

(3) Compliance date. Owners or operators who choose to comply with 40 CFR part 65, subpart D at initial startup shall comply with paragraphs (d)(1) and (2) of this section for each vent stream on and after the date on which the initial performance test is completed, but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated, or 180 days after the initial startup, whichever date comes first.

(4) Initial startup notification. Each owner or operator subject to the provisions of this subpart that chooses to comply with 40 CFR part 65, subpart D, at initial startup shall notify the Administrator of the specific provisions of 40 CFR 65.63(a)(1), (2), or (3), with which the owner or operator has elected to comply. Notification shall be submitted with the notifications of initial startup required by 40 CFR 65.5(b).

(NOTE: The intent of these standards is to minimize emissions of VOC through the application of best demonstrated technology (BDT). The numerical emission limits in these standards are expressed in terms of TOC, measured as TOC less methane and ethane. This emission limit reflects the performance of BDT.)

§ 60.701 Definitions.

As used in this subpart, all terms not defined here shall have the meaning given them in the Act and in subpart A of part 60, and the following terms shall have the specific meanings given them.

Batch operation means any non-continuous reactor process that is not characterized by steady-state conditions and in which reactants are not added and products are not removed simultaneously.

Boiler means any enclosed combustion device that extracts useful energy in the form of steam and is not an incinerator.
By compound means by individual stream components, not carbon equivalents.

Car-seal means a seal that is placed on a device that is used to change the position of a valve (e.g., from opened to closed) in such a way that the position of the valve cannot be changed without breaking the seal.

Combustion device means an individual unit of equipment, such as an incinerator, flare, boiler, or process heater, used for combustion of a vent stream discharged from the process vent.

Continuous recorder means a data recording device recording an instantaneous data value at least once every 15 minutes.

Flame zone means the portion of the combustion chamber in a boiler occupied by the flame envelope.

Halogenated vent stream means any vent stream determined to have a total concentration (by volume) of compounds containing halogens of 20 ppmv (by compound) or greater.

Incinerator means an enclosed combustion device that is used for destroying organic compounds. If there is energy recovery, the energy recovery section and the combustion chambers are not of integral design. That is, the energy recovery section and the combustion section are not physically formed into one manufactured or assembled unit but are joined by ducts or connections carrying flue gas.

Primary fuel means the fuel fired through a burner or a number of similar burners. The primary fuel provides the principal heat input to the device, and the amount of fuel is sufficient to sustain operation without the addition of other fuels.

Process heater means a device that transfers heat liberated by burning fuel directly to process streams or to heat transfer liquids other than water.

Process unit means equipment assembled and connected by pipes or ducts to produce, as intermediates or final products, one or more of the chemicals in §60.707. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.

Product means any compound or chemical listed in §60.707 which is produced for sale as a final product as that chemical, or for use in the production of other chemicals or compounds. By-products, co-products, and intermediates are considered to be products.

Reactor processes are unit operations in which one or more chemicals, or reactants other than air, are combined or decomposed in such a way that their molecular structures are altered and one or more new organic compounds are formed.

Relief valve means a valve used only to release an unplanned, nonroutine discharge. A relief valve discharge results from an operator error, a malfunction such as a power failure or equipment failure, or other unexpected cause that requires immediate venting of gas from process equipment in order to avoid safety hazards or equipment damage.

Secondary fuel means a fuel fired through a burner other than a primary fuel burner. The secondary fuel may provide supplementary heat in addition to the heat provided by the primary fuel.

Total organic compounds or TOC means those compounds measured according to the procedures in §60.704(b)(4). For the purposes of measuring molar composition as required in §60.704(d)(2)(i) and §60.704(d)(2)(ii), hourly emission rate as required in §60.704(d)(5) and §60.704(e), and TOC concentration as required in §60.704(b)(4) and §60.705(d)(4), those compounds which the Administrator has determined do not contribute appreciably to the formation of ozone are to be excluded.

Total resource effectiveness or TRE index value means a measure of the supplemental total resource requirement per unit reduction of TOC associated
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with a vent stream from an affected reactor process facility, based on vent stream flow rate, emission rate of TOC, net heating value, and corrosion properties (whether or not the vent stream contains halogenated compounds), as quantified by the equation given under §60.704(c).

Vent stream means any gas stream discharged directly from a reactor process to the atmosphere or indirectly to the atmosphere after diversion through other process equipment. The vent stream excludes relief valve discharges and equipment leaks.

§ 60.702 Standards.

Each owner or operator of any affected facility shall comply with paragraph (a), (b), or (c) of this section for each vent stream on and after the date on which the initial performance test required by §60.8 and §60.704 is completed, but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated, or 180 days after the initial start-up, whichever date comes first. Each owner or operator shall either:

(a) Reduce emissions of TOC (less methane and ethane) by 98 weight-percent, or to a TOC (less methane and ethane) concentration of 20 ppmv, on a dry basis corrected to 3 percent oxygen, whichever is less stringent. If a boiler or process heater is used to comply with this paragraph, then the vent stream shall be introduced into the flame zone of the boiler or process heater; or

(b) Combust the emissions in a flare that meets the requirements of §60.18; or

(c) Maintain a TRE index value greater than 1.0 without use of a VOC emission control device.

§ 60.703 Monitoring of emissions and operations.

(a) The owner or operator of an affected facility that uses an incinerator to seek to comply with the TOC emission limit specified under §60.702(a) shall install, calibrate, maintain, and operate according to manufacturer’s specifications the following equipment:

(1) A temperature monitoring device equipped with a continuous recorder and having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater.

