

Chemical Substance	Chemical Formula	Solubility in Water	Strong / Weak Electrolyte	Reason(s) Rules Applied or Exceptions Noted
sodium chloride	NaCl	soluble	strong	Na is an alkali metal, and all of the common alkali metal salts are soluble. Almost all salts are strong electrolytes.
hydrogen sulfide = hydrosulfuric acid	H <sub>2</sub> S	soluble: [sat H <sub>2</sub> S] = 0.10 M	weak	The gas H <sub>2</sub> S is fairly soluble in water. H <sub>2</sub> S is a weak acid. When dissolved, H <sub>2</sub> S can transfer some H <sup>+</sup> to H <sub>2</sub> O. Most acids are weak electrolytes.
barium sulfate	BaSO <sub>4</sub>	insoluble	strong	Exception: BaSO <sub>4</sub> is one of the few insoluble sulfates (also SrSO <sub>4</sub> , PbSO <sub>4</sub> ). Almost all salts are strong electrolytes.
ammonia	NH <sub>3</sub>	soluble	weak	The gas NH <sub>3</sub> is very soluble in water. NH <sub>3</sub> is a weak base. When dissolved, NH <sub>3</sub> can accept some H <sup>+</sup> from H <sub>2</sub> O. Most bases are weak electrolytes.
calcium chloride	CaCl <sub>2</sub>	soluble	strong	Almost all chloride salts are soluble. Almost all salts are strong electrolytes.
lithium nitrate	LiNO <sub>3</sub>	soluble	strong	All the common alkali metal salts and all common nitrate salts are soluble. Almost all salts are strong electrolytes.
potassium sulfide	K <sub>2</sub> S	soluble	strong	K is an alkali metal, and all of the common alkali metal salts are soluble. Almost all salts are strong electrolytes.
lead carbonate	PbCO <sub>3</sub>	insoluble	strong	Carbonate salts are generally insoluble. Almost all salts are strong electrolytes.
strontium sulfate	SrSO <sub>4</sub>	insoluble	strong	Exception: SrSO <sub>4</sub> is one of the few insoluble sulfates (also BaSO <sub>4</sub> , PbSO <sub>4</sub> ). Almost all salts are strong electrolytes.
nickel perchlorate	Ni(ClO <sub>4</sub> ) <sub>2</sub>	soluble	strong	Almost all perchlorate salts are soluble. Almost all salts are strong electrolytes.
acetic acid	CH <sub>3</sub> COOH = HOAc	soluble	weak	Most low mol. wt. acids are soluble. Acetic acid is not one of the six strong acids. Most acids are weak.

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mercurous iodide = Hg(I) iodide	Hg <sub>2</sub> I <sub>2</sub> [** Hg(I) is always dimeric.]	insoluble	strong	Exception: Hg <sub>2</sub> <sup>2+</sup> is one of the few cations forming insoluble halide salts. Almost all salts are strong electrolytes.
ammonium chloride	NH <sub>4</sub> Cl	soluble	strong	All the common NH <sub>4</sub> <sup>+</sup> salts are soluble. Almost all salts are strong electrolytes.
sodium acetate	NaCH <sub>3</sub> COO = NaOAc	soluble	strong	All the common alkali metal salts are soluble. Acetates generally soluble. Almost all salts are strong electrolytes.
nitric acid	HNO <sub>3</sub>	soluble	strong	Most low mol. wt. acids are soluble. HNO <sub>3</sub> is one of the six strong acids.
lead sulfate	PbSO <sub>4</sub>	insoluble	strong	Exception: PbSO <sub>4</sub> is one of the few insoluble sulfates (also BaSO <sub>4</sub> , SrSO <sub>4</sub> ). Almost all salts are strong electrolytes.
silver bromide	AgBr	insoluble	strong	Exception: most Cl <sup>-</sup> , Br <sup>-</sup> , and I <sup>-</sup> salts are soluble, but Ag <sup>+</sup> forms insoluble Cl <sup>-</sup> , Br <sup>-</sup> , and I <sup>-</sup> salts. Almost all salts are strong electrolytes.
cupric nitrate = copper (II) nitrate	Cu(NO <sub>3</sub> ) <sub>2</sub>	soluble	strong	All common nitrate salts are soluble. Almost all salts are strong electrolytes.
silver carbonate	Ag <sub>2</sub> CO <sub>3</sub>	insoluble	strong	Most carbonate salts are insoluble. Almost all salts are strong electrolytes.
potassium carbonate	K <sub>2</sub> CO <sub>3</sub>	soluble	strong	K is an alkali metal, and all of the common alkali metal salts are soluble. Almost all salts are strong electrolytes.
zinc sulfide	ZnS	insoluble	strong	Sulfide salts are generally insoluble. Almost all salts are strong electrolytes.
lithium hydroxide	LiOH	soluble	strong	Li is an alkali metal, and all of the common alkali metal salts are soluble. Almost all salts are strong electrolytes.
hydrogen cyanide = hydrocyanic acid	HCN	soluble	weak	Most low mol. wt. acids are soluble. The toxic gas HCN is soluble in water. HCN is not one of the six strong acids.