

Read the article and choose from the list A-Q the best phrase to fill each of the spaces 1-17.

THE CHEMISTRY OF FIREWORKS

Adapted from <http://en.wikipedia.org/wiki/Fireworks>

Colors in fireworks are usually generated by *pyrotechnic stars* — usually just called *stars* — which produce intense light when ignited. Stars contain five basic types of ingredients:

- a fuel **1.**
- an oxidizer – **2.**
- color-producing chemicals
- a binder **3.**
- a chlorine donor **4.**

Some of the more common color-producing compounds are tabulated here. The color of a compound in a firework will be the same as its color in a flame test. Not all compounds that produce a colored flame are appropriate for coloring fireworks, however. Ideal colorants will produce a **5.**

Colour	Example compounds
Red	SrCO ₃ (6.) LiCl (7.)
Orange	CaCl ₂ (8.)
Yellow	NaNO ₃ (9.)
Green	BaCl ₂ (10.)
Blue	CuCl ₂ (11.) at low temperature
Indigo	CsNO ₃ (12.)
Violet	KNO ₃ (13.) RbNO ₃ (14.)
Gold	Charcoal, 15.
White	Titanium, aluminium, beryllium, or 16. powders

The brightest stars, often called *Mag Stars*, are fueled by aluminium. Magnesium is rarely used in the fireworks industry due to its **17.** Often an alloy of both metals called *magnalium* is used.

- A. which provides chlorine to strengthen the color of the flame. Sometimes the oxidizer can serve this purpose
- B. a compound which produces (usually) oxygen to support the combustion of the fuel
- C. which allows the star to burn
- D. which holds the pellet together
- E. lack of ability to form a protective oxide layer
- F. pure, intense color when present in moderate concentration
- G. calcium chloride
- H. potassium nitrate
- I. barium chloride
- J. iron
- K. lithium chloride
- L. strontium carbonate
- M. cesium nitrate
- N. copper chloride
- O. sodium nitrate
- P. rubidium nitrate
- Q. magnesium