



INERT Explosive Simulant Manufacturers Report

1. The below is an unsolicited analysis on the different manufacturers that sell INERT explosive simulants and IED Training aids. All of the information is the opinion of the group's members based on personal evaluations is using the products and or inspecting the company's offerings on their website. Manufacturers and potential and past customers may or may not agree with our evaluation. Again, this is the opinion of members of this group and their personal experience in working with these types of products.
2. The overall grading for each company is based on following 5 factors:
 - Varsity: Inert simulants commercial and HME, Ordnance, IED's
 - Quality: Visually, Tactile, and realism
 - X-ray: x-ray correct quality
 - Pricing: How much do they charge
 - Sell internationally: Yes or No
3. Explosive Simulants Manufacturers and types of INERT explosives used for training :
 - A. There are 2 types of explosive simulants on the market. Not x-ray correct and X-ray correct.

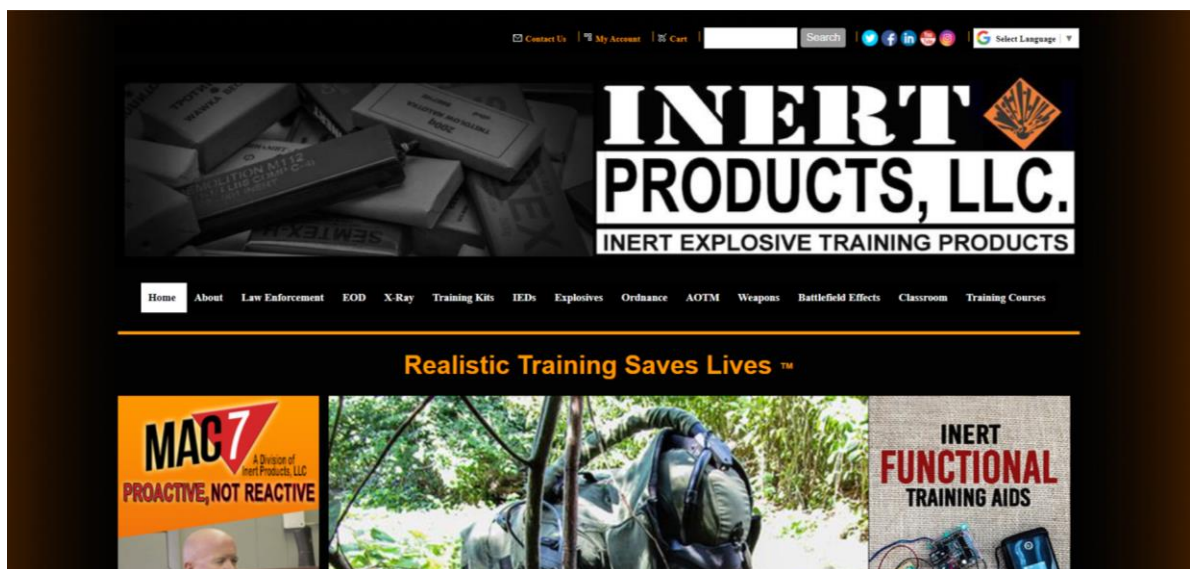
- Not x-ray correct but visually correct and can be used for visual training. However, they should never be used for x-ray training because the materials they use do not show up in x-ray like the real explosives they are simulating. Quality can vary based on how well they match the real explosive product.
- X-ray Correct: To be x-ray correct they have to meet two criteria:
 - The density in g/cc matches the explosives it is simulating (e.g. TNT has a density of 1.5 to 1.6 g/cc and a block of wood made to look like a TNT CAST booster is not even close by a mile). Density is important because it will ensure the weight is accurate and also for x-ray (especially in grey scale) the density determines what shade of grey it runs. If the density is not correct the simulant will NOT respond in x-ray correctly. Typically, with explosive simulants the densities are exceptionally low compared to the real explosives. This can cause them to be overexposed in x-ray and not be visible where a real explosive would. Another perfect example is just the opposite and when people use clay as an explosive simulant. This has a much higher density and will show up in a much darker shade of grey vs a real plastic explosive. It will also not wash out if over exposed where the real explosive would. The density of an explosive material is especially important for many reasons.
 - The average effective atomic number (Z_{eff}) needs to be in the same range as the explosive it is simulating. You have organic and inorganic explosives and one will turn orange in x-ray and the other will turn green. Those color ranges are Z_{eff} ranges for organic and inorganic materials based on how an x-ray reacts with the material. A block of wood or even wax and sawdust will turn orange, but the Z_{eff} of these materials is exceptionally low compared to real explosives. This means that if you try and use them on a cabinet x-ray that can auto detect explosives they will not alarm because the Z_{eff} is too low. They will also show up in a much lighter color of orange vs the real explosive.

