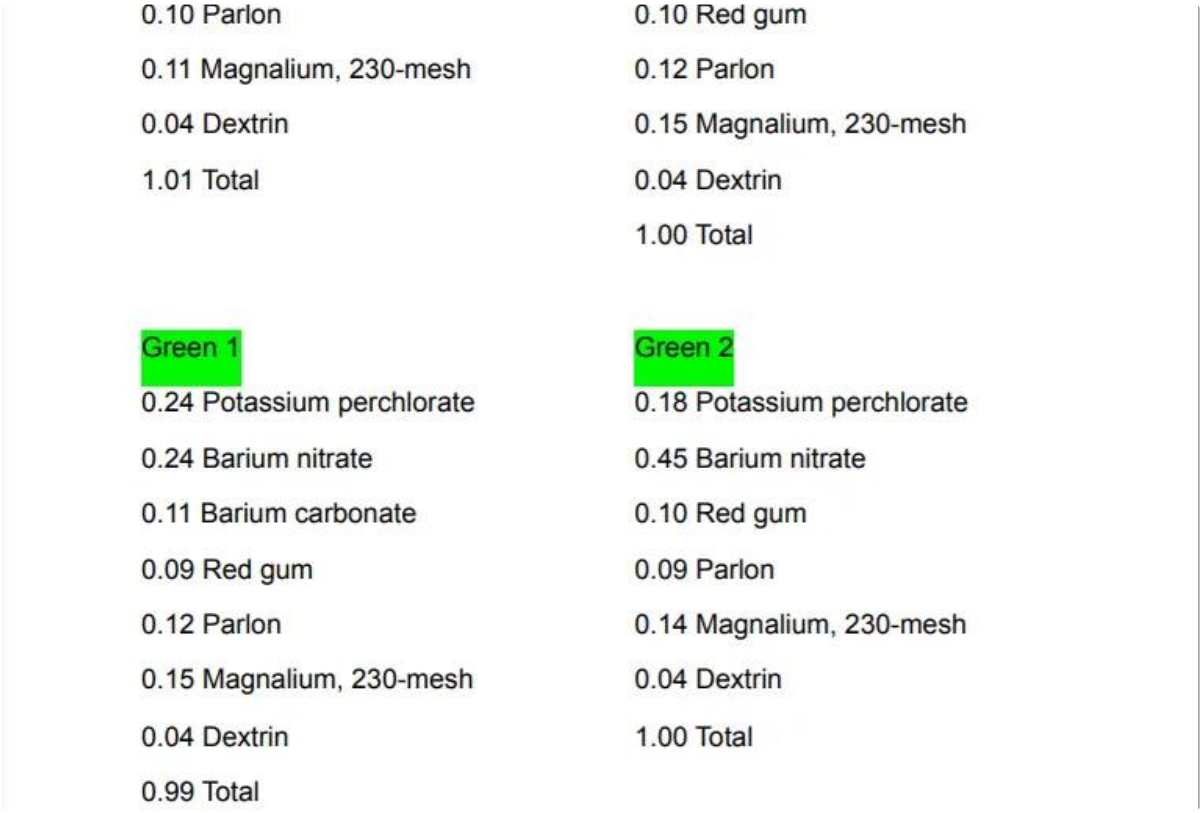
NEWS · FEB 8, 2025

De Colores Espanol: Pojete Spanish star formulas



0.10 Parlon
0.11 Magnalium, 230-mesh
0.04 Dextrin
1.01 Total

0.10 Red gum
0.12 Parlon
0.15 Magnalium, 230-mesh
0.04 Dextrin
1.00 Total

Green 1
0.24 Potassium perchlorate
0.24 Barium nitrate
0.11 Barium carbonate
0.09 Red gum
0.12 Parlon
0.15 Magnalium, 230-mesh
0.04 Dextrin
0.99 Total

Green 2
0.18 Potassium perchlorate
0.45 Barium nitrate
0.10 Red gum
0.09 Parlon
0.14 Magnalium, 230-mesh
0.04 Dextrin
1.00 Total

Pojete Spanish Star formulas

0.18 Copper oxide
0.08 Red gum
0.12 Parlon
0.04 Hexamine
0.04 Magnalium, 230-mesh
0.04 Dextrin
0.98 Total

0.07 Copper powder
0.09 Red gum
0.09 Parlon
0.04 Hexamine
0.04 Magnalium, 230-mesh
0.04 Dextrin
0.99 Total

Lemon Yellow (Green +6% cryolite or sodium oxalate)
0.26 Potassium perchlorate
0.26 Barium nitrate
0.07 Cryolite or sodium oxalate
0.10 Red gum
0.16 Magnalium, 230-mesh
0.13 Parlon
0.04 Dextrin
oxalate
1.05 Total

