

**THE METROLOGY OF THE PIRIFORM AMPHORAS
FROM THE 11th-CENTURY BYZANTINE SHIP AT SERÇE LIMANI:
NEW DESIGNS BUT AN OLD SYSTEM**

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ABSTRACT

The body capacities of 89 Serçe Limanı piriform amphoras, ranging from just under 5 to just under 20 liters, have a strong tendency through much of this range to fall in clusters at intervals that correspond to one-half the volume of 1 mina (3 Byzantine pounds) of wine, the basic unit of weight capacity in the fully developed Byzantine metrology system for wine. The one-half mina interval appears to be due to the existence of two separate but closely parallel volume capacity progressions for white and red wine in which 30 pounds of white wine theoretically occupy the same volume as would 32 pounds of red wine but in the actual practice of the making of these amphoras is allotted the same volume as would be occupied by 31.5 pounds of red wine. Thus, for example, the volume capacities of jars made to hold 33 pounds of red wine tend to cluster midway between the volume capacity clusters of jars made to hold 30 and 33 pounds of white wine.

There are four types of piriform jars, including 56 Günsenin Type I and 22 Günsenin Type XII jars. A study of the basic dimensions within the framework of the capacity sizes of these jars has revealed the presence of highly standardized dimensional systems. The basic dimensions are maximum diameter, body height and body wall thickness (controlled by the weight of clay in the body). Proportional ideals involving maximum diameter, body height and height of maximum diameter are closely adhered to. Necks and mouths, on the other hand, occur in only a few standard sizes in order to accommodate standard-sized stoppers. A 1-mina change in capacity size entails dimensional changes involving basic units of Byzantine linear measurement. The design of all these piriform amphoras was inextricably related to the mina unit of weight capacity.

The metrological system for the Günsenin I amphoras and that for one of the major types of the much larger globular amphoras from the 7th century Yassiada ship have much in common, suggesting that some of the fundamental practices involved may have continued over a long period of time despite ongoing design and size changes.