



Designation: E 123 – 92 (Reapproved 1996)

Standard Specification for Apparatus for Determination of Water by Distillation¹

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1. Scope

1.1 This specification covers apparatus used in Test Method D 95 and other similar ASTM test methods.

2. Referenced Documents

2.1 *ASTM Standards:*

D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation²

3. Apparatus Assembly

3.1 Typical assemblies of the apparatus are shown in Fig. 1 and Fig. 2. The glass flask has been generally used for petroleum products, soaps, naval stores, etc., and the metal still for road materials and tars.

4. Glass Flask

4.1 The glass flask shall have nominal capacities of 500 mL or 1000 mL, as required, and shall be made of heat-resistant glass. Styles shall be as shown in Fig. 3 and Fig. 4 and as listed in the following table:

Style	Size, mL	Shape	Top Finish	Figure
A	500	round	with \$ joint	Fig. 3
B	500	round	with \$ joint	Fig. 3
C	1000	round	with \$ joint	Fig. 3
D	500	Erlenmeyer	with \$ joint	Fig. 4

5. Metal Still

5.1 The metal still shall have an approximate capacity of 1000 mL. It may be constructed of any suitable metal; but copper is recommended for the vessel, and copper or brass for the lid. Fig. 5 shows the essential dimensions and a satisfactory construction of vessel head and clamp. Other means of closure may be used that provide a tight seal of head to body.

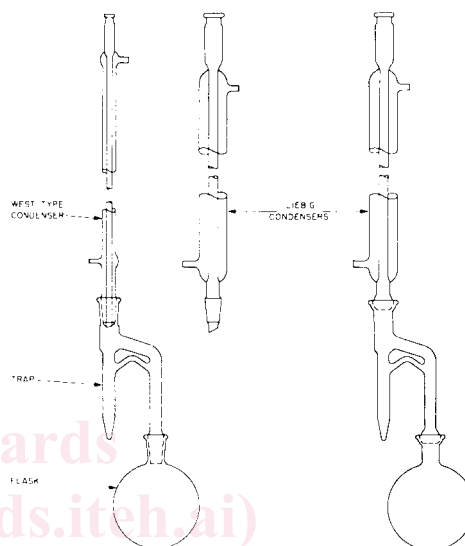
6. Heater

6.1 Any suitable gas burner or electric heater may be used with the glass still. With the metal still, a ring gas burner, having an inside diameter of 4¼ in. (108 mm) with holes in the inside periphery should be used.

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² *Annual Book of ASTM Standards*, Vol 05.01.



NOTE 1—Trap shall be 15 to 16 mm in inside diameter.
FIG. 1 Typical Assemblies with Glass Flask

7. Condenser

7.1 The condenser shall be a Liebig or West straight type with a jacket not less than 400 mm long. Fig. 6 shows the

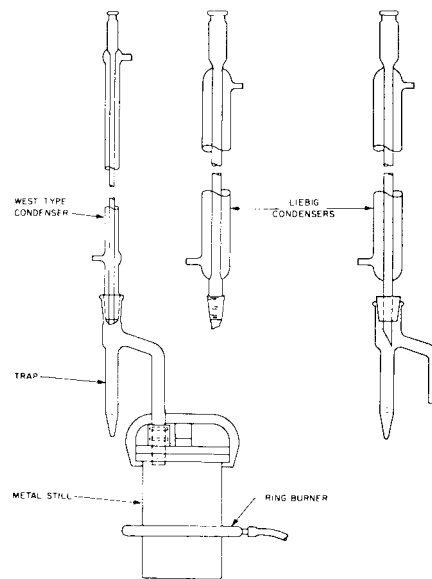
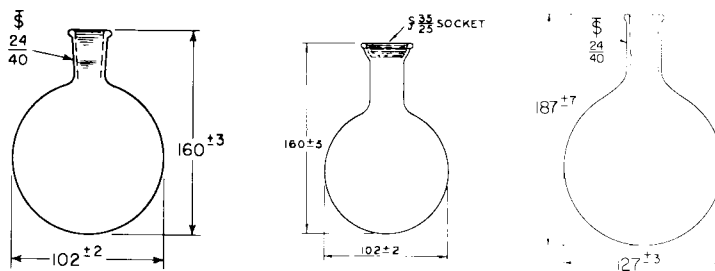


FIG. 2 Typical Assemblies with Metal Still



A. 500 mL with Taper Joint.

Note—All dimensions are in millimetres.
B. 500 mL with Ball-and-Socket Joint.

C. 1000 mL with Taper Joint.

FIG. 3 Glass Flasks, Round-Bottom

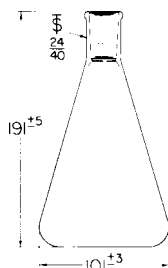


FIG. 4 Erlenmeyer Flask, 500-mL Capacity

general construction of suitable condensers.

8. Traps

8.1 The traps shall be of 5-mL, 10-mL, and 25-mL capacities. Six styles are provided as specified in Table 1 and shown in Figs. 7-11.

9. Keywords

9.1 apparatus; distillation.

TABLE 1 Dimensions and Sizes of Traps

Style	Description			Figure	Size of Trap, mL	Range, mL	Smallest Scale Division, mL	Scale Error, max, mL
	Top of Graduated Tube	Bottom of Graduated Tube	Bottom of Vapor Tube					
A	§ joint	conical	§ joint	7	10	0 to 1.0 over 1.0 to 10.0	0.1 0.2	0.05 0.1
B	§ joint	conical	§ joint	8	25	0 to 1.0 over 1.0 to 25	0.1 0.2	0.05 0.1
C	§ joint	conical	plain	9				
D	plain	conical	plain	10				
E	§ joint	round	§ joint	11	5 10	0 to 5.0 0 to 10.0	0.1 0.1	0.05 0.1
F	§ joint	round	§ joint	12	5	0 to 5.0	0.05	0.05