0.05 Cryolite or sodium oxalate
0.11 Red gum
0.10 Parlon
0.11 Magnalium, 230-mesh
0.04 Dextrin
1.01 Total

0.07 Copper oxide
0.11 Strontium carbonate
0.10 Red gum
0.12 Parlon
0.08 Magnalium, 230-mesh
0.04 Dextrin
1.00 Total

0.09 Copper oxide
0.10 Red gum
0.13 Parlon
0.10 Magnalium, 230-mesh
0.04 Dextrin
1.00 Total

Turquoise
0.27 Potassium perchlorate
0.27 Barium nitrate
0.06 – 0.09 Copper oxide
0.10 Red gum
0.13 Parlon
0.13 Magnalium, 230-mesh
0.04 Dextrin
1.00 – 1.03 Total

Important: The red gum must be a fine powder.

Lime Green
Green composition +2% cryolite or sodium oxalate

Violet or Purple
0.48 Potassium perchlorate
0.12 Copper oxide
0.06 Strontium carbonate
0.09 Red gum
0.12 Parlon
0.06 Magnalium, 230-mesh

0.09 Red gum
0.085 PVC
0.23 Magnalium, 230-mesh
0.04 Dextrin
0.985 Total

0.17 Parlon
0.15 Magnalium, 230-mesh
0.04 Dextrin
0.99 Total

Brilliant White
0.43 Potassium perchlorate
0.19 Barium nitrate
0.12 Red gum
0.22 Aluminum dark flake, 2 micron
0.04 Dextrin
0.01 Boric acid
1.01 Total

are used, less than 150 micron (100-mesh), the color will be whitened or yellowed, spoiling it.

Note: For microstars in comets, the same color formulae are to be used, augmented if necessary with magnalium to accelerate their combustion, depending on the size of the comet or microstar. For a purer color, it suffices to replace the magnalium with magnesium of 74 microns (200-mesh) particle size (coated with stearine), using acetone as the solvent, and eliminating the dextrin. (Use no water with magnesium.)

It is best to avoid the use of Potassium Dichromate, a cancer-causing chemical, when coating magnesium.

Spark-Effect Stars

Willow
0.29 Potassium nitrate
0.05 Sulfur
0.41 Pine charcoal
0.07 Dextrin
0.82 Total

Kamuro
0.29 Potassium nitrate
0.05 Sulfur
0.41 Pine charcoal
0.12 to 0.18 Titanium, 0-250 micron (60 mesh and finer), which will determine the density of the sparks

0.36 Pine charcoal

0.05 Dextrin

1.00 Total

Note: Charcoal is Pine (Nitroparis), and must be ballmilled to airfloat. If Oak, or other hardwood, charcoal is used, the star burnrate will be slower, and the stars will fall for a longer time. Screen mix the composition several times until it is completely homogeneous.

Finish (prime) with screen-mixed black powder made with Vine or Light Poplar charcoal. (Never finish (Prime) with fast black powder or ball milled black powder.)

0.15 Barium nitrate

0.15 Aluminum, dark

0.10 Aluminum, atomized, 100 micron, 140-mesh

0.10 to 0.15 (depending on the burn duration desired) Aluminum, 70-mesh

0.09 Red gum

0.04 Dextrin

0.01 Boric acid

1.00 to 1.05 Total

0.06 Charcoal

0.14 Sulfur

0.14 Titanium, 250micron, 60-mesh

0.05 Dextrin

0.99 Total

White/Silver Palm

0.90 Black powder

0.10 Titanium, 300-400 micron, 40-50 mesh

0.05 Dextrin

1.05 Total

(Suitable for use in Farfalle)

White Pearl

0.50 Potassium perchlorate

0.10 Red gum

0.15 Magnalium, 230-mesh

0.15 - 0.20 Aluminum, 70-mesh (amount will determine tail length)

0.90 – 0.95 Total

Green Pearl

0.15 Potassium perchlorate

0.35 Barium nitrate

0.07 Red gum

0.06 Parlon

0.07 Magnesium, treated, 200-mesh

0.15 – 0.20 Aluminum, 70-mesh (amount will determine tail length)

Red Pearl

0.15 Potassium perchlorate

0.35 Strontium nitrate

0.05 Strontium carbonate

0.07 Red gum

0.06 Parlon

0.07 Magnesium, treated, 200-mesh

0.15 – 0.20 Aluminum, 70-mesh (amount will determine tail length)

0.90 – 0.95 Total

with the parlon.

Gold Glitter

0.68 Black powder (with pine or grapevine charcoal)

0.09 Sodium oxalate

0.09 Aluminum, atomized, 100micron, 140-mesh

0.10 Antimony trisulfide

0.04 Dextrin

1.00 Total

Glitter "Blancoamari" (White?)

