

NAMING ACIDS IN CHEMISTRY

Acids dissolve in water (H_2O) and form ions. The following table consists of a list of ternary acids. Complete the anion and the cation columns and answer the given questions.

Acid	Name of the Acid in Aqueous Solution	Cation	Anion	Polyatomic Anion Name
HClO_3	Chloric acid	H_3O^+		
H_2SO_3	Sulfurous acid			
H_2SO_4	Sulfuric acid			Sulfate
H_3PO_3	Phosphorous acid	$3\text{H}_3\text{O}^+$		Phosphite
H_3PO_4	Phosphoric acid		PO_4^{3-}	
HNO_3	Nitric acid			
HNO_2	Nitrous acid		NO_2^-	Nitrite
H_2CO_3	Carbonic acid			

- a) How do ternary acids differ from binary acids in their structure?

- b) What number does the prefix "ter" refer to? _____
- c) When the polyatomic anion name ends with "-ate", the acid name ending is _____ .
- d) When the polyatomic anion name ends with "-ite", the acid name ending is _____ .
- e) If the prefix "hydro-" were used to name a ternary acid, what problem would it cause to name HClO_3 ?

- f) Write a rule for naming ternary acid.

- g) Predict the formula for chlorous acid _____ .

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Answers

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H_2SO_3	Sulfurous acid	$2\text{H}_3\text{O}^+$	SO_3^{2-}	Sulfite
H_2SO_4	Sulfuric acid	$2\text{H}_3\text{O}^+$	SO_4^{2-}	Sulfate
H_3PO_3	Phosphorous acid	$3\text{H}_3\text{O}^+$	PO_3^{3-}	Phosphite
H_3PO_4	Phosphoric acid	$3\text{H}_3\text{O}^+$	PO_4^{3-}	Phosphate
HNO_3	Nitric acid	H_3O^+	NO_3^-	Nitrate
HNO_2	Nitrous acid	H_3O^+	NO_2^-	Nitrite
H_2CO_3	Carbonic acid	$2\text{H}_3\text{O}^+$	CO_3^{2-}	Carbonate

a) How do ternary acids differ from binary acids in their structure?

Ternary acid contains three elements (H, O, and another element), whereas binary acids contain two elements (H and another element)

b) What number does the prefix "ter" refer to? Three (3)

c) When the polyatomic anion name ends with "-ate", the acid name ending is "-ic" .

d) When the polyatomic anion name ends with "-ite", the acid name ending is "-ous" .

e) If the prefix "hydro-" were used to name a ternary acid, what problem would it cause to name HClO_3 ?

It would be called hydrochloric acid, which is a binary acid with the formula HCl .

f) Write a rule for naming ternary acid.

They must contain hydrogen, oxygen, and another type of element.

g) Predict the formula for chlorous acid HClO_2 .