1.8   **Required Overall Emissions Reduction Efficiency**

(a)   The procedures of this section shall be used for determining the required VOC emissions reduction efficiency whenever such a computation is required (e.g., specific RACT compliance determinations) or as otherwise specified by the Director.

(b)   Calculate the overall emissions reduction efficiency needed each day (or other specified averaging period) to demonstrate compliance with the applicable standard as follows:

     (1)   Obtain the applicable emissions limitation

     (2)   Calculate the emissions limitation on a solids basis according to the following equation:

$$S = \frac{C}{1 - \left(\dfrac{C}{d}\right)}$$

where:

S   =   VOC emission limitation in terms of kg VOC/L of coating solids (lb. VOC/gal. coating solids);

C   =   the VOC emission limitation in terms of kg VOC/L of coating (lbs./gal.), minus water and exempt compounds; and

d   =   the density of VOC for the converting emission limitation to a solids basis. The density equals 0.882 kg/L (7.36 lb./gal.), unless otherwise approved or specified in a specific case.

     (3)   (i)   Calculate the required overall reduction efficiency of the control system for the day (or other specified averaging period) according to the following equation:

$$R_{Req} = \left[\frac{VOC_a - S}{VOC_a}\right] x\ 100$$

where:

R_{Req} =   the required overall emission reduction efficiency of the control system for the day (or other specified averaging period)

VOC_a =   the weighted-average VOC content, as delivered to the applicator, of the coatings used each day (or other specified averaging period) on the subject coating line or operation, in units of kg VOC/L of coating solids (lb./gal.), as determined by the applicable test methods and procedures of Appendix A, and the procedure in paragraph (b)(4) of this section. [**Note:** the maximum VOC content of the coatings, VOC_{max}, as delivered to the applicator, used for each averaging period on the subject coating line may be used instead of the weighted-average VOC content.]

S   =   VOC emissions limitation in terms of kg VOC/L of coating solids (lbs. VOC/gal.)

     (ii)   Compare R_{Req} to the calculated overall reduction efficiency, R as determined in the applicable Source Catagory of Section 2.

R_{Req} must be less than or equal to R for each averageing period in order for compliance to be achieved.

     (4)   The weighted-average VOC content, as delivered to the coating applicator, of the coatings used on a coating line or operation in units of mass of VOC per unit volume of coating solids shall be calculated by the following equation:

$$VOC_a = \frac{\sum_{i=1}^{n} V_i\, VS_i\, CS_i}{\sum_{i=1}^{n} V_i\, CS_i}$$

where:

VOC_a =   the daily-weighted average VOC content, as delivered to the applicator, of the coatings used on a coating line or operation in units of mass of VOC per unit volume of coating solids

n =   the number of different coatings, as delivered to the applicator, used each averaging period on a coating line or operation

V_i =   the volume of each coating i, as delivered to the applicator, used for each averaging period on a coating line or operation in units of liters (L) (gallons [gal])

VS_i =   the volume fraction solids content of each coating i, as delivered to the applicator, used for each averaging period on a coating line or operation in units of L solids/L coating (gal/gal)

CS_i =   the VOC content of each coating i, as delivered to the applicator, used for each averaging period on a coating line or operation in units of kg VOC/L solids (lb/gal)