

Omni Explosives' Comments Concerning Our Shock Tube and PAN Disrupter Problems

*by Bill Nixon,
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Attention PAN Disrupter Users:

As you may know by now, there has apparently been a rash of misfires with the PAN Disrupter over the last few months. You have probably received notifications about this and you may have already seen a report containing test results of investigations into the cause of these problems. During the last week, I have received an increasing number of emails and phone calls about this subject. I am writing this to clear up a few things concerning the Shock Tube that Omni offers for sale. Before I continue, please be aware that I am on the periphery of this situation. As such, I am only trying to explain about the things that we specifically know. I have been in touch with HDS and several other people who have been investigating this problem, but it is not my place to comment on the PAN itself or its accessories other than the shock tube that we have or will sell.

From what we have been told, it appears that one or more brands of shock tube may be related to these misfires. One of the issues is variations in the diameter of the tube. Omni sells a tremendous amount of shock tube to the law enforcement community, most of which is used for the PAN disrupter. Most explosive suppliers across the country sell to mines, quarries and construction companies. They know very little about the EOD community's applications for explosives. Your use of shock tube with the PAN would leave them scratching their heads. In their world, shock tube is made for setting off blasting caps, and that's about it. Shock tube for the PAN is definitely an "Off Label" application. The sales of shock tube for the PAN is minuscule compared to its intended application.

Here at Omni, we are unique in the fact that our current business consists primarily of law enforcement and military customers. For this reason, we try to know the application of the items we sell and we do our best to provide the highest quality products at a reasonable price.

The most common commercial shock tube is usually a nominal 3mm in diameter. The conversion of 3mm to the imperial (English) system equals .118 inches in diameter. However, the tube usually measures around .120 to .122 inches in diameter. This is size that Omni offers, unless otherwise specified.

Contrary to what you may have been told, there is no standard specification for the diameter of shock tube and it can vary from manufacturer to manufacturer. Depending on the intended use and the whims of the manufacturer it can be much larger or smaller. The military uses “mini tube” for some applications to save space and weight. It is as small as 2.16mm (.085 in.). When extra strength and ruggedness are required, military as well as commercial shock tube may be 3.8 mm (.150 in.) or larger in diameter. Remember, the big explosive corporations don't make this stuff for firing PANs!

To further confuse the issue, shock tube is often slightly oval in shape rather than perfectly round. If you measure your shock tube with a micrometer or vernier caliper, be sure to check for this “out of round” condition. Average the small and large measurement at a given point on the tube to get the true diameter. Shock tube is flexible and will conform when inserted into round hole.

For example: if you find that your tube's smallest diameter measures .119 inches at a given point. Rotate the measuring device 90 degrees (a quarter turn) and measure again. Say it now measures .123, the average would be .121 inches, which falls within the desired range.

Omni purchases approximately 2 million feet of shock tube every year. This shock tube is custom manufactured to Omni's specifications and it is delivered to us in bulk on very large process rolls. We use this tube to manufacture our shock tube blasting cap assemblies as well as rewind it onto various size rolls for our customer's use, primarily for the PAN.

During the past 5 years, we have had two suppliers of this shock tube. Our current vendor makes the tube for us in two colors: Yellow and Olive Drab Green. Other than the color, they are exactly the same. We have been told by the people who know these things that both of our vendors make shock tube that is acceptable for use in the Pan Disrupter.



Both of these vendors are located in the United States and the shock tube is completely manufactured within the borders of the United States. After extensive searches of our purchase orders, shipping records and ATF magazine records, to the best of my knowledge, if you have received shock tube from Omni Distribution, Inc. since January 1, 2006, you can be sure that it is 100% American made and is acceptable for use in the PAN Disrupter. Also, to the best of my knowledge, we have had no complaints or other issues with any of the shock tube we have sold during this time period.

If you believe you have had a misfire due to shock tube purchased from Omni, please let us know. If we don't know about it, we can't fix it.

If you need further confirmation of the origin of your tube on hand, please provide as much of the following information as possible to us and we will do our best to find out exactly what you have:

- Date Code of the roll (example: 12JAN2007)
- Color of Tube (Yellow or OD Green. If it is another color, you didn't get it from Omni)
- A number on a pink label (this is our internal inventory control number. It is unique and very helpful to us for tracking purposes)
- Other information such as our packing slip or invoice number, your purchase order number, etc.

While on this subject, I would like to address a couple of related topics:

Shelf Life of Shock Tube: If stored in a cool, dry place, shock tube will work for many years. It is my personal opinion that you should use shock tube older than two years from the date of receipt for training purposes or other non-critical applications. You should keep your newer tube for actual call-outs and critical operations. Testing a couple of hundred feet of your newer tube would also be prudent. You may have your own procedures and protocols, but when it comes to your inventory it is just common sense to use the old stuff for training. This goes for your blasting caps too. Any shock tube over five years old should be considered suspect.

Lightning Thermo Tube: Lightning Thermo Tube is a really neat product. It is another type of shock tube and looks pretty much the same as what you are used to seeing. However it is made with different chemicals in the core. As you probably know, standard commercial shock tube has a light coating of an HMX and aluminum dust mixture inside the tube. Lightning Thermo Tube, on the other hand uses a potassium perchlorate (plus other chemicals) and aluminum dust mix. For 99% of commercial applications, both types of tubes are interchangeable. Both types will initiate the other when spliced. The Lightning tube tends to spit out more of a "flame" at the open end than the HMX/AL tube. This makes it good for igniting things like smokeless and black powder. The Lightning tube that I have is a grey, translucent color although it may have also been made in different colors.

As good as this tube may work for some things, **DO NOT USE THERMO LIGHTING TUBE FOR THE PAN DISRUPTER.** The potassium perchlorate and aluminum dust reaction simply does not produce the pressure required for the PAN's function. This is not a criticism of this product; it is just a fact of this chemical reaction. I intend to write a paper in the future about this product, because it will do several useful things that the HMX/AL type tube will not.

Please contact me if you have any questions about the shock tube we provide. Also, feel free to contact me with any additional information or comments you may have. However, I cannot help you with specifics about the PAN Disrupter or its ammunition. Please contact the manufacturers of those products for that information and advice.

Thank you for your continued support

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