(i) Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox or in the ductwork immediately downstream of the firebox in a position before any substantial heat exchange is encountered.

(ii) Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

(2) A flow indicator that provides a record of vent stream flow diverted from being routed to the incinerator at least once every 15 minutes for each affected facility, except as provided in paragraph (a)(2)(ii) of this section.

(i) The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the incinerator, resulting in its emission to the atmosphere.

(ii) Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(b) The owner or operator of an affected facility that uses a flare to seek to comply with §60.702(b) shall install, calibrate, maintain, and operate according to manufacturer’s specifications the following equipment:

(1) A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.

(2) A flow indicator that provides a record of vent stream flow diverted from being routed to the flare at least once every 15 minutes for each affected facility, except as provided in paragraph (b)(2)(ii) of this section.

(i) The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the flare, resulting in its emission to the atmosphere.
(ii) Where the bypass line valve is secured in the closed position with a car-
seal or a lock-and-key type configuration, a flow indicator is not required. A
visual inspection of the seal or closure mechanism shall be performed at least
once every month to ensure that the valve is maintained in the closed posi-
tion and the vent stream is not di-
verted through the bypass line.

(c) The owner or operator of an af-
fected facility that uses a boiler or
process heater to seek to comply with
§60.702(a) shall install, calibrate, main-
tain and operate according to the man-
ufacturer’s specifications the following
equipment:

(1) A flow indicator that provides a
record of vent stream flow diverted
from being routed to the boiler or pro-
cess heater at least once every 15 min-
utes for each affected facility, except
as provided in paragraph (c)(1)(ii) of
this section.

(i) The flow indicator shall be in-
stalled at the entrance to any bypass
line that could divert the vent stream
from being routed to the boiler or pro-
cess heater, resulting in its emission to
the atmosphere.

(ii) Where the bypass line valve is se-
cured in the closed position with a car-
seal or a lock-and-key type configura-
tion, a flow indicator is not required. A
visual inspection of the seal or closure
mechanism shall be performed at least
once every month to ensure that the
valve is maintained in the closed posi-
tion and the vent stream is not di-
verted through the bypass line.

(2) A temperature monitoring device
in the firebox equipped with a contin-
uous recorder and having an accuracy
of ±1 percent of the temperature being
monitored expressed in degrees Celsius
or ±0.5 °C, whichever is greater, for
boilers or process heaters of less than
44 MW (150 million Btu/hr) design heat
input capacity. Any vent stream intro-
duced with primary fuel into a boiler or
process heater is exempt from this
requirement.

(i) An integrating steam flow moni-
toring device having an accuracy of ±10
percent, and a carbon bed temperature
monitoring device having an accuracy
of ±1 percent of the temperature being
monitored expressed in degrees Celsius
or ±0.5 °C, whichever is greater, both
equipped with a continuous recorder; or

(ii) An organic monitoring device
used to indicate the concentration
level of organic compounds exiting the
recovery device based on a detection
principle such as infra-red,
photoionization, or thermal conduc-
tivity, each equipped with a continuous
recorder.

(2) Where a condenser is the final re-
cov-ery device in the recovery system:

(i) A condenser exit (product side)
temperature monitoring device equip-
ated with a continuous recorder
and having an accuracy of ±1 percent of
the temperature being monitored ex-
pressed in degrees Celsius or ±0.5 °C,
whichever is greater; or

(ii) An organic monitoring device
used to indicate the concentration
level of organic compounds exiting the
recovery device based on a detection
principle such as infra-red,
photoionization, or thermal conduc-
tivity, each equipped with a continuous
recorder.

(3) Where a carbon adsorber is the
final recovery device unit in the recov-
ery system:

(i) An integrating steam flow moni-
toring device having an accuracy of ±10
percent, and a carbon bed temperature
monitoring device having an accuracy
of ±1 percent of the temperature being
monitored expressed in degrees Celsius
or ±0.5 °C, whichever is greater, both
equipped with a continuous recorder; or

(ii) An organic monitoring device
used to indicate the concentration
level of organic compounds exiting the
recovery device based on a detection
principle such as infra-red,
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photoionization, or thermal conductivity, each equipped with a continuous recorder.

(e) An owner or operator of an affected facility seeking to demonstrate compliance with the standards specified under §60.702 with a control device other than an incinerator, boiler, process heater, or flare, or a recovery device other than an absorber, condenser, or carbon adsorber, shall provide to the Administrator information describing the operation of the control device or recovery device and the process parameter(s) which indicate proper operation and maintenance of the device. The Administrator may request further information and will specify appropriate monitoring procedures or requirements.

§ 60.704 Test methods and procedures.

(a) For the purpose of demonstrating compliance with §60.702, all affected facilities shall be run at full operating conditions and flow rates during any performance test.

(b) The following methods in appendix A to this part, except as provided under §60.8(b), shall be used as reference methods to determine compliance with the emission limit or percent reduction efficiency specified under §60.702(a).

(1) Method 1 or 1A, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determination of vent stream molar composition or TOC (less methane and ethane) reduction efficiency shall be prior to the inlet of the control device and after the recovery system.

(2) Method 2, 2A, 2C, or 2D, as appropriate, for determination of the gas volumetric flow rates.

