

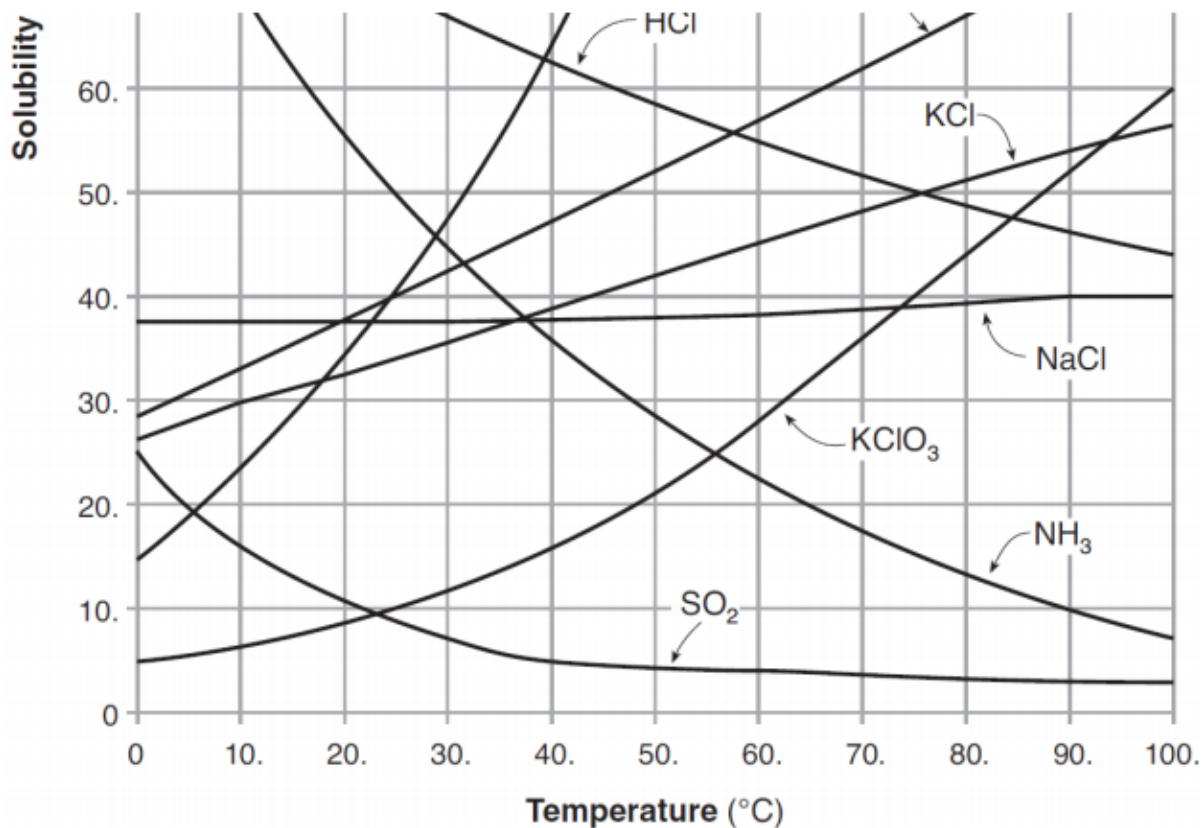
Answer on Question #67123, Chemistry, General Chemistry

When 9 grams of KClO_3 are dissolved in 50 grams of water at 20°C , how is the resulting mixture described?

- 1.heterogeneous and supersaturated
- 2.heterogeneous and unsaturated
- 3.homogeneous and supersaturated
- 4.homogeneous and unsaturated

Solution:

First of all, we need determine solubility of KClO_3 . For it we can use following diagram:



Find 20°C on the Table G x-axis, then move straight up to the KClO_3 curve. Move straight over to the y-axis, and read the scale (11 g). This means that 11 grams of KClO_3 are soluble in 100 grams of water at 20°C .

As for the solubility of KClO_3 in 50 grams of water. Place 50 g of water in the numerator, and 100 g of water in the denominator, and solve.

$$\frac{50. \text{ g of water}}{100. \text{ g of water}} = 0.50 \text{ multiplier}$$

We can use the multiplier factor with the 11 g of KClO_3 and determine the mass of KClO_3 soluble in 50 g of water.

$11 \text{ g of } \text{KClO}_3 \times 0.50 = 5.5 \text{ g of } \text{KClO}_3 \text{ soluble in 50 g of water at } 20^\circ\text{C}.$

Thus, the solution is heterogeneous and supersaturated.

Answer: 1.