https://en.wikipedia.org/wiki/Effective_atomic_number

4. **Who makes explosive simulants:** From a worldwide perspective there are not that many companies that manufacture and sell Inert Replica Training aids. Based on our own knowledge and experience plus searching the internet we develop this list of companies that actually sell Inert explosive simulants. The below is a list of companies that we could find that have a website and sell explosive simulants and Inert training aids? Many of these we have “tested” to verify density and Z_{eff} vs the real explosive they are simulating. We have also collected pricing data on almost all these companies’ products. If we missed a company, please let us know as we plan to update this report as we receive more information and feedback. We did not include “distributors” in this report and only listed the actual manufacturers.

- **Inert Products:** <https://inertproducts.com/>

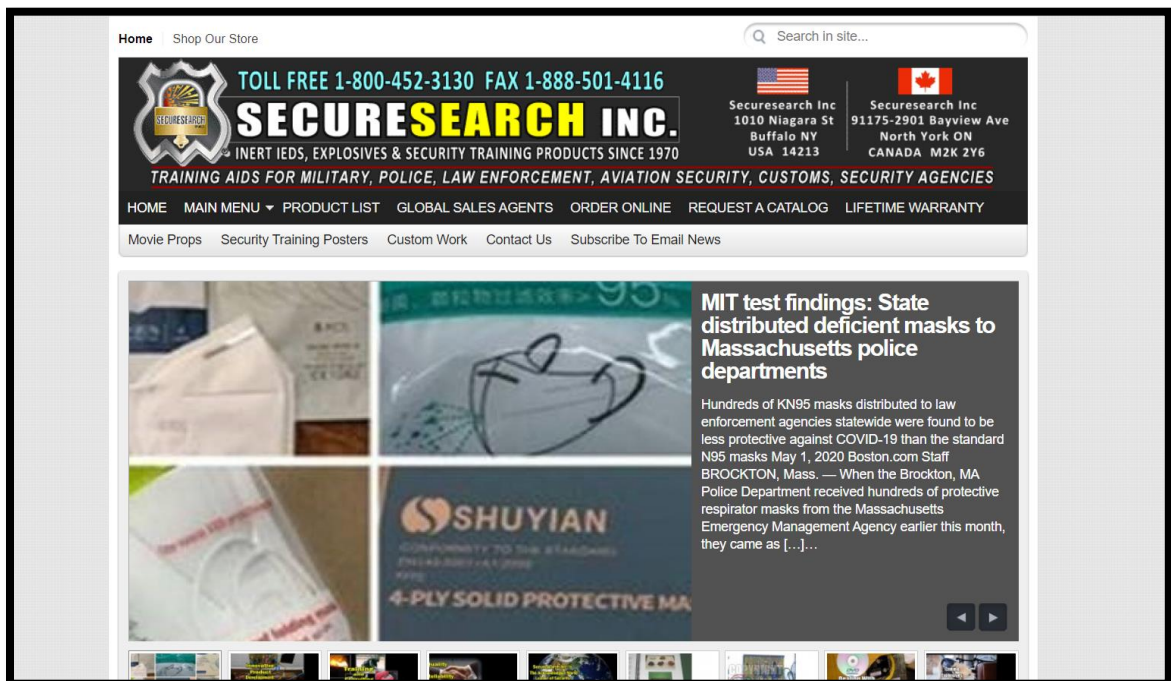
Inert products are the one stop shop for all things INERT from ordnance to explosive simulants and IED's. What they mostly advertise on the website are non-x-ray correct visual training aids, but they do offer "X-ray correct" simulants and IED's. I have tested their x-ray C-4, Semtex, Det Cord, and sheet explosive they are x-ray correct and also very realistic. The majority of what they sell is not x-ray correct, so you just need to tell them when you talk to them that you want x-ray correct. They have a ton of other non-x-ray correct products that are visually accurate but not x-ray and the quality varies by price. As the price goes up the quality increases so their low-cost dynamite while visually good enough it does not feel or x-ray like a real stick of dynamite. Their deluxe dynamite is much better and has a good filler for post blast but the density and Zeff are really low, so it is not ideal for x-ray. Their C-4 and plastic explosives come in 3 levels of quality from (visual only, visual, and tactile good), To (visual, tactile and x-ray correct). The price for x-ray correct stimulants starts around \$70.00 per lb. and up. Their none x-ray correct stuff can be as low as \$12.00 up to \$40.00 depending on the quality level. They have the most variety of products of any other INERT simulant company. They are also about the only game in town for replica ordnance. They are also on GSA for you Americans.



