

What forms a precipitate?

Check each step,
in order.

Solubility Rules
you are
responsible for.

Soluble

no precipitate

Insoluble

forms precipitate



Hg_2^{2+}
mercury (I) ion



Hg^{2+}
mercury (II) ion

Step 1

ANIONS

Acetates (OAc^{-1} or $\text{CH}_3\text{COO}^{-1}$)
Nitrates (NO_3^{-1})

Always

Never

Step 2

CATIONS

Ammonium (NH_4^{1+})
Alkali metal (Na^{1+} , Li^{1+} , K^{1+} ...)
Acids (the ones we learned)

Always

Never

Step 3

ANIONS

Carbonates (CO_3^{2-})
Phosphates (PO_4^{3-})

Never

Always

Step 4

has
exceptions

ANIONS

Halogens (Cl^{-1} , Br^{-1} , I^{-1} , F^{-1})

Usually

Except:
 Ag^{+} ,
 Hg_2^{2+} or Pb^{2+}

Sulfates (SO_4^{2-})

Usually

Hg_2^{2+} or Pb^{2+}
 Sr^{2+} , Ba^{2+}

Sulfides (S^{2-})

Hydroxy Salts (OH^{-1})

Except:
 Sr^{2+} , Ba^{2+} ,
 Ca^{2+}

Usually



If you remember 1-3 you'll be good 85% of the time

If you remember 1-3 and 4 you'll be good 95%

Remembering the exceptions isn't that hard

— there's only **six ions that cause exceptions**

and **lead, mercury, and silver** are the most commonly encountered ones.