

Richter Magnitude vs. Energy for earthquakes

The strength of an earthquake can be measured by a device called a *seismograph*. When an earthquake occurs, this device converts the wave energy into a standard unit of measurement, like the *Richter scale*. In the Richter scale, units of measurement are referred to as *magnitudes*.

Richter Scale Magnitude	Energy Released (Joules)	Comment
2.0	1.3×10^8	Smallest earthquake detectable by people.
5.0	2.8×10^{12}	Energy released by the Hiroshima atomic bomb.
6.0 - 6.9	7.6×10^{13} to 1.5×10^{15}	About 120 shallow earthquakes of this magnitude occur each year on the Earth.
6.7	7.7×10^{14}	Northridge, California earthquake 17 January 1994.
6.8		Nisqually, WA earthquake 28 February 2001
7.0	2.1×10^{15}	Major earthquake threshold.
7.4	7.9×10^{15}	Turkey earthquake 17 August 1999. More than 12,000 people killed.
7.6	1.5×10^{16}	Deadliest earthquake in the last 100 years. Tangshan, China, 28 July 1976. Approximately 255,000 people perished.
	$\sim 1.0 \times 10^{17}$	Mt. St. Helens eruption, 18 May 1980.
8.3	1.6×10^{17}	San Francisco earthquake of 18 April 1906.
9.0		Fukushima earthquake, 11 March 2011
9.3	4.3×10^{18}	December 26, 2004 Sumatra earthquake.
9.5	8.3×10^{18}	Most powerful earthquake recorded in the last 100 years. Southern Chile on 22 May 1960. Claimed 3,000 lives.
	$\sim 1.0 \times 10^{19}$	Yearly power production of the US.

<http://www.physicalgeography.net/fundamentals/10m.html>

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<http://www.ce.washington.edu/~nisqually/>