(3) The emission rate correction factor, integrated sampling and analysis procedure of Method 3B shall be used to determine the oxygen concentration (%O2) for the purposes of determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the TOC samples, and the samples shall be taken during the same time that the TOC samples are taken. The TOC concentration corrected to 3 percent O2 (Cc) shall be computed using the following equation:

\[
C_C = \frac{C_{TOC}}{\frac{17.9}{20.9} - \%O_{2d}}
\]

where:
- \(C_C\) = Concentration of TOC corrected to 3 percent O2, dry basis, ppm by volume.
- \(C_{TOC}\) = Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.
- \(\%O_{2d}\) = Concentration of O2, dry basis, percent by volume.

(4) Method 18 to determine the concentration of TOC in the control device outlet and the concentration of TOC in the inlet when the reduction efficiency of the control device is to be determined.

(i) The minimum sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at approximately 15-minute intervals.

(ii) The emission reduction (R) of TOC (minus methane and ethane) shall be determined using the following equation:

\[
R = \frac{E_i - E_o}{E_i} \times 100
\]

where:
- R = Emission reduction, percent by weight.
- \(E_i\) = Mass rate of TOC entering the control device, kg TOC/hr.
- \(E_o\) = Mass rate of TOC discharged to the atmosphere, kg TOC/hr.

(iii) The mass rates of TOC (\(E_i, E_o\)) shall be computed using the following equations:

\[
E_i = K_2 \sum_{j=1}^{n} C_{ij} M_{ij} Q_i
\]

\[
E_o = K_2 \sum_{j=1}^{n} C_{oj} M_{ij} Q_o
\]

where:
- \(C_{ij}\), \(C_{oj}\) = Concentration of sample component “j” of the gas stream at the inlet and outlet of the control device, respectively, dry basis, ppm by volume.
- \(M_{ij}\), \(M_{oj}\) = Molecular weight of sample component “j” of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole).
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Q, Qo = Flow rate of gas stream at the inlet and outlet of the control device, respectively, dscm/min (dscf/hr).

K2 = Constant, 2.494×10−6 ( l/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20 °C.

(iv) The TOC concentration (C_{TOC}) is the sum of the individual components and shall be computed for each run using the following equation:

\[ C_{TOC} = \sum_{j=1}^{n} C_j \]

where:

\( C_{TOC} \) = Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.

\( C_j \) = Concentration of sample components "j", dry basis, ppm by volume.

\( n \) = Number of components in the sample.

(5) The requirement for an initial performance test is waived, in accordance with § 60.8(b), for the following:

(i) When a boiler or process heater with a design heat input capacity of 44 MW (150 million Btu/hour) or greater is used to seek compliance with § 60.702(a).

(ii) When a vent stream is introduced into a boiler or process heater with the primary fuel.

(iii) The Administrator reserves the option to require testing at such other times as may be required, as provided for in section 114 of the Act.

(6) For purposes of complying with the 98 weight-percent reduction in §60.702(a), if the vent stream entering a boiler or process heater with a design capacity less than 44 MW (150 million Btu/hour) is introduced with the combustion air or as secondary fuel, the weight-percent reduction of TOC (minus methane and ethane) across the combustion device shall be determined by comparing the TOC (minus methane and ethane) in all combusted vent streams, primary fuels, and secondary fuels with the TOC (minus methane and ethane) exiting the combustion device.

(c) When a flare is used to seek to comply with §60.702(b), the flare shall comply with the requirements of §60.18.

(d) The following test methods in appendix A to this part, except as provided under §60.8(b), shall be used for determining the net heating value of the gas combusted to determine compliance under §60.702(b) and for determining the process vent stream TRE index value to determine compliance under §60.700(c)(2) and §60.702(c).

(1)(i) Method 1 or 1A, as appropriate, for selection of the sampling site. The sampling site for the vent stream flow rate and molar composition determination prescribed in §60.704 (d)(2) and (d)(3) shall be, except for the situations outlined in paragraph (d)(1)(ii) of this section, prior to the inlet of any control device, prior to any postreactor dilution of the stream with air, and prior to any postreactor introduction of halogenated compounds into the process vent stream. No traverse site selection method is needed for vents smaller than 4 inches in diameter.

(ii) If any gas stream other than the reactor vent stream is normally conducted through the final recovery device:

(A) The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which any nonreactor stream or stream from a nonaffected reactor process is introduced.

(B) The efficiency of the final recovery device is determined by measuring the TOC concentration using Method 18 at the inlet to the final recovery device after the introduction of any vent stream and at the outlet of the final recovery device.

(C) This efficiency of the final recovery device shall be applied to the TOC concentration measured prior to the final recovery device and prior to the introduction of any nonreactor stream or stream from a nonaffected reactor process to determine the concentration of TOC in the reactor process vent stream from the final recovery device. This concentration of TOC is then used to perform the calculations outlined in §60.704(d) (4) and (5).

(2) The molar composition of the process vent stream shall be determined as follows:

(i) Method 18 to measure the concentration of TOC including those containing halogens.

(ii) ASTM D1946–77 or 90 (Reapproved 1994) (incorporation by reference as
specified in §60.17 of this part) to measure the concentration of carbon monoxide and hydrogen.

(iii) Method 4 to measure the content of water vapor.

(3) The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.

