

THE CHEMISTRY OF FIREWORKS

Colours in fireworks are generated by pyrotechnic stars, which produce coloured light when ignited. The stars contain five basic ingredients:

COLOUR-PRODUCING COMPOUNDS

Specific compounds which produce an intense colour when burned. Some of the commonly used colour producing compounds are listed on the right; generally they tend to be metal salts.

FUEL

Allows the star to burn; gunpowder, which contains a mix of potassium nitrate, sulfur and charcoal, is often used.

OXIDISER

Usually nitrates, chlorates or perchlorates; required to provide oxygen for the combustion of the fuel.

BINDER

Hold the mixture together; the most commonly used binder is a type of starch called dextrin, dampened with water.

CHLORINE DONOR

Chlorine donors can help strengthen some colours. Sometimes the oxidiser can also act as the chlorine donor.



RED

STRONTIUM SALTS

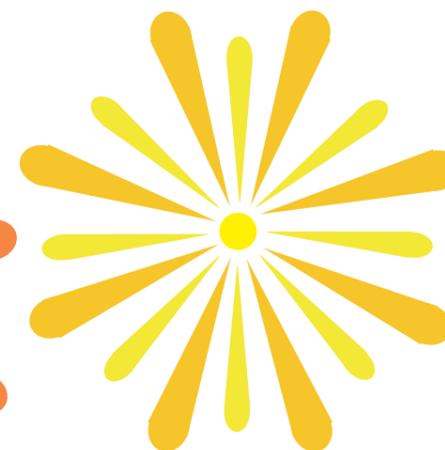
Strontium Nitrate
Strontium Carbonate
Strontium Sulfate
Strontium Chloride



ORANGE

CALCIUM SALTS

Calcium Carbonate
Calcium Chloride
Calcium Sulfate



YELLOW

SODIUM SALTS

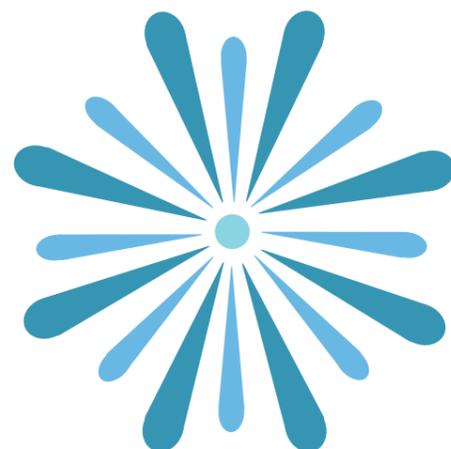
Sodium Bicarbonate
Sodium Nitrate
Sodium Chloride



GREEN

BARIUM SALTS

Barium Nitrate
Barium Carbonate
Barium Chloride
Barium Chlorate



BLUE

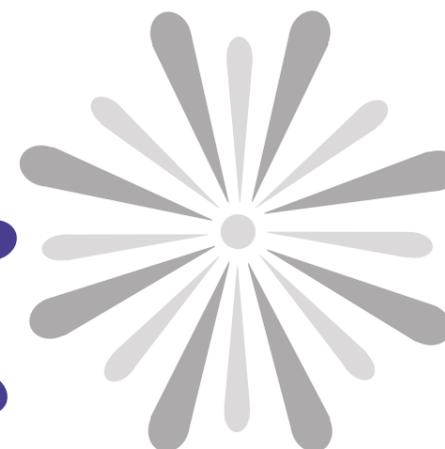
COPPER SALTS

Copper (I) Chloride
Copper Carbonate
Copper Oxides



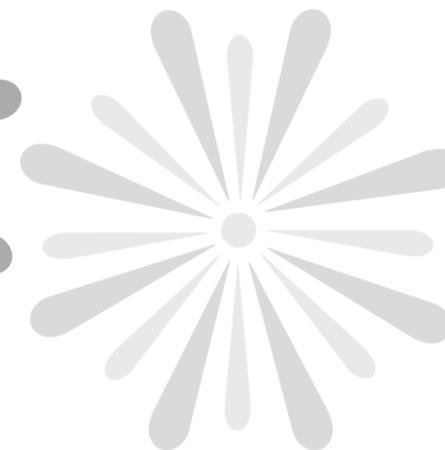
PURPLE

COMBINE COPPER
& STRONTIUM
COMPOUNDS



SILVER

WHITE HOT
MAGNESIUM &
ALUMINIUM



WHITE

BURNING METAL
Magnesium
Aluminium
Titanium