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Sparkler compositions

Chapter 4: Sparkler compositions

Sparkler #1

Source: rec.pyrotechnics

Comments:

Preparation:

Potassium perchlorate.....	40
Mixed titanium fines.....	40
Dextrin.....	18
Propyl guar.....	2

Sparkler #2

Source: rec.pyrotechnics

Comments:

Preparation:

Potassium nitrate.....	14
Sulfur.....	3
Charcoal.....	3
Aluminum.....	2
Binder.....	qs

Sparkler #3

Source: Chemical abstracts[14] 122, 59596

Comments: Better visual effect, better spark lifting altitude. lower combustion rate, and better safety.

Preparation:

Charcoal.....	5-20
Nitroguanidine.....	10-20
Ti or Mg/Al alloy powder (as spark forming component).....	10-20
Fe-powder (spark forming).....	10-30
Potassium nitrate.....	balance

Sparkler #4

Source: rec.pyrotechnics, posted by Footleg <chm5pf@sun.leeds.ac.uk

Comments:

Preparation:

Potassium perchlorate.....	60
Aluminum.....	30
Dextrin.....	10

Sparkler #5

Source: rec.pyrotechnics, posted by Footleg <chm5pf@sun.leeds.ac.uk

Comments:

Preparation: Dextrin binder can probably be used.

Potassium nitrate.....	14
Sulfur.....	3
Charcoal.....	3
Aluminum.....	2

Sparkler #6

Source: rec.pyrotechnics, posted by Footleg <chm5pf@sun.leeds.ac.uk

Comments:

Preparation:

Barium chlorate.....	16
Aluminum flitter.....	24
Shellac.....	3

Sparkler #7

Source: rec.pyrotechnics, posted by Footleg <chm5pf@sun.leeds.ac.uk

Comments:

Preparation:

Strontium nitrate.....	5
Shellac.....	1

Sparkler #8

Source: rec.pyrotechnics, posted by Footleg <chm5pf@sun.leeds.ac.uk

Comments:

Preparation:

Potassium perchlorate.....	50
Fine Aluminum.....	35
Dextrin.....	15

Sparkler #9

Source: rec.pyrotechnics, posted by Footleg <chm5pf@sun.leeds.ac.uk

Comments:

Preparation:

Potassium nitrate.....	7
Sulfur.....	2
Charcoal.....	4
Aluminum.....	3

Sparkler #10

Source: rec.pyrotechnics. Original by Bruce Snowden, post by Sweden <sweden@synchron.ct.se.

Comments: The composition burns very fast and explosively if one doesn't pay extreme attention towards the diameter of the sparkler. It is found that if the comp is thinner than 1.8 mm then the propagation stops. If the diameter is more than 2.0 mm the burning is too fast, sending sparks all the way down to the ground. Another severe problem is keeping the ingredients mixed in the suspension. The Ti has a very strong tendency of ending up in the bottom of the test tube, making a plug. Another problem is that after the first dipping and subsequent drying, the second (and last) dipping has to be performed very, very fast or else the first dipping is spoiled, hence the bound dextrin is redissolved. Using coarser perchlorate, finer titanium and making the dipping mixture thicker (by using less solvent) may solve these problems.

Preparation:

potassium perchlorate.....	47
Titanium.....	47
Dextrin.....	6

Sparkler #11

Source: rec.pyrotechnics. Inventor of this composition is Bruce Snowden. posted by Sweden <sweden@synchron.ct.se

Comments:

Preparation: The aluminum is probably supposed to be atomized, but experimentation is required.

Potassium nitrate.....	14
Sulfur.....	3
Charcoal.....	3
Aluminum.....	2
Binder.....	qs

Sparkler #12

Source: rec.pyrotechnics. Original is by Bruce Snowden. Posted by Sweden <sweden@synchron.ct.se

Comments:

Preparation: Guar gum comes from the seeds of the legume Cyanopsis Psoralioides. It should be possible to substitute red gum.

Potassium perchlorate.....	40
Mixed titanium fines.....	40
Dextrin.....	18
Propyl guar.....	2

Sparkler #13

Source: "Mengen en Roeren"[6], page 224.

Comments:

Preparation: Mix the composition with a 10% dextrin solution in water, and dip iron wire or wood in the moist composition. Adding 500 parts strontium nitrate will produce a red color, adding 60 parts barium nitrate will produce a green color.

Potassium chlorate.....	300
Aluminum granules.....	60
Charcoal.....	2

Sparkler #14

Source: rec.pyrotechnics. Posted by Tom137 <tom137@aol.com>.Composition from Weingart[5], p. 190.

Comments:

Preparation:

Potassium perchlorate.....	10
Aluminum, finely powdered.....	7
Dextrin.....	3
Water.....	20



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