(4) The net heating value of the vent stream shall be calculated using the following equation:

\[ H_T = K_1 \sum_{j=1}^{n} C_j H_j \left(1 - B_{ws}\right) \]

where:

- \( H_T \) = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C, as in the definition of \( Q_s \) (vent stream flow rate).
- \( K_1 \) = Constant, 1.740 \times 10^{-7} (l/ppm) (g-mole/scm) (MJ/kcal), where standard temperature for (g-mole/scm) is 20 °C.
- \( C_j \) = Concentration on a dry basis of compound \( j \) in ppm as measured by Method 18 as indicated in §60.704(d)(2).
- \( H_j \) = Net heat of combustion of compound \( j \), kcal/g-mole, based on combustion at 25 °C and 760 mm Hg. The heats of combustion of vent stream components would be required to be determined using ASTM D2382-76 or 88 or D4809-95 (incorporation by reference as specified in §60.17 of this part) if published values are not available or cannot be calculated.
- \( B_{ws} \) = Water vapor content of the vent stream, proportion by volume.

(5) The emission rate of TOC in the vent stream shall be calculated using the following equation:

\[ E_{TOC} = K_2 \sum_{j=1}^{n} C_j M_j Q_s \]

where:

- \( E_{TOC} \) = Emission rate of TOC in the sample, kg/hr.
- \( K_2 \) = Constant, 2.494 \times 10^{-6} (l/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20 °C.
- \( C_j \) = Concentration on a dry basis of compound \( j \) in ppm as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (incorporation by reference as specified in §60.17 of this part) as indicated in §60.704(d)(2).
- \( M_j \) = Molecular weight of sample \( j \), g/g-mole.
- \( Q_s \) = Vent stream flow rate (dscm/min) at a temperature of 20 °C.

(6) The total vent stream concentration (by volume) of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Method 18.

(e) For purposes of complying with §§60.700(c)(2) and 60.702(c), the owner or operator of a facility affected by this subpart shall calculate the TRE index value of the vent stream using the equation for incineration in paragraph (e)(1) of this section for halogenated vent streams. The owner or operator of an affected facility with a nonhalogenated vent stream shall determine the TRE index value by calculating values using both the incinerator equation in (e)(1) of this section and the flare equation in (e)(2) of this section and selecting the lower of the two values.

(1) The equation for calculating the TRE index value of a vent stream controlled by an incinerator is as follows:

\[ \text{TRE} = \frac{1}{E_{TOC}} \left[ a + b(Q_s)^{0.88} + c(Q_s) + d(Q_s) \right] \]

(1) Where for a vent stream flow rate (scm/min) at a standard temperature of 20 °C that is greater than or equal to 14.2 scm/min:

- \( Q_s \) = Vent stream flow rate (scm/min) at a standard temperature of 20 °C.
- \( H_T \) = Vent stream net heating value (MJ/scm), where the enthalpy per mole of vent stream is based on combustion at 25 °C.
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The net heating value of a gas is the net enthalpy per mole of gas, and can be obtained from Table 1 except for Category E vent streams, where

HVAL = Vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C as in definition of Q.

Ys = 14.2 scm/min. For all vent streams except Category E vent streams, where Ys = 14.2(Hr)/3.6.

The set of coefficients that apply to a vent stream can be obtained from Table 1.

Table 1—Total Resource Effectiveness Coefficients for Vent Streams Controlled by an Incinerator Subject to the New Source Performance Standards for Reactor Processes

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<th>Design Category</th>
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<th>c</th>
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</tbody>
</table>

Flow = Vent stream flow rate (scm/min), at a standard temperature of 20 °C.

Q = Qs for all vent stream categories listed in Table 1 except for Category E vent streams.

TRE = TRE index value.

Qs = 14.2 scm/min.

Hr = (FLOW)(HVAL)/14.2

where the following inputs are used:

FLOW = Vent stream flow rate (scm/min), at a standard temperature of 20 °C.

Ys = Hourly emissions of TOC reported in kg/hr.

a, b, c, d, e, and f are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 1.
(2) The equation for calculating the TRE index value of a vent stream controlled by a flare is as follows:

$$TRE = \frac{1}{E_{TOC}} \left[ a(Q_s) + b(Q_s)^{0.8} + c(Q_s)(H_T) + d(E_{TOC}) + e \right]$$

where:
- $TRE$ = TRE index value.
- $E_{TOC}$ = Hourly emission rate of TOC reported in kg/hr.
- $Q_s$ = Vent stream flow rate (scm/min) at a standard temperature of 20°C.
- $H_T$ = Vent stream net heating value (MJ/scm) at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C as in the definition of $Q_s$.
- $a$, $b$, $c$, $d$, and $e$ are coefficients. The set of coefficients that apply to a vent stream can be obtained from table 2.

<table>
<thead>
<tr>
<th>$H_T$ Value</th>
<th>$a$</th>
<th>$b$</th>
<th>$c$</th>
<th>$d$</th>
<th>$e$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_T &lt; 11.2$ MJ/scm</td>
<td>2.25</td>
<td>0.286</td>
<td>-0.193</td>
<td>-0.0051</td>
<td>2.08</td>
</tr>
<tr>
<td>$H_T \geq 11.2$ MJ/scm</td>
<td>0.309</td>
<td>0.0619</td>
<td>-0.0043</td>
<td>-0.0034</td>
<td>2.08</td>
</tr>
</tbody>
</table>

(f) Each owner or operator of an affected facility seeking to comply with §60.700(c)(2) or §60.702(c) shall recalculate the TRE index value for that affected facility whenever process changes are made. Examples of process changes include changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The TRE index value shall be recalculated based on test data, or on best engineering estimates of the effects of the change on the recovery system.

(1) Where the recalculated TRE index value is less than or equal to 1.0, the owner or operator shall notify the Administrator within 1 week of the recalculation and shall conduct a performance test according to the methods and procedures required by §60.704 in order to determine compliance with §60.702 (a) or (b). Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.