0.43 Potassium nitrate

0.13 Barium nitrate

0.10 Sulfur

0.10 Charcoal, airfloat, pine or grapevine

0.09 Sulfur

0.09 Charcoal, airfloat, pine or grapevine

0.13 Antimony trisulfide

0.10 Aluminum, atomized, 100micron, 140-mesh

0.07 Dextrin

0.99 Total

Good for comets.

White Strobe

0.52 Barium nitrate

0.04 Potassium nitrate

0.26 Sulfur

0.14 Magnalium, 63 micron, 230-mesh

0.04 Dextrin

1.00 Total

First Prime Layer, Brilliant White

Second Prime Layer, 50:50 Brilliant-White:Black-Powder-Prime

Note: These stars are difficult to light. A good first layer of the Brilliant White composition, followed by a layer of 50:50 Brilliant-white:BP-prime will ensure ignition, especially if the shell burst is not a hard one. Mild shell bursts are preferred if using these stars. This is a good white strobe star, with a flash rate of about 1.5 Hertz (flashes per second).

0.70 Red Lead Tetraoxide

0.15 Copper oxide

0.19 Magnalium, 63 micron, 230-mesh

0.04 Aluminum, dark

10% Nitrocellulose lacquer

0.125 Parlon

0.083 Black Iron Oxide

0.05 Red gum

Crackle Prime (second layer, 1.5mm, 1/16")

Black Powder +7% Red gum

Note: If magnalium finer, or more coarse, than 63 micron (230-mesh) is used, the delay to crackle-explosion will be reduced or enlarged, so that delay time can be adjusted that way.

Apply the prime layers using 50:50 alcohol:acetone.

The first layer of prime creates a glowing slag layer which surrounds and sticks to the crackle, igniting it well. 250-micron (60-mesh) titanium may be added to this prime layer, so that the titanium will be ignited and projected when the crackle microstar explodes, creating the crackling-flower effect.

breaking shell. The potassium nitrate in such a prime burns at a lower temperature than the ignition point (550-600 degrees C) of the potassium perchlorate in the star composition, or the mixture of that perchlorate and barium/strontium nitrate. (Potassium chlorate, or barium/strontium-nitrate, based stars have an ignition temperature of 400 degrees C, so BP-prime can ignite them, even in from a hard-broken shell.)

How, then, can we ensure the good ignition of the potassium-perchlorate based stars?

A double-layer priming method can ensure that good ignition on stars and comets.

A layer of hot igniter prime is applied to the stars.

Hot Igniter Prime

0.45 Potassium perchlorate

0.30 Potassium nitrate

0.06 Sulfur

0.06 Red gum

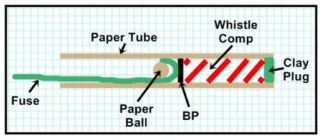
0.15 Charcoal, airfloat Poplar

0.18 Magnalium, 63-micron, 230-mesh

0.05 Dextrin (if you are using water or water+alcohol as the solvent)

1.25 Total

Note: this composition produces a raspy whistle sound. For a smoother, clean/sharp whistle sound, replace the sodium salicylate with sodium or potassium benzoate, and delete the iron oxide.



Black Powder

There are many things to say about BP. I will focus on the most important points.

Concerning lift powder: the powder grains must be durable, with a rapid combustion rate, producing large amounts of gas, but not excessive heat, since we want to lift the shell casing intact, where it can display its effects at the desired height.

If the lift powder produced much heat, as would be the case if a metal powder was used, such as aluminum or magnesium, or if chlorate or perchlorate was used as the oxidizer, the powder would be too powerful, and we risk damaging the mortar or shell.



Explosives

Burst charge

0.35 Potassium perchlorate

0.35 Potassium nitrate

0.30 Aluminum, dark

Flash – Thunder

0.70 Potassium perchlorate

0.30 Aluminum, dark

Lift powder

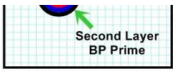
0.75 Potassium nitrate

0.15 Sulfur

0.18 Charcoal, airfloat, Poplar

1.08 Total

Note: The Burst Charge is only used alone in rocket headings or small



Secondly, after the hot igniter prime layer, apply a layer of BP prime (made with Poplar charcoal) screened or ballmilled.

Colors using only nitrates are harder to light, and more expensive to develop production processes for, so the listed color compositions combine the nitrates and potassium perchlorate to improve ignition, and make them less expensive.

Very Important! The charcoal used for the black powder prime has to be a light charcoal, as from Willow, Poplar, etc., i.e. softwoods (due to their porosity and low density), because it lowers the ignition point of the powder, besides being faster burning, especially if ballmilled. That BP prime can maintain ignition from a hard break, not being blown out by the fast travel through the air, and thoroughly igniting the hot igniter prime, and then the color star.

