APA

AMERICAN PYROTECHNICS ASSOCIATION

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Possible R&D Projects with value to both the DOT & Fireworks Industry

Break Charge/Burst Charge

- Terms for the composition used to break open a fireworks component up in the sky and ignite the pyrotechnic effects inside the component
- The big question: Is this “intended to produce an audible effect”, known as a “report” in the fireworks industry?
- VERY significant with Consumer Fireworks – and DOT classification

Consumer Product Safety Commission (1966 rule)

- Established regulations for consumer fireworks, later updated in 1976.
- Any composition “intended to produce an audible effect” (a “report”) was limited to 130 milligrams in an aerial device/50 milligrams in an ground device.
- This regulation was aimed at M-80’s, cherry bombs, and large powerful firecrackers

The “gray area” - break charge

- Break charge, though, clearly makes a noise when it bursts a component open in the sky
- The FDA/CPSC regulations exempted “propelling and expelling charges” consisting of potassium nitrate/sulfur/charcoal (traditional “black powder”) from their original “audible effect” rules in 1966, but then later reserved the right to say that it might be audible effect if it was “too loud”

The current CPSC “test”

- A laboratory technician listens to a device when it is fired in its intended manner.
- IF the burst up in the air is deemed by the tester’s ear to be “too loud”, the item fails, and can not be sold to consumers
- This has been a reproducibility nightmare for the industry for almost 40 years now – a quantitative test is urgently needed

WE NEED AN OBJECTIVE TEST

- It is impossible for the industry's testing program in China to match CSPC's testing when such a subjective test is used
- This has created issues between the CPSC and the fireworks industry
- DOT incorporated APA Standard 87-1 into their regulations in the late 1980's in a splendid example of government/industry cooperation.

The “Equivalency” Issue

- APA 87-1 calls for bursting charges to be black powder or “equivalent” nonmetallic pyrotechnic composition
- The $64 question – what is “equivalent”?
- We desperately need a test that a manufacturer can use to be certain that their products comply with the DOT and CPSC rules, as well as APA Standard 87-1.

A workable test must:

- 1. Discriminate black powder and “equivalent” compositions from more energetic break charges –thereby maintaining an equivalent level of transportation risk.
- 2. Be reproducible whether it is run in China or the U.S.
- 3. Be portable, safe to the tester, inexpensive, and – most of all – acceptable to DOT and the CPSC.

Why not just use black powder?

- 1. It is somewhat hazardous to produce
- 2. It is quite subject to batch-to-batch variation in its burning speed
- 3. Therefore, “hybrid” break charges have been developed by some China factories – these are safer to produce since a less energetic mixing process is required
- 4. The question remains however – Are they “equivalent”?

Let's develop a quantitative test

1. Black powder and truly "equivalent" compositions pass the test
2. More-energetic compositions fail the test – thereby maintaining transportation safety
3. The test gives reproducible results
4. The test can be done in a test field in China, as well as here in the U.S.
5. DOT, CPSC, and APA agree on the test

Conclusion

- We support a research program aimed at developing a quantitative test for “break charge” to help maintain the excellent transportation safety record for Consumer Fireworks, classed as 1.4G explosives
- We are prepared to offer any assistance we can provide for such a program
- Thank you!