(g) Any owner or operator subject to the provisions of this subpart seeking to demonstrate compliance with §60.700(c)(4) shall use Method 2, 2A, 2C, or 2D of appendix A to 40 CFR part 60, as appropriate, for determination of volumetric flow rate.

(h) Each owner or operator seeking to demonstrate that a reactor process vent stream has a TOC concentration for compliance with the low concentration exemption in §60.700(c)(8) shall conduct an initial test to measure TOC concentration.

(1) The sampling site shall be selected as specified in paragraph (d)(1)(i) of this section.
(2) Method 18 or Method 25A of part 60, appendix A shall be used to measure concentration.

(3) Where Method 18 is used to qualify for the low concentration exclusion in §60.700(c)(8), the procedures in §60.704(b)(4) (i) and (iv) shall be used to measure TOC concentration, and the procedures of §60.704(b)(3) shall be used to correct the TOC concentration to 3 percent oxygen. To qualify for the exclusion, the results must demonstrate that the concentration of TOC, corrected to 3 percent oxygen, is below 300 ppm by volume.

(4) Where Method 25A is used, the following procedures shall be used to calculate ppm by volume TOC concentration, corrected to 3 percent oxygen:
   (i) Method 25A shall be used only if a single organic compound is greater than 50 percent of total TOC, by volume, in the reactor process vent stream. This compound shall be the principal organic compound.
   (ii) The principal organic compound may be determined by either process knowledge or test data collected using an appropriate EPA Reference Method. Examples of information that could constitute process knowledge include calculations based on material balances, process stoichiometry, or previous test results provided the results are still relevant to the current reactor process vent stream conditions.
   (iii) The principal organic compound shall be used as the calibration gas for Method 25A.
   (iv) The span value for Method 25A shall be 300 ppmv.
   (v) Use of Method 25A is acceptable if the response from the high-level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.
   (vi) The owner or operator shall demonstrate that the concentration of TOC including methane and ethane measured by Method 25A, corrected to 3 percent oxygen, is below 150 ppm by volume to qualify for the low concentration exclusion in §60.700(c)(8).
   (vii) The concentration of TOC shall be corrected to 3 percent oxygen using the procedures and equation in paragraph (b)(3) of this section.
The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every 15 minutes and averaged over the same time period of the performance testing, and

(ii) The percent reduction of TOC determined as specified in §60.704(b) achieved by the incinerator, or the concentration of TOC (ppmv, by compound) determined as specified in §60.704(b) at the outlet of the control device on a dry basis corrected to 3 percent oxygen.

Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.702(a) through use of a boiler or process heater:

(i) A description of the location at which the vent stream is introduced into the boiler or process heater, and

(ii) The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 MW (150 million Btu/hr) measured at least every 15 minutes and averaged over the same time period of the performance testing.

Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.702(b) through use of a smokeless flare, flare design (i.e., steam-assisted, air-assisted or nonassisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the performance test, continuous records of the flare pilot flame monitoring, and records of all periods of operations during which the pilot flame is absent.

Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.702(c):

(i) Where an absorber is the final recovery device in the recovery system, the exit specific gravity (or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved by the Administrator), and average exit temperature, of the absorbing liquid measured at least every 15 minutes and averaged over the same time period of the performance testing (both measured while the vent stream is normally routed and constituted); or

(ii) Where a condenser is the final recovery device in the recovery system, the average exit (product side) temperature measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is routed and constituted normally; or

(iii) Where a carbon adsorber is the final recovery device in the recovery system, the total steam mass flow measured at least every 15 minutes and averaged over the same time period of the performance test (full carbon bed cycle), temperature of the carbon bed after regeneration and within 15 minutes of completion of any cooling cycle(s), and duration of the carbon bed steaming cycle (all measured while the vent stream is routed and constituted normally); or

(iv) As an alternative to §60.705(b)(4)(i), (ii) or (iii), the concentration level or reading indicated by the organics monitoring device at the outlet of the absorber, condenser, or carbon adsorber, measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is normally routed and constituted.

(v) All measurements and calculations performed to determine the TRE index value of the vent stream.

Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under §60.703 (a) and (c) as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Administrator may at any time require a report of these data. Where a combustion device is used to comply with §60.702(a), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

(1) For thermal incinerators, all 3-hour periods of operation during which the average combustion temperature was more than 28 °C (50 °F) below the
average combustion temperature during
the most recent performance test
at which compliance with §60.702(a)
was determined.

(2) For catalytic incinerators, all 3-
hour periods of operation during which
the average temperature of the vent
stream immediately before the cata-
lyst bed is more than 28 °C (50 °F) below
the average temperature of the vent
stream during the most recent per-
formance test at which compliance
with §60.702(a) was determined. The
owner or operator also shall record all
3-hour periods of operation during which
the average temperature dif-
cence across the catalyst bed is less
than 80 percent of the average tempera-
ture difference of the bed during the
most recent performance test at which
compliance with §60.702(a) was deter-
dined.

(3) All 3-hour periods of operation
during which the average combustion
temperature was more than 28 °C (50 °F)
below the average combustion tem-
perature during the most recent per-
formance test at which compliance
with §60.702(a) was determined for boil-
ers or process heaters with a design
heat input capacity of less than 44 MW
(150 million Btu/hr) where the vent
stream is introduced with the combus-
tion air or as a secondary fuel.

(4) For boilers or process heaters,
whenever there is a change in the loca-
tion at which the vent stream is intro-
duced into the flame zone as required
under §60.702(a).