Variety: A+
Quality: C to A (depends on the product)
X-ray: B limited selection but they do have it
Pricing: B+
Sell internationally: Yes

- **Secure Search:** <http://www.securesearchinc.com/>

Secure search has been around for many years and is one of the first companies to sell INERT training devices. They have a ton of different products from military ordnance, explosive simulants, and IED's. They have a ton of different real world IED's and are particularly good at making devices that have been used in real world incidents. They make exceptionally good INERT functioning IED's that have accurate circuit design. They are semi old school as far as their IED's and do not really have the newer stuff that is seen in hot spots overseas. Their explosive simulants are of a particularly good visual and tactile quality and they do (or did) offer x-ray correct materials. All of their stuff is a bit pricy and when I purchased some x-ray correct stuff awhile back it was expensive (\$200 plus range per item). While the x-ray stuff did turn the right color, the densities were off and also the *Z eff* some sometimes they did not trigger the x-ray autodetection. They have a ton of products on their website and their website is not the most user friendly. They make good stuff, but my past experience is that the price is high when you compare to somebody like Inert products for the same type item.



Variety: B+
Quality: B
X-ray: D- limited
Pricing: D-
Sell internationally: Yes

- **SVS Countermeasures Training:**

<https://svscountermeasurestraining.com/collections/inert-training-devices>

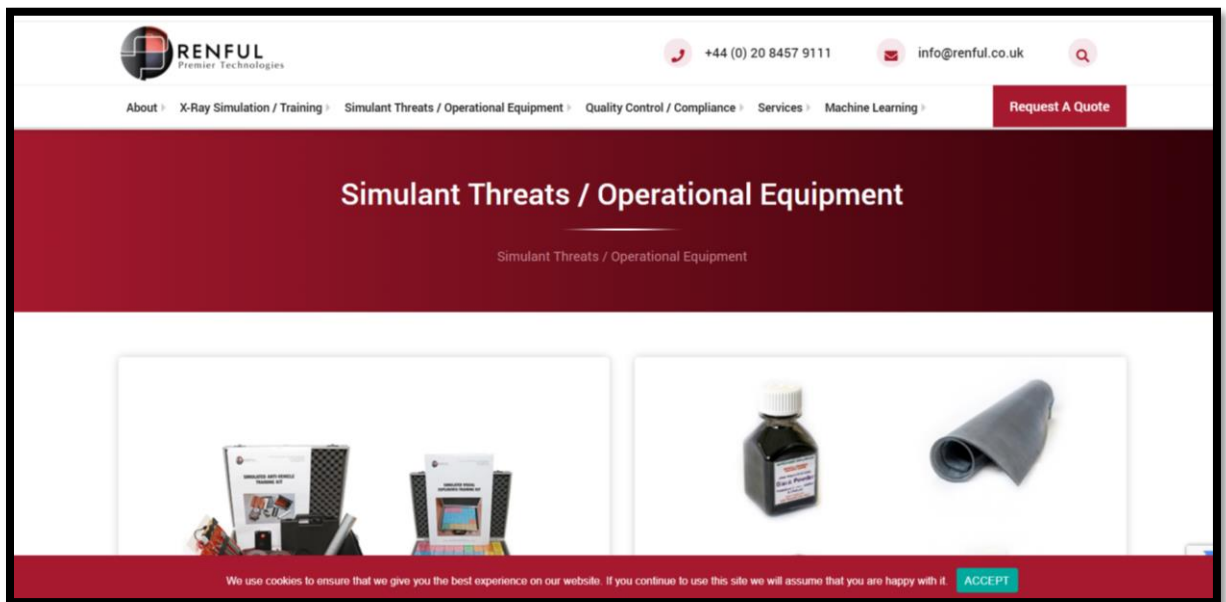
The guys are new and are a USA company but sell their products worldwide. They cater to EOD and Checkpoint security as far as their products. They have a huge line of explosive simulants that are either specifically for EOD (non-x-ray correct) or checkpoint (x-ray correct). They specifically tell you if the product can or cannot be used in x-ray. Their stuff is very realistic, and the packaging and quality is really good. They also have training kits not just for checkpoint but also for EOD. The prices are on the website and they are exceptionally good for both their x-ray and non-x-ray correct products. The realism is really high with these guys and even if you blow up their simulants what is inside (e.g. dynamites) looks just like a real thing. You can get a pound of x-ray correct C-4 from these guys (\$45.00) for just about the same price you can get a non-x-ray correct version (\$30.00). For x-ray correct those are really good prices based on some of the other x-ray correct vendors prices.



