

**AUSTRALASIAN TEKTITES AND ATOMIC BOMB GLASS:
CLOSE SIMILARITY IN THEIR SHAPE PERCENTAGES.**

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Introduction: Tektites are small greenish to jet black glass bodies found in large but limited areas, or strewn fields, on the surface of Earth. So far, tektites occur in 4 different strewn fields: North America (Age : 35 Ma), Europe (15 Ma), Ivory Coast (1.1 Ma) and Australasia (0.8 Ma).

Tektites are subdivided in 4 groups: 1) normal or splash-form (showing sizes from half a centimeter up to 25 cm.), 2) aerodynamically shaped , 3) layered or Muong Nong (irregular chunks of glass up to 28 kilograms in weight) and 4) microtektites (always smaller than a few millimeters).

Splash-form tektites are best known from the Australasian strewn field and they come in a wide variety of different forms: spheres, ellipsoids, droplets, teardrops, dumbbells, etc. The largest known splash-form tektite is a 1.07 Kg. sphere found in Coco Grove, Luzon, Philippines.

Tektites are most probably distant ejecta produced in meteorite impact events. In this hypothesis, tektites are formed by melt splashed by impacts and their size and shape are controlled by surface tension as bodies in rotation. The shapes of splash-form tektites result from the solidification of rotating liquids in the upper terrestrial atmosphere.

Glass produced in atomic bomb tests shares most of the characteristics of tektites, e.g.: color and transparency, shapes, petrographies (e.g.: quartz , lechatelierite and cristobalite inclusions), Ferrous to Ferric Iron ratios and a very low water content.

Here I present numbers showing close similarity between the published percentages of their forms.

Reported australasian splash-form tektites shape percentages are the following: Spheres 70-60%, Ellipsoids 25%, Dumbbells 8% and Teardrops 4%. [1].

Published microtektite shape percentages from 2 cores collected from the South China Sea are the following:

Core MD 972142: Spheres 66%, Flat ellipsoids 7%, Strongly elongated 5% , Droplets 17% and Irregular forms 11%.

Core MD 972143: Spheres 62%, Flat ellipsoids 9%, Strongly elongated 7%, Droplets 10% and Irregular forms 17%. [2]

These numbers are very close to the shape percentages reported from atomic bomb glass produced in a Yucca Flat, Nevada, test:

Spheres 60%, Elongated forms, including teardrops 16%, Irregular forms 24%. [3]

More than half of the bodies ejected in both processes are spheres.

Most probably, this similarity in their shape's percentage numbers is related to the similarities in the launch and solidification mechanisms: e.g.: Tektite launch mechanism seems to be entrainment in impact-produced plumes of gas, similar in structure to the plumes produced by the tests of thermonuclear weapons.

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References: [1] McNamara K. and Bevan A. (2001) Tektites, booklet published by the Western Australian Museum, Perth, pp. 1-38. [2] Lee M-Y and Wei K-Y (2000) Meteoritics & Planetary Science 35: pp. 1151-1155. [3] Glass B.P. et al. (1987) Second International Conference on Natural Glasses, Prague: pp. 361-369.