Radiation shielding is a necessary component to protect those who are working in the medical field.

From the smallest urgent care clinic in a community to the most advanced hospital in one of the world’s biggest cities, you rarely see the lead lined materials that shield the technicians and doctors who are scanning for broken bones, internal injuries, tumors and the like. The lead is located inside X-ray room walls, hidden in the cores of doors, tucked behind frames or infused into lead barium glass. A&L is one of the country’s leading manufacturers of lead lined products. We work across the spectrum of owners, architects, designers, engineers, construction managers and suppliers to ensure that a room has the proper shielding components while maintaining the appearance of other architectural grade materials being used in the project. Allow us to show you more of what we can do to make your next lead lined project a success.
A&L Shielding Inc. is an American manufacturing company located in Rome, Georgia. Our company specializes in the custom production and supply of lead lined materials, including lead lined doors and door frames, lead lined window frames and lead glazing, lead lined drywall and heavy lead shielding products for linear accelerators and gamma shielding. We are committed in our manufacturing processes to help customers achieve their LEED® green building program credits and meet their requirements for FSC certified and no added urea formaldehyde (NAUF) lead lined doors. A&L Shielding is at the top of the industry for production times as we ship most of our materials in 10 working days. Our products are shipped across North America, to Central and South America and to various regions worldwide. Our team works diligently to provide the highest quality, attention and care in building our products. We strive for that same level of excellence in the care and service we provide to each customer, owner, architect and designer with whom we interact.
Resources are a click away

Whether it be after hours, your busiest moment at work or during a meeting where you can’t stop to send an email or call, information you need is waiting for you at www.alshielding.com.

Our website contains detailed information about each of our products and services. From the product pages or the “Resources” tab at the top of each page you can navigate to your needed specifications, technical information and details. From the list of available PDFs, simply click the “Add” button and a copy will be included in your A&L Doc Binder. When finished, click “View All” to see each PDF in the binder or click “Download” to send a copy of the binder to your computer.

If you need more information beyond what you locate on our website, please contact us for personalized help.
**What are the most common components?**

1. **Lead lined doors** – These doors can be either wood or hollow metal. Wood doors are most often manufactured with our CORECLAD® construction, with half of the required lead thickness under each face. We manufacture our doors with almost any veneer and most varieties of plastic laminate. A&L Shielding is FSC certified and can certify doors meet no added urea formaldehyde requirements. We can construct our center lead wood doors with lead up to 1/2” thick. We can also provide lead lined hollow metal doors. Faces are typically 16 gage, but thicker gages of metal are available, both as standard cold rolled steel or galvanized.

   With either type of door construction, these doors are built as architectural grade to match other standard doors. Fire labels are available up to 60 minutes for our patented fire rated lead lined wood doors and three hours for lead lined hollow metal doors.

2. **Lead lined door frames** – Door frames are lined with lead equal to the lead thickness of the partitions in which they are located. While A&L Shielding manufactures both welded frames for new construction and knock down frames for existing construction, we recommend welded wherever possible. We manufacture our door frames in a wide range of gages of cold rolled steel. Various anchoring systems are available, as well as angle reinforcement, if required. Frames may be fire rated up to three hours.

3. **Lead lined borrowed lite frames** – Like door frames, lead lined borrowed lite frames are lined with the same thickness of lead as the walls in which they are located. We construct these window frames as welded or “fixed” for new construction. We also can construct the frames as two piece slip type, which is ideal for installation into an existing lead lined partition. Our window frames are available in a variety of custom profiles, including splayed and sloped. A voice passage is optional in all designs.
4. Lead glazing – Lead glazing shields from radiation while providing vision into the treatment area. This glass is available in a variety of lead equivalencies and typically matches or exceeds the lead equivalency of the frame and wall in which it is located. While lead glass is not available as tempered, A&L can provide lead laminated safety glass when safety glazing is a requirement. Examples of conditions that would require safety glazing include lead lined doors with lites, lead lined sidelites and lead lined borrowed lites in close proximity to a door opening.

5. Lead lined drywall – This material is used to cover most shielded walls in standard diagnostic shielding applications. It is available in various thicknesses and heights of lead, with lead to 7’0” above the finished floor being the most common. Drywall is bonded to sheet lead, providing good support during installation. A&L recommends that 5/8” drywall be used to maintain this support. Lead lined drywall is mounted vertically to metal or wood studs with normal drywall screws, which are then covered by a round lead tab. All cutouts in the drywall for wall switches, outlets, etc., must be shielded with lead to prevent leakage.

6. Sheet lead – Sheet lead can be used to shield floors, walls or ceilings. When lead is installed in contact with concrete, it should be coated with an asphaltum varnish for chemical isolation. An underlayment such as plywood over lead in the floor helps prevent physical damage to the lead. Sheet lead can shield ceilings where ordinary building materials are inadequate to shield rooms above. In these instances, A&L recommends the sheet lead be installed on plywood prior to final installation.

