

## Mr Brentnall's 'Guaranteed Never-Let-You-Down' Solubility Rules

1. All **compounds containing group one metals** (e.g. lithium (Li), sodium (Na) and potassium (K)) will **always dissolve in water**.....no matter what. Even if you beg them to not dissolve they will just ignore you and disappear from sight when the old H<sub>2</sub>O is added.
2. All **compounds containing nitrate ions** (e.g. lead nitrate) will also **always dissolve in water**.....this was bad news for the Romans who added lead nitrate to wine as a sweetener and wondered why they were dying off!
3. Most **compounds containing sulfate ions** (e.g. magnesium sulfate) will **dissolve in water**.....soz that this rule isn't watertight though (see what did there?) as some sulfates do not dissolve ....so watch out.
4. Most **compounds containing hydroxide ions do not dissolve**....of course examples containing group one metals are the exception (see rule 1!)
5. Most **compounds containing carbonate ions do not dissolve**....again though examples containing group one metals are the exception (see rule 1!)
6. ....and finally **compounds containing chlorides can't make their mind up!** Some dissolve, some don't. You'll have to use rules 1-5 to help you decide!

In summary for those who like a table

Compound contains	Solubility in water
Group one metal ions	Always dissolve
Nitrate ions	Always dissolve
Sulfate ions	Mostly dissolve
Hydroxide ions	Mostly DO NOT dissolve
Carbonate ions	Mostly DO NOT dissolve
Chloride ions	Sometimes dissolve, sometimes don't