14.187 SOLID187 — 3–D 10–Node Tetrahedral Structural Solid
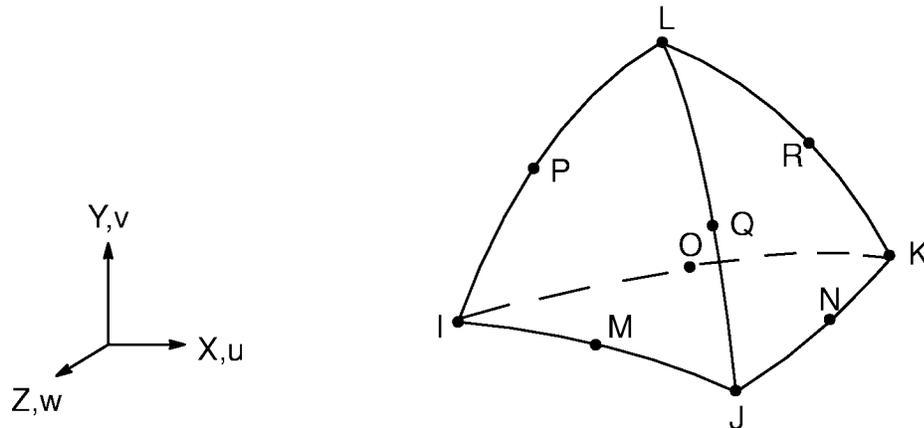
Matrix or Vector	Shape Functions	Integration Points
Stiffness Matrix	Equations (12.8.2–1), (12.8.2–2), and (12.8.2–3)	4
Stress Stiffness Matrix	Equations (12.8.2–1), (12.8.2–2), and (12.8.2–3)	4
Mass Matrix	Equations (12.8.2–1), (12.8.2–2), and (12.8.2–3)	4
Thermal Load Vector	Equations (12.8.2–1), (12.8.2–2), and (12.8.2–3)	4
Pressure Load Vector	Equation (12.8.2–1), (12.8.2–2), and (12.8.2–3) specialized to the face	6

Load Type	Distribution
Element Temperature	Same as shape functions
Nodal Temperature	Same as shape functions
Pressure	Linear over each face

Reference: Zienkiewicz(39)

14.187.1 Other Applicable Sections

Chapter 2 describes the derivation of structural element matrices and load vectors as well as stress evaluations. Section 13.1 describes integration point locations.