Variety: B
Quality: A
X-ray: A+
Pricing: A+
Sell internationally: Yes

- **Renful:** <https://renful.co.uk/simulant-threats-operational-equipment/>

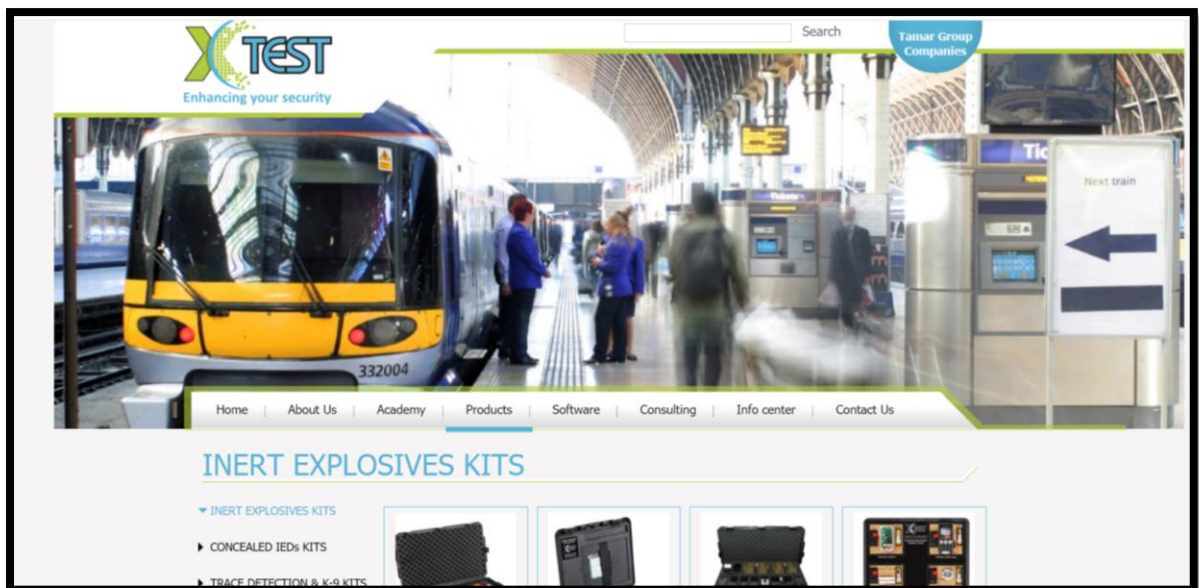
All of Renfuls products seemed to be geared specifically for checkpoint training (x-ray, bag search, etc.) but all of their simulants are supposed to be x-ray correct. Their prices are not bad for their kits and the quality is good. They do not have anything as far as ordnance and a limited selection of explosives but what they have will work for both visual and x-ray training. They do have several different kits that are based on specific threat categories. The kits are reasonable priced, but I honestly do not know if their products are x-ray correct. They claim they are so we just have to assume they will work correctly. When you look at the products, they have to they look “OK”, but the realism seems to be off a little when compared to the real explosive.



Variety: D
Quality: C
X-ray: A (we assume)
Pricing: A
Sell internationally: Yes

- **Tamar (X-TEST):** <http://www.x-test.com/>

TSA made these guy RICH and they are the most expensive simulants on the market. These guys are from Israel and make several different kits geared for checkpoint training. They will also sell you individual simulants, but they are crazy expensive (like \$325.00 for a block of C4). All of their stuff is x-ray correct and of a remarkably high accuracy as far as the density and average effective atomic number. The only people that really buy their kits and simulants are airports and TSA was only using their stuff (not sure about now). If your EOD, these guy stuffs are way overpriced, but they do supposedly sell EOD level simulants at a much lower price. This stuff is “laboratory” level and extremely high priced. Unless you are an airport and are doing test on EDS these guys prices make them limited as to who is actually going to pay those prices. Other companies are making x-ray correct at much lower prices so not sure how why you would want to buy these products.



