

Chapter Ag 105**MILK AND CREAM TEST BOTTLES**

Ag 105.01 Babcock test glassware Ag 105.03 Cream test bottles
Ag 105.02 Milk test bottles Ag 105.04 Standard milk pipettes

Ag 105.01 Babcock test glassware. Bottles and pipettes used in determining the per cent of fat in milk or milk products shall have the word "sealed" clearly blown or otherwise clearly and permanently marked in or on the side of the bottle or pipette, and in or on the side or bottom of the bottle or pipette, the name, initials, or trademark of the manufacturer and designating number.

Ag 105.02 Milk test bottles. The standard Babcock test bottles for milk shall have a capacity of 1.6 cubic centimeters for each 8 per cent marked upon the necks thereof.

(1) **GRADUATION.** The total per cent graduation shall be 8. The graduated portion of the neck shall have a length not less than 63.5 millimeters (2.5 inches). The graduation shall represent 1%, 0.5%, and 0.1%. The 0.1% graduations shall be not less than 3 millimeters in length; the 0.5% graduations shall be one millimeter longer than the 0.1% graduations, projecting one millimeter to the left; the 1% graduations shall extend halfway around the neck to the right, projecting 2 millimeters to the left of the 0.1% graduations. Each per cent graduation shall be numbered, the number being placed on the left of the scale. The maximum error of the total graduation or any part thereof shall not exceed the volume of the smallest unit of the graduation.

(2) **NECK.** The neck shall be cylindrical for at least 5 millimeters below the lowest and above the highest graduation marks. The top of the neck shall be flared to a diameter of not less than 10 millimeters.

(3) **BULB.** The capacity of the bulb up to the junction of the neck shall be not less than 45 milliliters. The shape of the bulb may be either cylindrical or conical, with the smallest diameter at the bottom. If cylindrical, the outside diameter shall be between 34 and 36 millimeters; if conical, the outside diameter of the base shall be between 31 and 33 millimeters and the maximum diameter between 35 and 37 millimeters.

(4) **CHARGE.** The charge of the bottle shall be 18 grams.

(5) **HEIGHT.** The total height of the bottle shall be between 150 and 165 millimeters (5 7/8 and 6 1/2 inches).

Ag 105.03 Cream test bottles. (1) **CHARGE.** Cream test bottles shall receive a charge of either 9 grams or 18 grams. The 18-gram bottle shall be used with only an 18-gram charge and the 9-gram bottle shall be used with a 9-gram charge. Each bottle shall bear on the top of the neck above the graduations in plainly legible characters the weight of the charge to be used.

(2) **HEIGHT.** The total height of cream test bottles shall be either between 150 and 165 millimeters (5¾ and 6½ inches) or between 210 and 229 millimeters (8¼ and 9 inches).

(3) **NECK.** The neck shall be cylindrical for a least 5 millimeters below the lowest and above the highest graduation marks. The top of the neck shall be flared to a diameter of not less than 10 millimeters.

(4) **BULB.** The capacity of the bulb up to the junction of the neck shall be not less than 45 milliliters. The shape of the bulb may be either cylindrical or conical, with the smallest diameter at the bottom. If cylindrical, the outside diameter shall be between 34 and 36 millimeters; if conical, the outside diameter of the base shall be between 31 and 33 millimeters and the maximum diameter between 35 and 37 millimeters.

(5) **GRADUATION.** (a) The graduated portion of the 150 to 165 millimeter bottles shall have a length of not less than 63.5 millimeters. The graduated portion of the 210 to 229 millimeter bottles shall have a length of not less than 120 millimeters. Such graduated portion of the neck of the 9-gram bottle shall have a capacity of 0.1 cubic centimeters for each one per cent marked on the neck thereof. Such graduated portion of the neck of the 18-gram bottle shall have a capacity of 0.2 cubic centimeters for each one per cent marked on the neck thereof.

(b) The graduations on all cream test bottles except the 30 per cent 18-gram 9-inch bottle shall represent 5 per cent, one per cent and 0.5 per cent. The 0.5 per cent graduations shall be at least 3 millimeters in length; the one per cent graduations shall be at least 2 millimeters longer than the 0.5 per cent graduations, projecting 2 millimeters to the left; and the 5 per cent graduations shall extend halfway around the neck to the right and project 4 millimeters to the left of the 0.5 per cent graduations. Each 5 per cent graduation shall be numbered, the number being placed on the left of the scale.

(c) The graduations on the 30 per cent 18-gram 9-inch bottles shall represent 2 per cent, one per cent and 0.2 per cent. The 0.2 per cent graduations shall be at least 3 millimeters in length; the one per cent and 2 per cent graduations shall extend halfway around the neck to the right and project 4 millimeters to the left of the 0.2 per cent graduations. Each 2 per cent graduation shall be numbered, the number being placed on the left of the scale.

(6) **ERROR.** The maximum error of the total graduation or of any part thereof of any cream test bottle shall not exceed the volume of the smallest unit of graduation.

(7) **SIZES ENUMERATED.** The following types of test bottles meeting the above qualifications may be used to determine the milk fat content of cream by the Babcock test:

Total Graduation	Charge	Total Height	Smallest Graduation	Graduated Portion of Neck
30%-----	18 gr.	9 in.	0.2%	Not less than 120 mm.
30%-----	18 gr.	6 in.	0.5%	Not less than 63.5 mm.
40%-----	18 gr.	6 in.	0.5%	Not less than 63.5 mm.
40%-----	9 gr.	6 in.	0.5%	Not less than 63.5 mm.
50%-----	18 gr.	9 in.	0.5%	Not less than 120 mm.
50%-----	9 gr.	9 in.	0.5%	Not less than 120 mm.
60%-----	18 gr.	9 in.	0.5%	Not less than 120 mm.
60%-----	9 gr.	9 in.	0.5%	Not less than 120 mm.

Ag 105.04 Standard milk pipettes. The standard Babcock pipette shall have a straight nozzle, contain 17.6 milliliters of water at 20 degrees Centigrade, complete delivery in 5 to 8 seconds and meet the following specifications:

Total length not more than	330 millimeters
Outside diameter of suction tube	6 to 8 millimeters
Length of suction tube	125 to 135 millimeters
Outside diameter of delivery tube	4.5 to 5.25 millimeters
Length of delivery tube	100 to 120 millimeters
Distance of graduation mark above bulb	15 to 45 millimeters
Tolerance	0.05 milliliters