Most typical diagnostic rooms use lead ranging in thicknesses from 1/32” to 1/8”. In medical facilities, these rooms include – but are not limited to – X-ray, CT, cardiac catheterization, radiography / fluoroscopy, nuclear medicine, C-arm and hybrid operating rooms.
Heavy lead shielding is required for procedures that use equipment producing higher levels of radiation than traditional diagnostic scans. Common lead thicknesses in these applications include 1/4", 3/8", 1/2" and 5/8". Some projects may call for even thicker lead, at which point lead plate or interlocking lead brick is used.

**Lead lined plywood** - When the required lead thickness exceeds 1/8", lead lined plywood is often used to shield walls. Lead clad plywood is available in various lead thicknesses and with plywood sizes up to 48" x 96". A&L recommends widths of 12", 16" or 24" to allow for more manageable weights. It is attached to walls using techniques designed to ensure a continuous lead sheet to the project’s required shielding height. All cutouts in the lead lined plywood for wall switches, outlets, etc., must be shielded with sheet lead to prevent leakage. Since installation details may vary from job to job based on the lead thickness, contact us for installation details.

**Lead lined brick** - Lead bricks are designed for heavy lead wall and ceiling shielding protection and can be obtained as interlocking or rectangular brick in a variety of lead thickness levels. It is often used in walls where the lead thickness requirement is 1" or greater, such as in a linear accelerator room. Lead bricks are available up to 2-1/2" thick. Multiple layers of brick are used for higher lead thicknesses. Each brick interlocks into the adjacent brick, assuring no straight-line leakage is possible. We also offer structural support systems for brick as well as installation.

**PET glazing** - PET shielding glass is used for shielding 0.511 MeV gamma rays and where lead thicknesses are greater than 1/8". This glass is composed of materials with a lead oxide content of roughly 70 percent – equivalent to ultra-high lead content block glass for nuclear power facilities. This glass is available in sizes up to 60” x 42”.

Common applications where these requirements are found included PET scan, injection rooms, quiet rooms, hot labs, HDR and gamma knife rooms. It is not uncommon that the floor, ceiling and walls are completely covered in lead – like a lead “box” – to isolate and contain the higher radiation. Sheet lead and lead brick are often used in conjunction with concrete and other materials to shield linear accelerator rooms.
These openings are typically used in cancer treatment facilities and vary in size and scope depending on factors as determined by the project physicist.

Not only do we design, engineer and manufacture the assemblies and room shielding, but we offer installation services as well as upgrades and repairs. The openings in these rooms come as a swinging door type assembly. Each assembly includes the door, frame, door operator, data access unit for programming and controls. Additional features available include emergency battery power systems, motion and touch sensors and partial opening programming.

The doors typically use a combination of 5 percent borated polyethylene and lead in a steel shell. Polyethylene has a high hydrogen content that slows fast neutrons, which are then captured by the high cross-section boron. This minimizes the dose from captured gammas. Swinging doors include special heavy steel frames cast into concrete walls during construction.

We use custom-made, bolt-on hinges that are designed with a safety rating allowing each hinge to carry the entire weight of the door. The power operators we provide, install and program are state of the art units with custom programming capabilities. These operators can be configured to match specific needs of the facility.

Oftentimes, ductwork above the openings will require shielding as well. This is usually a combination of lead and borated polyethylene. Walls within these rooms may also require one of these shielding materials or a combination of both.
Many of our bullet resistant materials are designed to meet or exceed UL 752 standards. These materials are used in banks, pharmacies, schools, police stations, judicial chambers, etc., where ballistic security is desired.

A&L Shielding provides a full line of products to shield against various levels of firearms. These materials include bullet resistant panels for walls, bullet resistant doors and frames, bullet resistant window frames and bullet resistant glazing. Doors are available in both wood and hollow metal.

A&L Shielding can also provide transaction trays and speak-thru devices for windows. Just as with our lead lined materials, A&L Shielding’s bullet resistant materials are constructed to match the appearance of other architectural grade products.

The most common level we see is for UL 752 Level 3, but each building owner or facility manager must determine what level is required as UL 752 ratings extend from Level 1 to Level 8. Levels 1 through 3 and Level 6 meet the needs of most commercial properties as they are designed to withstand shots from handguns commonly used in robberies or small arms attacks.

Levels 4, 5, 7 and 8 are designed specifically to withstand assault weapons and military grade rifles. These levels of bullet resistance are found in high-profile areas such as military facilities, government buildings and embassies.

A variety of shielding designs are required in the X-ray field. We specialize in designing and building these items. These include but are not limited to duct shielding, custom barriers and lead lined “barn” doors.

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