Variety: C
Quality: A-
X-ray: A+
Pricing: F-
Sell internationally: Yes

- **AI Explosives:** <http://www.aiexplosives.com/>

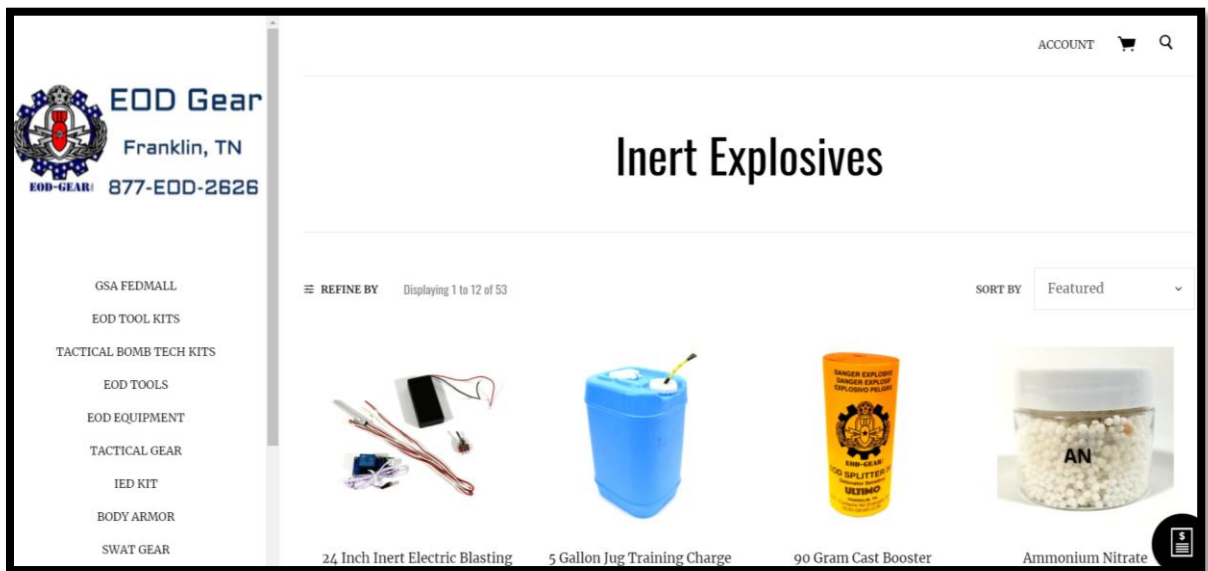
This company is another high-end x-ray correct group that caters to airports. They make x-ray correct explosive simulants that are supposed to be very accurate. I am not sure of their pricing but typically this stuff is regarded expensive. The quality is fairly good visually, but they do not have any commercial type explosives that will match manufacturers packaging.



