Terminal Velocity

$$V_t = 970.5208 \left[1 - e^{\left(-\frac{D}{0.177}\right)^{1.147}} \right] \quad [cm\ s^{-1}]$$

D: Diameter in cm

Rain Rate

$$R = \sum_{i=1}^{n} N(D_i)\, D_i^{\,3}\, V_t(D_i)\, \frac{\pi}{6}\, \delta D \quad [m\ s^{-1}]$$

$N(D)$: Distribution at Diameter D $[m^{-4}]$
D: Diameter [m]
$V_t(D)$: Terminal Velocity at Diameter D $[m\ s^{-1}]$

Conversion to $mm\ hr^{-1}$

$$\frac{m}{s} \cdot \frac{1000mm}{m} \cdot \frac{3600s}{hr}$$