

Gerb Colours

From an Article by John Glasswick

I entered the small gerb and ground competitions this year in Fargo and received a number of comments that my gerb colors were comparable to those of Clive Jennings-White (I may be assuming incorrectly that these were compliments). This article was prompted by requests to publish the formulas for gerb colours (yes, that's the way we spell it in the Great White North).

I like to enter the competitions at the PGI conferences each year because they motivate me to develop new areas of my pyrotechnic knowledge. The past year I had focused on colour formulations. Before this year I had only one colour formula that I was pleased with, a red that Tom DeWille had given out, on PML a number of years ago. Not only was I pleased with the red colour of Tom's formula, it used easily obtained, non-esoteric (that Jennings-White factor again), relatively safe ingredients, burned long and fiercely, stored and transported well, and was easy to handle.

To derive other colours, I decided to start from the red formula, modifying only the colour impairing oxidizers. The formulas that I finally arrived at retain most of the good characteristics which I like about the red. I doubt that I can claim any original discovery regarding these colour formulas. Their simplicity suggests that similar compositions are likely to have been known and used by many before me.

All quantities are in "parts," the magnalium is 200 mesh, and the titanium is 18–30 mesh sponge. Since the titanium is present only to provide sparks, other metals such as iron and ferrotitanium can be substituted. Note the very small quantity of sodium nitrate in the lime formula. The actual colour is extremely sensitive to the amount of sodium nitrate, and the yellow can easily overpower the green of the barium nitrate if too much is used.

The blue I used in my competition gerbs was from Pymcolor Hannony by Joel Baechle (page 34) with 15 parts titanium added for sparks, so I am not at liberty to publish this formula. I found Joel's book well worth purchasing, and the book has also been invaluable for me for star colour formulas.

Since the above formulas contain titanium, do not hammer the composition into the gerb tubes. I don't have a press, so I just use my 210 pounds of body weight to press each increment with a wood dowel. I have not had any problems with consolidating the composition in this way for gerbs up to 1½ inches, including the impact of handling, vibrations, etc., from storing the gerbs for months and transporting them over 1000 miles.

	Red	Yellow	Orange	Green	Lime	Purple	Turquoise
Red Gum	10	10	10	10	10	10	10
Parlon	20	20	20	20	20	20	20
Magnalium	20	20	20	20	20	20	20
Titanium	15	15	15	15	15	15	15
Strontium nitrate	50		33			25	
Sodium nitrate		20	17		1		
Barium nitrate		30		50	49		50
Cupric oxide (black)						10	25
Potassium perchlorate						25	

The compositions are hot and slow-burning, so I have found that the gerb tube needs to be thicker if the duration is to be longer than about 30 seconds. As well, these compositions are drossy, so the nozzle needs to be a little larger than the typical $\frac{1}{3}$ of the tube inside diameter. I have found the compositions difficult to ignite, but I have had no problems as long as they are primed with a 50/50 mix of black powder/composition.

In my determination of these colour formulas, no effort has been made to achieve balance of the chemical reactions. I would expect that these formulas can be made efficient; however, I have chosen to leave them as they are for their simplicity of formulation.