$$\begin{aligned}
T_{tot} &= 6(We - 12)^{-0.25} && 12 < We < 18 \\
T_{tot} &= 2.45(We - 12)^{0.25} && 18 < We < 45 \\
T_{tot} &= 14.1(We - 12)^{-0.25} && 45 < We < 351 \\
T_{tot} &= 0.766(We - 12)^{0.25} && 351 < We < 2670 \\
T_{tot} &= 5.5 && 2670 < We \lesssim 10^5
\end{aligned} \tag{33}$$

Note how the transitional Weber numbers for Eq. 33 roughly correspond to the transitional Weber numbers of the breakup morphology given in Table 2. This suggests that the physics governing breakup times is different for each breakup mode, and is further support for dividing secondary atomization into numerous breakup morphologies.

Dai and Faeth (2001) studied the total breakup time in the multimode regime and, like Pilch and Erdman (1987), noticed a local maximum near $We = 40$ similar to that given in Eq. 33. This local maximum occurs at the transition of bag/plume and plume/sheet-thinning breakup, as defined in the discussion of the multimode breakup regime.

For the case of viscous drops Pilch and Erdman (1987) cited the correlation given by Gelfand et al. (1975). However, they noted that Eq. 33 is more accurate than Eq. 34 for drops of low viscosity ($Oh < 0.1$). Note that Pilch and Erdman (1987) have a typographical error in their republication of Eq. 34; it has been corrected here.

$$T_{tot} = 4.5\left(1 + 1.2Oh^{0.74}\right) \quad We \approx We_c, \quad Oh < 0.3 \tag{34}$$

Similarly, Hsiang and Faeth (1992) proposed the following relation:

$$T_{tot} = 5/(1 - Oh/7) \quad We < 10^3, \quad Oh < 3.5 \tag{35}$$

Both equations are presented in Fig. 20. Reasonable agreement is seen at low $Oh$ where $T_{tot} \approx 5.0$. At $Oh > 0.5$ the correlations do not match one another. It is unknown which correlation is most accurate and more work is needed.