(d) Each owner or operator subject to
the provisions of this subpart shall
keep records of the following:

(1) Up-to-date, readily accessible con-
tinuous records of the flow indication
specified under §60.703(a)(2)(i),
§60.703(b)(2)(i), and §60.703(c)(1)(i), as
well as up-to-date, readily accessible
records of all periods and the duration
when the vent stream is diverted from
the control device.

(2) Where a seal mechanism is used to
comply with §60.703(a)(2)(i),
§60.703(b)(2)(ii), and §60.703(c)(1)(ii), a
record of continuous flow is not re-
quired. In such cases, the owner or op-
erator shall keep up-to-date, readily
accessible records of all periods and
the duration when the seal mechanism
is broken, the bypass line valve position
has changed, the serial number of the
broken car-seal has changed, or
when the key for a lock-and-key type
configuration has been checked out.

(e) Each owner or operator subject to
the provisions of this subpart shall
keep up-to-date, readily accessible con-
tinuous records of the flare pilot flame
monitoring specified under §60.703(b),
as well as up-to-date, readily accessible
records of all periods of operations in
which the pilot flame is absent.

(f) Each owner or operator subject to
the provisions of this subpart shall
keep up-to-date, readily accessible con-
tinuous records of the equipment oper-
at ing parameters specified to be mon-
tored under §60.703(d), as well as up-to-
date, readily accessible records of peri-
ods of operation during which the pa-
parameter boundaries established during
the most recent performance test are
exceeded. The Administrator may at
any time require a report of these data.
Where an owner or operator seeks to
comply with §60.702(c), periods of oper-
ation during which the parameter
boundaries established during the most
recent performance tests are exceeded
are defined as follows:

(1) Where an absorber is the final re-
covery device in a recovery system,
and where an organic compound moni-
toring device is not used:

(i) All 3-hour periods of operation
during which the average absorbing liq-
uid temperature was more than 11 °C
(20 °F) above the average absorbing liq-
uid temperature during the most re-
d recent performance test, or
(ii) All 3-hour periods of operation
during which the average absorbing liq-
uid specific gravity was more than 0.1
unit above, or more than 0.1 unit
below, the average absorbing liquid
specific gravity during the most recent
performance test (unless monitoring of
an alternative parameter, which is a
measure of the degree of absorbing li-
quid saturation, is approved by the Ad-
ministrator, in which case he will de-
fine appropriate parameter boundaries
and periods of operation during which
they are exceeded).

(2) Where a condenser is the final re-
covery device in a system, and where
an organic compound monitoring device is not used, all 3-hour periods of operation during which the average exit (product side) condenser operating temperature was more than 6 °C (11 °F) above the average exit (product side) operating temperature during the most recent performance test.

(3) Where a carbon adsorber is the final recovery device in a system, and where an organic compound monitoring device is not used:
   (i) All carbon bed regeneration cycles during which the total mass steam flow was more than 10 percent below the total mass steam flow during the most recent performance test, or
   (ii) All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration (and after completion of any cooling cycle(s)) was more than 10 percent or 5 °C greater, whichever is less stringent, than the carbon bed temperature (in degrees Celsius) during the most recent performance test.

(4) Where an absorber, condenser, or carbon adsorber is the final recovery device in the recovery system and where an organic compound monitoring device is used, all 3-hour periods of operation during which the average organic compound concentration level or reading of organic compounds in the exhaust gases is more than 20 percent greater than the exhaust gas organic compound concentration level or reading measured by the monitoring device during the most recent performance test.

(g) Each owner or operator of an affected facility subject to the provisions of this subpart and seeking to demonstrate compliance with §60.702(c) shall keep up-to-date, readily accessible records of:
   (1) Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal or addition of recovery equipment or reactors;
   (2) Any recalculation of the TRE index value performed pursuant to §60.704(f); and
   (3) The results of any performance test performed pursuant to the methods and procedures required by §60.704(d).

(h) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the flow rate cutoff in §60.700(c)(4) shall keep up-to-date, readily accessible records to indicate that the vent stream flow rate is less than 0.011 scm/min and of any change in equipment or process operation that increases the operating vent stream flow rate, including a measurement of the new vent stream flow rate.

(i) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the design production capacity provision in §60.700(c)(3) shall keep up-to-date, readily accessible records of any change in equipment or process operation that increases the design production capacity of the process unit in which the affected facility is located.

(j) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the low concentration exemption in §60.700(c)(8) shall keep up-to-date, readily accessible records of any change in equipment or process operation that increases the concentration of the vent stream of the affected facility.

(k) Each owner or operator subject to the provisions of this subpart is exempt from the quarterly reporting requirements contained in §60.7(c) of the General Provisions.

(l) Each owner or operator that seeks to comply with the requirements of this subpart by complying with the requirements of §60.700 (c)(2), (c)(3), or (c)(4) or §60.702 shall submit to the Administrator semiannual reports of the following recorded information. The initial report shall be submitted within 6 months after the initial start-up date.
   (1) Exceedances of monitored parameters recorded under §60.705 (c), (f), and (g).
   (2) All periods and duration recorded under §60.705(d) when the vent stream is diverted from the control device to the atmosphere.
   (3) All periods recorded under §60.705(f) in which the pilot flame of the flare was absent.
   (4) Any change in equipment or process operation that increases the operating vent stream flow rate above the
low flow exemption level in § 60.700(c)(4), including a measurement of the new vent stream flow rate, as recorded under § 60.705(i). These must be reported as soon as possible after the change and no later than 180 days after the change. These reports may be submitted either in conjunction with semiannual reports or as a single separate report. A performance test must be completed within the same time period to verify the recalculated flow value and to obtain the vent stream characteristics of heating value and \(E_{TOC}\). The performance test is subject to the requirements of § 60.8 of the General Provisions. Unless the facility qualifies for an exemption under any of the exemption provisions listed in § 60.700(c), except for the total resource effectiveness index greater than 8.0 exemption in § 60.700(c)(2), the facility must begin compliance with the requirements set forth in § 60.702.

