

Table 1. REQUIRED MINIMUM INITIAL SO₂ EMISSION REDUCTION EFFICIENCY (Z_i)

H ₂ S content of acid gas (Y), %	Sulfur feed rate (X), LT/D			
	2.0 ≤ X ≤ 5.0	5.0 < X ≤ 15.0	15.0 < X ≤ 300.0	X > 300.0
Y ≥ 50	79.0	88.51X ^{0.0101} Y ^{0.0125} or 99.8, whichever is smaller		
20 ≤ Y < 50	79.0	88.51X ^{0.0101} Y ^{0.0125} or 97.9, whichever is smaller		97.9
10 ≤ Y < 20	79.0	88.51X ^{0.0101} Y ^{0.0125} or 93.5, whichever is smaller		93.5
Y < 10	79.0	79.0	79.0	79.0

Table 2. REQUIRED MINIMUM SO₂ EMISSION REDUCTION EFFICIENCY (Z_c)

H ₂ S content of acid gas (Y), %	Sulfur feed rate (X), LT/D			
	2.0 ≤ X ≤ 5.0	5.0 < X ≤ 15.0	15.0 < X ≤ 300.0	X > 300.0
Y ≥ 50	74.0	85.35X ^{0.0144} Y ^{0.0128} or 99.8, whichever is smaller		
20 ≤ Y < 50	74.0	85.35X ^{0.0144} Y ^{0.0128} or 97.5, whichever is smaller		97.5
10 ≤ Y < 20	74.0	85.35X ^{0.0144} Y ^{0.0128} or 90.8, whichever is smaller		90.8
Y < 10	74.0	74.0	74.0	74.0

§ 60.643 Compliance provisions.

formance test as required by § 60.8, the

(a)(1) To determine compliance with the standards for sulfur dioxide specified in § 60.642(a), during the initial per-

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minimum required sulfur dioxide emission reduction efficiency (Z) is compared to the emission reduction efficiency (R) achieved by the sulfur recovery technology.

(i) If $R \geq Z_i$, the affected facility is in compliance.

(ii) If $R < Z_i$, the affected facility is not in compliance.

(2) Following the initial determination of compliance as required by § 60.8, any subsequent compliance determinations that may be required by the Administrator would compare R to Z_c .

(b) The emission reduction efficiency (R) achieved by the sulfur reduction technology shall be determined using the procedures in § 60.644(c)(1).

[50 FR 40160, Oct. 1, 1985, as amended at 54 FR 6679, Feb. 14, 1989]

§ 60.644 Test methods and procedures.

(a) In conducting the performance tests required in § 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in paragraph § 60.8(b).

(b) During a performance test required by § 60.8, the owner or operator shall determine the minimum required reduction efficiencies (Z) of SO₂ emissions as required in § 60.642 (a) and (b) as follows:

(1) The average sulfur feed rate (X) shall be computed as follows:

$$X = KQ_a Y$$

Where:

X = average sulfur feed rate, Mg/D (LT/D).

Q_a = average volumetric flow rate of acid gas from sweetening unit, dscm/day (dscf/day).

Y = average H₂S concentration in acid gas feed from sweetening unit, percent by volume, expressed as a decimal.

$K = (32 \text{ kg S/kg-mole}) / ((24.04 \text{ dscm/kg-mole})(1000 \text{ kg S/ Mg})) = 1.331 \times 10^{-3} \text{ Mg/dscm}$, for metric units
 $= (32 \text{ lb S/lb-mole}) / ((385.36 \text{ dscf/lb-mole})(2240 \text{ lb S/long ton}))$
 $= 3.707 \times 10^{-5} \text{ long ton/dscf}$, for English units.

(2) The continuous readings from the process flowmeter shall be used to determine the average volumetric flow rate (Q_a) in dscm/day (dscf/day) of the

acid gas from the sweetening unit for each run.

(3) The Tutwiler procedure in § 60.648 or a chromatographic procedure following ASTM E-260 (incorporated by reference—see § 60.17) shall be used to determine the H₂S concentration in the acid gas feed from the sweetening unit. At least one sample per hour (at equally spaced intervals) shall be taken during each 4-hour run. The arithmetic mean of all samples shall be the average H₂S concentration (Y) on a dry basis for the run. By multiplying the result from the Tutwiler procedure by 1.62×10^{-3} , the units gr/100 scf are converted to volume percent.

(4) Using the information from paragraphs (b) (1) and (3), Tables 1 and 2 shall be used to determine the required initial (Z_i) and continuous (Z_c) reduction efficiencies of SO₂ emissions.

(c) The owner or operator shall determine compliance with the SO₂ standards in § 60.642 (a) or (b) as follows:

(1) The emission reduction efficiency (R) achieved by the sulfur recovery technology shall be computed for each run using the following equation:

$$R = (100 S) / (S + E)$$

(2) The level indicators or manual soundings shall be used to measure the liquid sulfur accumulation rate in the product storage tanks. Readings taken at the beginning and end of each run, the tank geometry, sulfur density at the storage temperature, and sample duration shall be used to determine the sulfur production rate (S) in kg/hr (lb/hr) for each run.

(3) The emission rate of sulfur shall be computed for each run as follows:

$$E = C_e Q_{sd} / K_1$$

Where:

E = emission rate of sulfur per run, kg/hr.

C_e = concentration of sulfur equivalent (SO₂ + reduced sulfur), g/dscm (lb/dscf).

Q_{sd} = volumetric flow rate of effluent gas, dscm/hr (dscf/hr).

K_1 = conversion factor, 1000 g/kg (7000 gr/lb).

(4) The concentration (C_e) of sulfur equivalent shall be the sum of the SO₂ and TRS concentrations, after being converted to sulfur equivalents. For each run and each of the test methods specified in this paragraph (c) of this section, the sampling time shall be at