

# 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

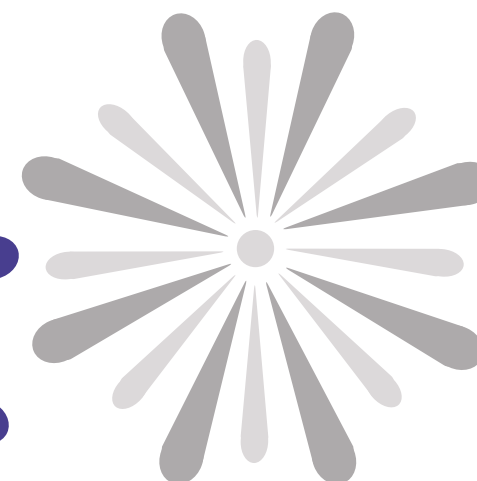
### COPPER SALTS

Copper (I) Chloride  
Copper Carbonate  
Copper Oxides



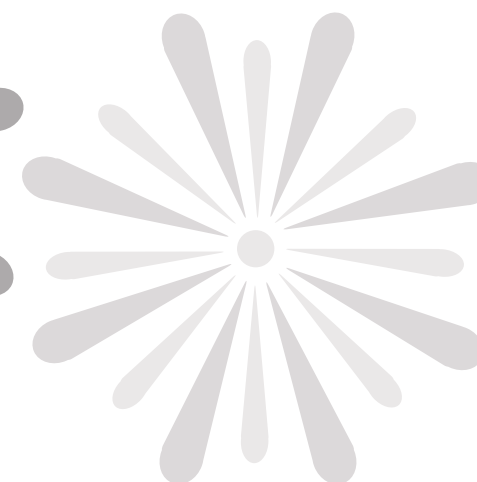
## PURPLE

COMBINE COPPER  
& STRONTIUM  
COMPOUNDS



## SILVER

WHITE HOT  
MAGNESIUM &  
ALUMINIUM



## WHITE

BURNING METAL  
Magnesium  
Aluminium  
Titanium