Variety: D
Quality: C+
X-ray: A
Pricing: Unknown
Sell internationally: Yes

- **EOD Gear:** <https://www.eod-gear.com/inert-m112-c4-block/>

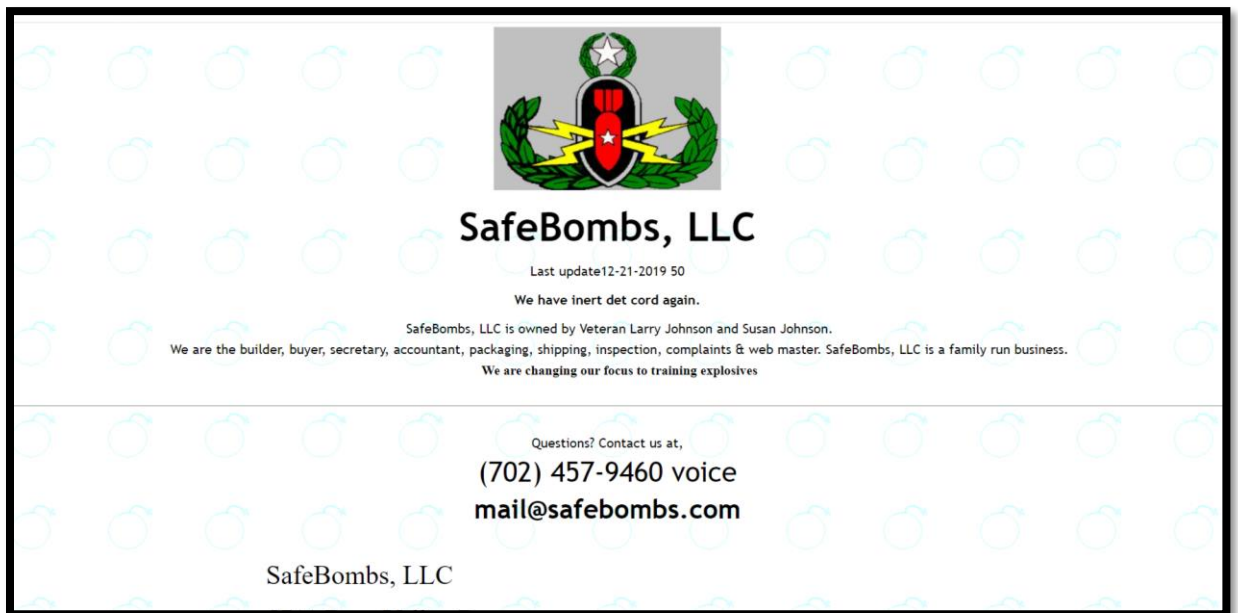
These guy at the smaller end of the scale, but they do sell inert explosives, HME's. Dets and even IED's. This stuff is not x-ray quality and it is hit or miss if their stuff even turns the correct color (typically no). These guy products are "OK" and will do the job and they price everything pretty cheap. If you need something cheap you can blow up but not high quality this stuff will work. Good examples are their cast booster is a block of wood and their C4 is very squishy and turns almost green in x-ray (should be orange). Their dynamite looks good but inside of it was a white powder and can be messy. They have some HME's on their website too but do not expect them to be density and *Z eff* accurate.



Variety: B-
Quality: C+
X-ray: D
Pricing: A
Sell internationally: Unknown

- **SafeBombs:** <http://safebombs.com/>

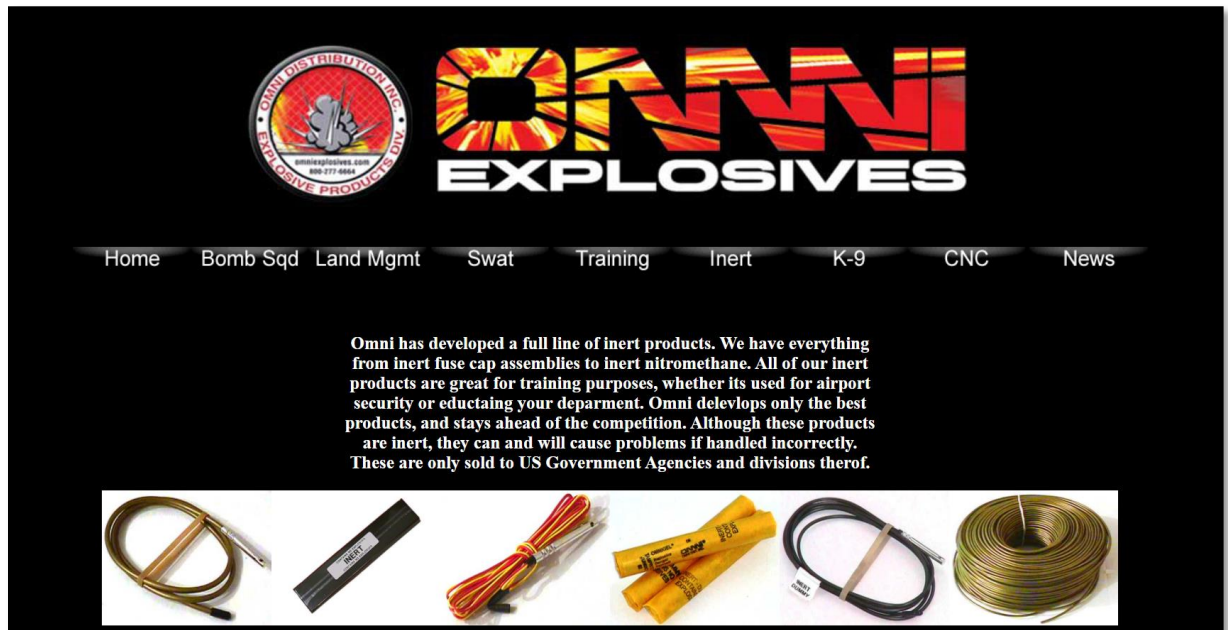
Safe bombs are really hard to find, and their website is pretty bad, but they do have Inert training aids. None of their stuff is x-ray correct (except their det cord but they and Inert Products/EOD Ger buy it from same manufacturer). They have a few explosive simulants, but the quality is “average” and none of it is for x-ray. They do make exceptionally good functioning IED’s that are electronically sound. Prices are pretty low so if you are looking for something that is “OK” and not for x-ray but at a low price these guys can help.



