radius of gyration, *s*

A parameter characterizing the size of a particle of any shape. For a rigid particle consisting of mass elements of mass m_i, each located at a distance r_i from the centre of mass, the radius of gyration, s, is defined as the square root of the mass-average of r_i^2 for all the mass elements, i.e.

$$s = \sqrt{\frac{\sum_i m_i r_i^2}{\sum_i m_i}}$$

For a non-rigid particle, an average over all conformations is considered, i.e.

$$\sqrt{<s^2>} = \frac{\sqrt{<\sum_i m_i r_i^2>}}{\sqrt{\sum_i m_i}}$$

The subscript zero is used to indicate unperturbed dimensions, as in $<s^2>_0^{1/2}$.

Source:
Purple Book, p. 48