

Pillow Forms And Their Implications From Metavolcanic Occurrences In The Egyptian Shield.

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The features of a seven well preserved pillow metavolcanic occurrences in the Egyptian Shield are discussed and compared to the modern and ancient environments. The aim of this work is to present an idea about the mode of origin, the composition of parent magma, and the environment of eruption.

On the basis of combined morphological, size and chemical results, three groups are recognized among the studied pillowed lavas:

- 1) Deformed elongated pillows (Type A), present in Muweilih and Wadi Beririq areas.
- 2) Flattened bulbous pillows (Type B), occurring in Wadi Ghadir, Gabal Ghadir, Wadi Um Suleimate and West Safaga areas.
- 3) Spherical pillows (Type C), present mainly in Wadi Kariem and partly in West Safaga areas.

The tubular type, connection between pillows, and radial cracks are absent in the studied pillow forms. The flattening, tight packing with development of chilled margins, small size, and the abundance of vesicular structure are the most prominent features of the studied pillows. These salient features show that they differ from pillows of the modern mid-oceanic ridge environments and are closely similar to those of the ancient back-arc basin environments.

The above features indicate that accumulating of the studied pillows took place at higher initial temperature, higher hydrostatic pressure, lower viscosity and rapid eruption compared to modern mid-oceanic ridge pillows. This interpretation strengthens the back-arc basin origin of the studied pillows.