

Solubility Rules for Double Replacement Reactions

COMPOUND	SOLUBILITY	EXCEPTION(S)
1. Salts of alkali metals and ammonia	Soluble	None
2. Nitrate salts and chlorate salts	Soluble	None
3. Sulfate salts	Soluble	Pb, Ag, Hg, Ba, Sr, and Ca
4. Chloride, bromide and iodide salts	Soluble	Ag, Hg, and Pb
5. Carbonates, phosphates, chromates, sulfides, and hydroxides	Insoluble	Compounds of the alkali metals and of ammonia

Single Replacement Reactions

Activity Series

Li	Lithium	Always Replace H
K	Potassium	
Ba	Barium	
Sr	Strontium	
Ca	Calcium	
Na	Sodium	
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Mg	Magnesium	Replace H from acids
Al	Aluminum	
Zn	Zinc	
Fe	Iron	
Ni	Nickel	
Pb	Lead	
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H	Hydrogen	
Cu	Copper	
Ag	Silver	
Au	Gold	

Solubility Chart														
	Acetate	Bromide	Carbonate	Chlorate	Chloride	Chromate	Hydroxide	Iodide	Nitrate	Oxide	Phosphate	Silicate	Sulfate	Sulfide
aluminum	S	S	—	S	S	—	A	S	S	a	A	I	S	d
ammonium	S	S	S	S	S	S	—	S	S	—	S	—	S	S
barium	S	S	P	S	S	A	S	S	S	S	A	S	a	d
calcium	S	S	P	S	S	A	S	S	S	P	P	P	P	P
copper(II)	S	S	—	S	S	—	A	—	S	A	A	A	S	A
hydrogen	S	S	—	S	S	—	—	S	S	—	S	I	S	S
iron(II)	S	S	P	S	S	—	A	S	S	A	A	—	S	A
iron(III)	S	S	—	S	S	A	A	S	S	A	P	—	P	d
lead(II)	S	S	A	S	S	A	P	P	S	P	A	A	P	A
magnesium	S	S	P	S	S	S	A	S	S	A	P	A	S	d
manganese(II)	S	S	P	S	S	—	A	S	S	A	P	I	S	A
mercury(I)	P	A	A	S	a	P	—	A	S	A	A	—	P	I
mercury(II)	S	S	—	S	S	P	A	P	S	P	A	—	d	I
potassium	S	S	S	S	S	S	S	S	S	S	S	S	S	S
silver	P	a	A	S	a	P	—	I	S	P	A	—	P	A
sodium	S	S	S	S	S	S	S	S	S	S	S	S	S	S
strontium	S	S	P	S	S	P	S	S	S	S	A	A	P	S
tin(II)	d	S	—	S	S	A	A	S	d	A	A	—	S	A
tin(IV)	S	S	—	—	S	S	P	d	—	A	—	—	S	A
zinc	S	S	P	S	S	P	A	S	S	P	A	A	S	A

S = soluble in water

A = soluble in acids, insoluble in water

P = partially soluble in water, soluble in dilute acids

I = insoluble in dilute acids and water

a = slightly soluble in acids, insoluble in water

d = decomposes in water