Variety: C
Quality: C
X-ray: F
Pricing: A
Sell internationally: Unknown

- **OMNI Explosives:** <http://www.omniexplosives.com/Inert.html>

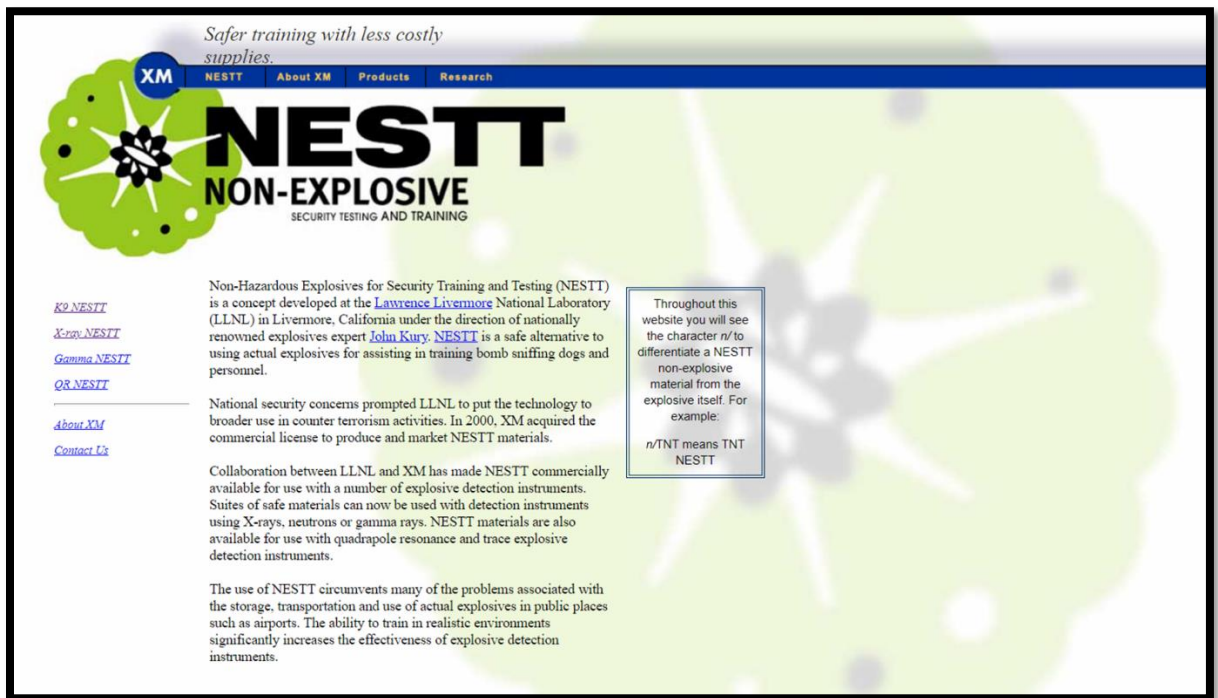
Omni only sells explosive simulants and no kits or IED's. Their website sucks and it appears by design, but you can send them an e-mail and request their catalog. The catalog is also exceptionally low quality, but you can see an exceedingly small picture of the simulants and the prices. They actually make surprisingly good stuff and it is very realistic and the prices are fairly good. Some of their stuff is OK x-ray and some is not x-ray correct and I not sure they know what x-ray correct actually means (they call their stuff x-ray excellent, whatever that means). Some of their stuff will turn the correct color but others the density and *Z eff* are way off for TSA level x-ray correct. They make you prove who you are before they sell you anything and you have to be Government or, they will just ignore you so e-mail them with your work account. These guys are also USA only so if you not in the USA they are not going to deal with you.



