Indicator	**Acronym**	**Formula**	**Reference**
Inradius Ratio	INR	$\frac{2r}{h}$	Gillette et al., "Error estimates for generalized barycentric interpolation," *Advances in Computational Mathematics*, 2012
Outradius Ratio	OUR	$\frac{h}{2R}$	Gillette et al., "Error estimates for generalized barycentric interpolation," *Advances in Computational Mathematics*, 2012
Circle Ratio	CIR	$\frac{r}{R}$	Attene et al., "Benchmarking the geometrical robustness of a virtual element Poisson solver," *Mathematics and Computers in Simulation*, 2021
Kernel Radius Ratio	KRR	$\frac{r_K}{R}$	Attene et al., "Benchmarking the geometrical robustness of a virtual element Poisson solver," *Mathematics and Computers in Simulation*, 2021
Kernel Area Ratio	KAR	$\frac{A_K}{A}$	Attene et al., "Benchmarking the geometrical robustness of a virtual element Poisson solver," *Mathematics and Computers in Simulation*, 2021
Area Perimeter Ratio	APR	$\frac{2\pi A}{P^2}$	Attene et al., "Benchmarking the geometrical robustness of a virtual element Poisson solver," *Mathematics and Computers in Simulation*, 2021
Minimum Angle	MIA	$\frac{\theta_{\min}}{2\pi}$	Stimpson et al., "The verdict library reference manual," *Sandia National Laboratories Technical Report*, 2007
Maximum Angle	MAA	$\frac{\theta_{\max}}{2\pi}$	Stimpson et al., "The verdict library reference manual," *Sandia National Laboratories Technical Report*, 2007
Angle Ratio	ANR	$\frac{\theta_{\min}}{\theta_{\max}}$	Stimpson et al., "The verdict library reference manual," *Sandia National Laboratories Technical Report*, 2007
VEM Indicator	VEM	$\sqrt{\frac{\varrho_1\varrho_2 + \varrho_1\varrho_3 + \varrho_1\varrho_4}{3}}$	Sorgente et al., "The role of mesh quality and mesh quality indicators in the virtual element method," *Advances in Computational Mathematics*, 2022
Scaled Jacobian	JAC	$\min_i \left\{ \frac{\mathcal{J}_i}{e_{i-1}\, e_i} \right\}$	Knupp, "Achieving finite element mesh quality via optimization of the Jacobian matrix norm and associated quantities" *International Journal for Numerical Methods in Engineering*, 2000
Frobenius Norm	FRO	$\min_i \left\{ \frac{2}{\kappa_i} \right\}$	Knupp, "Algebraic mesh quality metrics," *SIAM Journal on Scientific Computing*, 2001

Notation:

- h: polygon diameter (maximum point-to-point distance)
- A, P: polygon area and perimeter
- e_i: length of the i-th edge of the polygon
- $\theta_{\min}, \theta_{\max}$: minimum and maximum angle in the polygon
- r: radius of the maximum circle inscribed in the polygon
- R: radius of the minimum circle circumscribing the polygon
- A_K: area of the polygon kernel
- r_K: radius of the maximum circle inscribed in the polygon kernel
- $\varrho_1, \dots \varrho_4$: VEM quality indicators (see reference paper)
- $\mathcal{A}_i, \kappa_i$: determinant and condition number of the Jacobian matrix at the i-th vertex