Separation rate $T(x)$ and distribution functions $q_\alpha(x_a), Q_\alpha(x_a)$

$q_\alpha(x_a)$ — frequency distribution of particle characteristic x_a

$Q_\alpha(x_a)$ — cummulative distribution function of particle characteristic x_a

$$Q_\alpha(x_a) = P(x_{P,a} < x_a) = \int_0^{x_a} q_\alpha(\xi) d\xi$$

$$q_\alpha(x_a) = \frac{dQ_\alpha(x_a)}{dx_a}$$

$$\int_0^\infty q_\alpha(\xi) d\xi = 1$$

Designation, Particle characteristic x_a	Index of $q_\alpha(x_a), Q_\alpha(x_a)$
Number of particles	0
Particle size	1
Particle surface	2
Particle volume	3

$T(x)$ — particle separation rate, cut function

$$T(x) = 1 - \frac{\dot{N}_{clean\ gas}(x)}{\dot{N}_{feed}(x)}$$

x_{50} — cut size; $\quad T(x_{50}) = 0.5$

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