Variety: C+
Quality: B+
X-ray: C-
Pricing: B
Sell internationally: No

- **XM-Materials:** <http://www.xm-materials.com/>

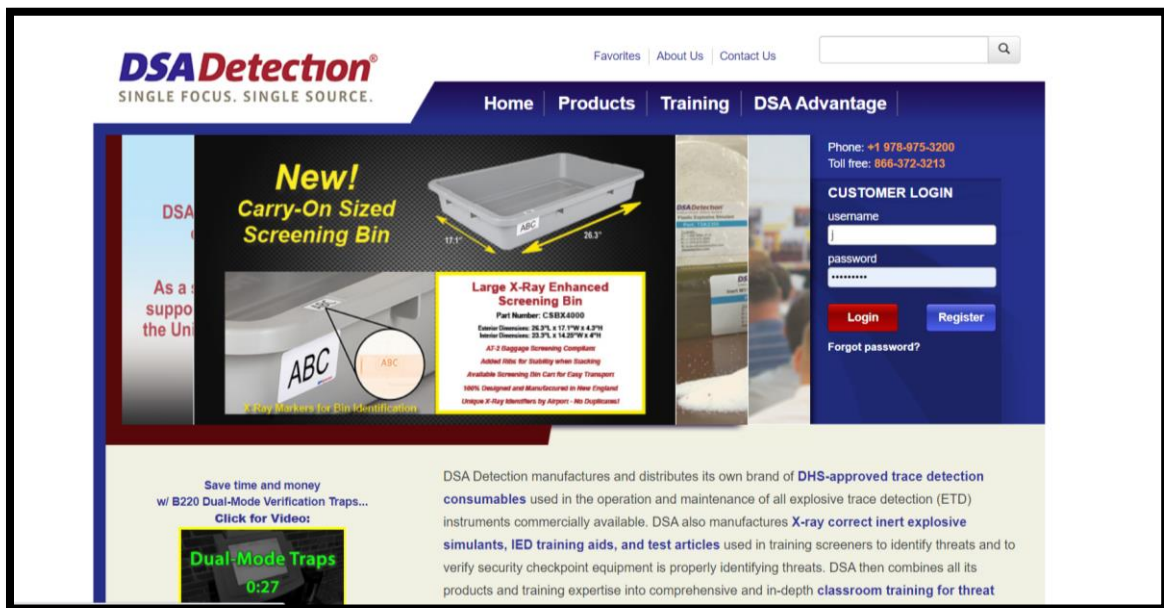
You have probably never heard of these guys but if you are looking for PERFECTLY accurate x-ray correct explosive simulants these guys make some the best simulants on the market. The only problem is that all of it is jet black in color and is visually not accurate. This stuff is designed to test x-ray machines that detect explosives. Their typical customer will be an x-ray manufacturer who is trying to get a “certification” from some airport agency for explosive detection. Their prices are high but not as high as X-TEST. If you are looking for dead on accurate explosive simulants to test x-ray these are the guys to buy from. They do not have much to choose from so they only have commercial and military grade explosive simulants. They do not have any HME’s, IED’s, Or ordnance. They also sell some REALLY good K-9 training materials that use live explosives but can be shipped and do not require explosive storage.



Variety: D
Quality: D
X-ray: A+
Pricing: C-
Sell internationally: Yes

- **DSA Detection:** <https://www.dsadetetion.com/>

DSA makes airport Inert training aides and they also make kits for checkpoint training. They also have a line of x-ray correct IED's, but they are not functioning and are just visual and have no penalty. They focus on the airport market and outside of that they do not have EOD level products. It really varies with their products as to the visual and tactile quality. Some stuff is fairly good but others not so good. Dynamites are hard, Plastic explosives are too soft and they build cap wells into many of their simulants so you will see that in x-ray. If you want x-ray correct that is of a decent visually quality these guys have good prices. They make some pretty comprehensive training kits for checkpoint training but for EOD training they do not have much to offer.



Variety: C
Quality: B-
X-ray: A
Pricing: B-
Sell internationally: Yes

If we missed a manufacture, please let us know and we will add them once we update the report. If you have any question you can message us at our Facebook page.