(5) Any change in equipment or process operation, as recorded under paragraph (i) of this section, that increases the design production capacity above the low capacity exemption level in § 60.700(c)(3) and the new capacity resulting from the change for the reactor process unit containing the affected facility. These must be reported as soon as possible after the change and no later than 180 days after the change. These reports may be submitted either in conjunction with semiannual reports or as a single separate report. A performance test must be completed within the same time period to obtain the vent stream flow rate, heating value, and \(E_{TOC}\). The performance test is subject to the requirements of § 60.8 of the General Provisions. Unless the facility qualifies for an exemption under any of the exemption provisions listed in § 60.700(c), except for the TRE index greater than 8.0 exemption in § 60.700(c)(2), the facility must begin compliance with the requirements set forth in § 60.702.

(m) The requirements of § 60.705(l) remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with § 60.705(l), provided that they comply with the requirements established by the State.

(n) Each owner or operator that seeks to demonstrate compliance with § 60.700(c)(3) must submit to the Administrator an initial report detailing the design production capacity of the process unit.

(o) Each owner or operator that seeks to demonstrate compliance with § 60.700(c)(4) must submit to the Administrator an initial report including a flow rate measurement using the test methods specified in § 60.704.

(p) Each owner or operator that seeks to demonstrate compliance with
§ 60.700(c)(8) must submit to the Administrator an initial report including a concentration measurement using the test method specified in §60.704.

(q) The Administrator will specify appropriate reporting and record-keeping requirements where the owner or operator of an affected facility complies with the standards specified under §60.702 other than as provided under §60.703 (a), (b), (c), and (d).

(f) Each owner or operator whose reactor process vent stream is routed to a distillation unit subject to subpart NNN and who seeks to demonstrate compliance with §60.700(c)(5) shall submit to the Administrator a process design description as part of the initial report. This process design description must be retained for the life of the process. No other records or reports would be required unless process changes are made.

(s) Each owner or operator who seeks to demonstrate compliance with §60.702 (a) or (b) using a control device must maintain on file a schematic diagram of the affected vent streams, collection system(s), fuel systems, control devices, and bypass systems as part of the initial report. This schematic diagram must be retained for the life of the system.

(t) Each owner or operator who seeks to demonstrate compliance with §60.700(c)(2) must maintain a record of the initial test for determining the total resource effectiveness index and the results of the initial total resource effectiveness index calculation.


§60.707 Chemicals affected by subpart RRR.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaldehyde</td>
<td>75–07–0</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>64–19–7</td>
</tr>
<tr>
<td>Acetic anhydride</td>
<td>108–24–7</td>
</tr>
<tr>
<td>Acetone</td>
<td>67–64–1</td>
</tr>
<tr>
<td>Acetone cyanohydrin</td>
<td>75–86–5</td>
</tr>
<tr>
<td>Acetylene</td>
<td>74–86–2</td>
</tr>
<tr>
<td>Acrylic acid</td>
<td>70–10–7</td>
</tr>
<tr>
<td>Acrylonitrile</td>
<td>107–13–1</td>
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<tr>
<td>Adipic acid</td>
<td>124–04–9</td>
</tr>
<tr>
<td>Adiponitrile</td>
<td>111–69–3</td>
</tr>
<tr>
<td>Alcohols, C–11 or lower, mixtures.</td>
<td></td>
</tr>
<tr>
<td>Alcohols, C–12 or higher, mixtures.</td>
<td></td>
</tr>
<tr>
<td>Alcohols, C–12 or higher, unmixed.</td>
<td></td>
</tr>
<tr>
<td>Allyl chloride</td>
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<tr>
<td>Amylene</td>
<td>513–35–9</td>
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<td>Amylenes, mixed.</td>
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<tr>
<td>Aniline</td>
<td>62–53–3</td>
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<tr>
<td>Benzene</td>
<td>71–43–2</td>
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<tr>
<td>Benzenesulfonic acid</td>
<td>98–11–3</td>
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<tr>
<td>Benzenesulfonic acid C&lt;sub&gt;1&lt;/sub&gt;–&lt;sub&gt;C&lt;/sub&gt;–alkyl deriv-atives, sodium salts</td>
<td>68081–81–2</td>
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<tr>
<td>Benzylic chloride</td>
<td>100–44–7</td>
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<td>Biphosphol A</td>
<td>80–05–7</td>
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<td>Brometone</td>
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<td>1,3-Butadiene</td>
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<td>Butadiene and butene fractions.</td>
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<td>n-Butane</td>
<td>106–97–8</td>
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<tr>
<td>1,4-Butanediol</td>
<td>110–63–4</td>
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<td>Butanes, mixed.</td>
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<tr>
<td>1-Butene</td>
<td>106–98–9</td>
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<td>2-Butene</td>
<td>25167–67–3</td>
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<td>Butenes, mixed.</td>
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<td>n-Butyl acetate</td>
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<tr>
<td>Butyl acrylate</td>
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<td>78–92–2</td>
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<td>tert-Butyl alcohol</td>
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<td>Caprolactam</td>
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<td>Cumene hydroperoxide</td>
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<td>Cyanuric chloride</td>
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<td>Cyclohexane</td>
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<td>Cyclohexanone oxime</td>
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<td>110–83–8</td>
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<td>Diacetone alcohol</td>
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<td>1,4-Dichlorobutene</td>
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<td>3,4-Dichloro-1-butene</td>
<td>64037–54–3</td>
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### § 60.708 Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under section 111(c) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities which will not be delegated to States: §60.703(e).

