

Errata for Water Treatment / Water Works Operator book (2024 edition):

Question 38:

The weight of a gallon of hydrofluosilicic acid is approximately ____ pounds per gallon, assuming this gallon of acid is approximately 25% acid.

Possible Choices

10.3

11.3

12.3

13.3

14.3

None of the choices.

The answer is 10.3, and the full rationale is listed here:

Hydrofluosilicic acid solutions typically have a specific gravity (density relative to water) in the range of 1.22 to 1.25, depending on concentration. For this calculation, we'll assume a specific gravity of 1.23, which corresponds to a typical product with approximately 25% acid.

One gallon of water weighs 8.34 pounds at standard conditions.

Since the specific gravity of the acid is 1.23, it is 1.23 times heavier than water. Therefore, the weight of one gallon of hydrofluosilicic acid is:

Weight = 8.34

pounds $\times$ 1.23 = 10.2582 pounds per gallon

10.3 is the closest among the choices.