Hardwood charcoals, such as black pine, beech, oak, etc., raise the ignition temperature, besides slowing the burn rate, so those charcoals are used for longer-duration spark effects.

Titanium Whistles

0.70 Potassium perchlorate

ignition from shock, sparks, or heating due to friction. But, this method does not produce very powerful lift powder. Despite that, though, good BP prime can be produced by screen mixing, and even lift powder if good, hot charcoal is used, such as Poplar, Willow, Balsa, Maple, etc. Of course, it is logical that more of such lift powder would be required, than if it had been ballmilled, to propel a shell, etc., to a good height.

There are also effects in which such screen-mixed powder is used, so it does not burn very rapidly, such as: Willow stars, Kamuro stars, or Glitters, etc.

Although it is a method used quite a bit, safely, but not completely free from accidents, grinding the ingredients in a ballmill, in which the material is rubbed between media made of lead, bronze, wood, or other non-sparking materials, will produce a hotter BP.

Ballmilling will take some time, depending on how much pulverization is desired, and the size/weight of the milling media. It is clear that ballmilled powder is of high quality, and fast, because the potassium nitrate particles are forced into the pores of the charcoal, helping to produce the maximum amount of gasses, and faster/cleaner burning.

Research of the Chinese stars' chemical compositions and manufacturing methods

About their colors

especially green, blue and turquoise. Rolling stars with these resins is easy and makes very hard stars.

Here in Spain I obtained and tried a water/alcohol-soluble resin, and it worked fine, but produced a rapidly burning star which did not produce a very long effect. It is a matter of finding the right resin, and the Chinese know a lot about these materials.

-Some resins are soluble in acetone and/or alcohol, and can also be used for binding stars.

-Resins decompose/ignite at a very low temperature (lower than redgum, shellac, and temperature-sensitive sulfur), depending on the type of resin. This is where the virtue of the easily-ignited stars gain this characteristic, resulting from a lower ignition temperature. The resin adds no acidity to the composition, so desired PH levels can be maintained. Quite the opposite would be the case if some sulfur blends were used to lower the ignition point, resulting in a dangerous composition.

-Phenolic resin has a characteristic feature, that of the odor of Bakelite, which is a principal component of electronic circuit boards, among other articles. If one smells a plate of limes, the odor will be similar to the Chinese color compositions.

-I initially recognized the odor of Bakelite/resin due to my profession as an electronics technician. That led me to suspect that Chinese compositions had to be using something to lower their ignition temperatures, and that something had something to do with Bakelite. After a bit of research, I realized the Chinese were using the resins, and subsequently I began to

0.30 Potassium perchlorate

0.38 Potassium nitrate

0.14 charcoal, airfloat

0.05 Red gum

0.06 Sulfur

0.09 Black iron oxide

0.15 Magnalium, 63-micron, 230-mesh

0.05 Dextrin

The combination of the potassium nitrate and the perchlorate creates a more powerful oxidizer, but the ignition point is also slightly raised over KNO3 alone.

Softwood charcoal, such as Poplar, Willow, Maple, etc.

The red gum regulates the combustion, and can be used as a binder if alcohol or acetone is used as the solvent.

The sulfur lowers the ignition point of the composition.

The iron oxide forms molten iron slag, which helps with ignition.

The magnalium may be replaced with dark aluminum. Either will increase the combustion temperature for good ignition.

carbonates, nitrates, perchlorate, etc. Some of their compositions use higher amounts of metal fuel to increase the brightness, but, of course, with the tradeoff of increased burn rate, and less purity of color. Certain levels of magnalium or magnesium increase the burn temperature to the point where colors are washed out and whitened. But, that's fine for them.

About Priming

Having carefully examined the priming of many stars, in both shells and other effects, I can say the following:

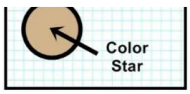
The Chinese use a single layer of prime on color stars. I have not observed double prime layers on their stars.

Unlike BP using only potassium nitrate as the oxidizer, the Chinese use a mixture of potassium nitrate and potassium perchlorate, probably 50:50, to increase the heat of combustion.

They also include a small percentage of charcoal, phenolic resin, and maybe some, but very little, sulfur.

Also added to this prime to increase the heat of combustion is a percentage of magnalium or dark aluminum.

And, I suspect the prime contains a percentage of silicon powder which, when burned, leaves tiny hot slag droplets of silicon dioxide, to help with the priming and ignition. But this is a hypothesis on my part, which I can not confirm.



UNCATEGORIZED

Read it online

With the videos and comments: https://www.westernpyro.org/blog/de-colores-en-espanol