Subpart SSS—Standards of Performance for Magnetic Tape Coating Facilities

**SOURCE:** 53 FR 38914, Oct. 3, 1988, unless otherwise noted.

---

### Table

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS No. 1</th>
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<tbody>
<tr>
<td>Dichlorodifluoromethane</td>
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<td>Dichlorodimethylsilane</td>
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<td>Dichloroforme</td>
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<td>Dihexamethylene</td>
<td>111–42–2</td>
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<td>Diisocyanate</td>
<td>25340–17–4</td>
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<td>Diethylene glycol</td>
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<td>Diisocyanate phthalate</td>
<td>26761–40–0</td>
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<tr>
<td>Dimethyl terephthalate</td>
<td>120–61–6</td>
</tr>
<tr>
<td>2,4-(and 2,6)-dinitrotoluene</td>
<td>121–14–2</td>
</tr>
<tr>
<td>Dicyclophthalate</td>
<td>606–20–2</td>
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<tr>
<td>Dodecylphthalate</td>
<td>117–81–7</td>
</tr>
<tr>
<td>Dodecylbenzene, non-linear</td>
<td>25378–22–7</td>
</tr>
<tr>
<td>Dodecylbenzenesulfonic acid</td>
<td>27176–87–0</td>
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<tr>
<td>Dodecylbenzenesulfonic acid, sodium salt</td>
<td>25155–30–0</td>
</tr>
<tr>
<td>Ethanol</td>
<td>106–89–8</td>
</tr>
<tr>
<td>Ethanolamine</td>
<td>141–43–6</td>
</tr>
<tr>
<td>Ethyl acetate</td>
<td>141–78–6</td>
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<tr>
<td>Ethyl acrylate</td>
<td>140–88–5</td>
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<tr>
<td>Ethylene</td>
<td>100–41–4</td>
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<tr>
<td>Ethylene chloride</td>
<td>75–90–3</td>
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<tr>
<td>Ethylene dinitromethane</td>
<td>74–85–1</td>
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<tr>
<td>Ethylene dichloride</td>
<td>106–93–4</td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>107–06–2</td>
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<tr>
<td>Ethylene glycol monobutyl ether</td>
<td>111–76–2</td>
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<tr>
<td>Ethylene glycol monomethyl ether acetate</td>
<td>111–15–9</td>
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<tr>
<td>Ethylene glycol monomethyl ether</td>
<td>109–86–4</td>
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<tr>
<td>Ethylene oxide</td>
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<tr>
<td>2-Ethylhexyl alcohol</td>
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<tr>
<td>(2-Ethylhexyl) amine</td>
<td>104–75–6</td>
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<tr>
<td>6-Ethyl-1,2,3,4-tetrahydroanthracenedione</td>
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<tr>
<td>Formaldehyde</td>
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<tr>
<td>Glycol</td>
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<tr>
<td>n-Heptane</td>
<td>142–82–5</td>
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<tr>
<td>Heptenes (mixed)</td>
<td>124–09–4</td>
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<tr>
<td>Hexamethylene diamine</td>
<td>3323–53–3</td>
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<tr>
<td>Hexamethylethelamine</td>
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<tr>
<td>Hexane</td>
<td>110–54–3</td>
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<tr>
<td>Isobutane</td>
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<tr>
<td>Isobutanol</td>
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<td>Isobutylene</td>
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<td>Isobutyraldehyde</td>
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<tr>
<td>Isopentane</td>
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<td>Isopropene</td>
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<td>Ketene</td>
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<td>Linear alcohols, ethoxylated, mixed</td>
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<tr>
<td>Linear alcohols, ethoxylated, and sulfated, sodium salt, mixed</td>
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<tr>
<td>Linear alcohols, sulfated, sodium salt, mixed</td>
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<tr>
<td>Linear alkylbenzene</td>
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<td>Maleic anhydride</td>
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<td>Mesityl oxide</td>
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<td>Methanol</td>
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<td>Methylamine</td>
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<td>ar-Methylbenzenediamine</td>
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<td>Methyl chloride</td>
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<tr>
<td>Methylene chloride</td>
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<tr>
<td>Methyl ethyl ketone</td>
<td>78–83–3</td>
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<td>Methyl isobutyl ketone</td>
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<td>Methyl methacrylate</td>
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<td>1-Methyl-2-pyrrolidine</td>
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<td>Nitrobenzene</td>
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<td>Nonene</td>
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<td>Nonyl alcohol</td>
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<td>Nonylphenol</td>
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<td>Octene</td>
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</table>

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Note: The CAS numbers listed above correspond to the Chemical Abstracts Service Registry numbers assigned to specific chemicals, isomers, or mixtures of chemicals. Some isomers or mixtures that are covered by the standards do not have CAS numbers assigned to them. The standards apply to all of the chemicals listed, whether CAS numbers have been assigned or not.

[58 FR 45962, Aug. 31, 1993, as amended at 60 FR 38238, Nov. 27, 1995]