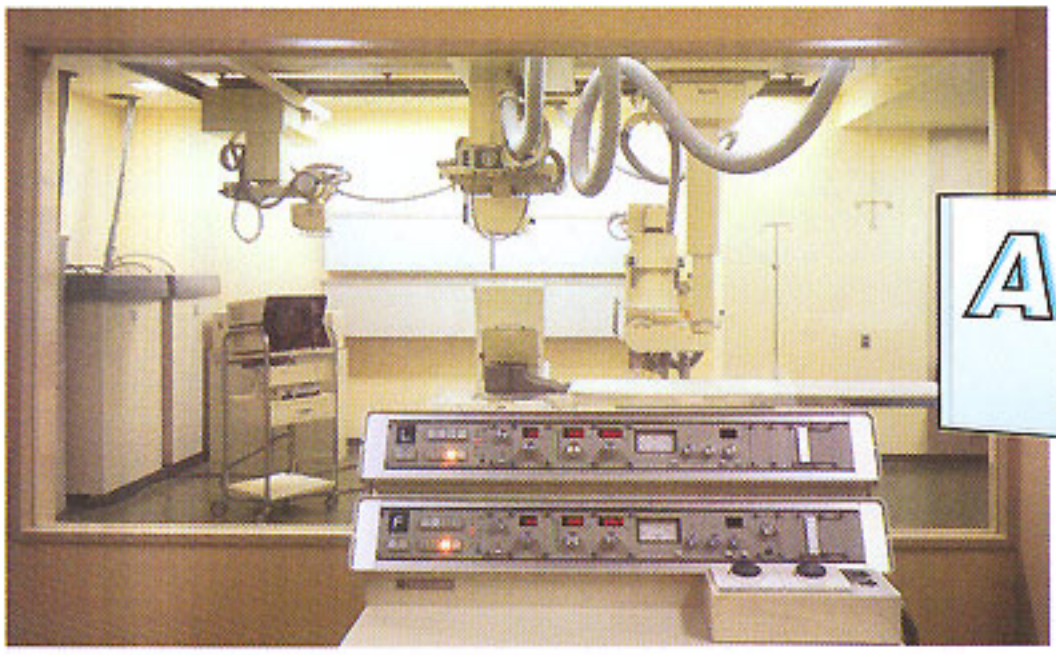
AMEROPE
ENTERPRISES, INC.

Radiation Shielding Lead Glass Products
for Use Worldwide.

Offering the Industry's Largest Sizes
Plus **Saf-T-Lite**™ Shields



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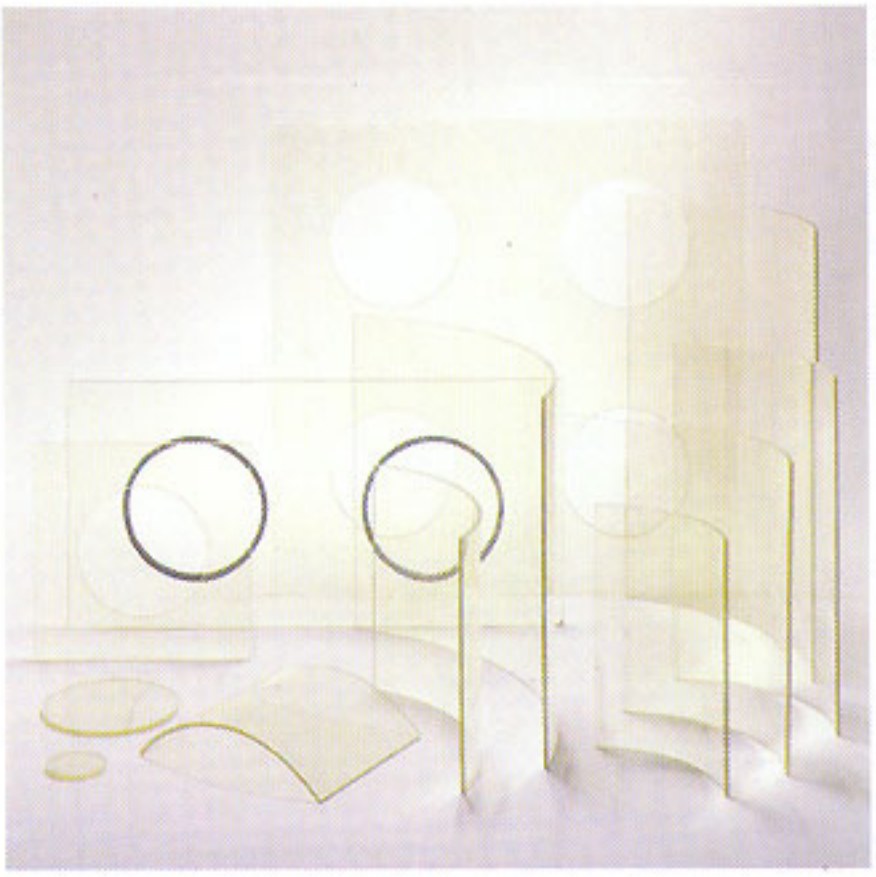
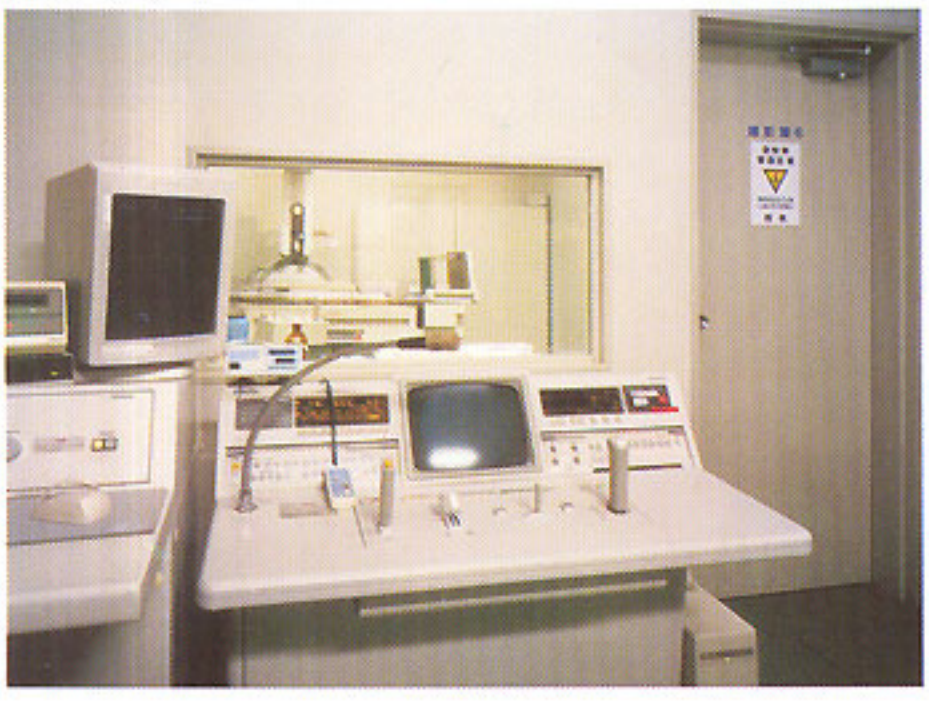
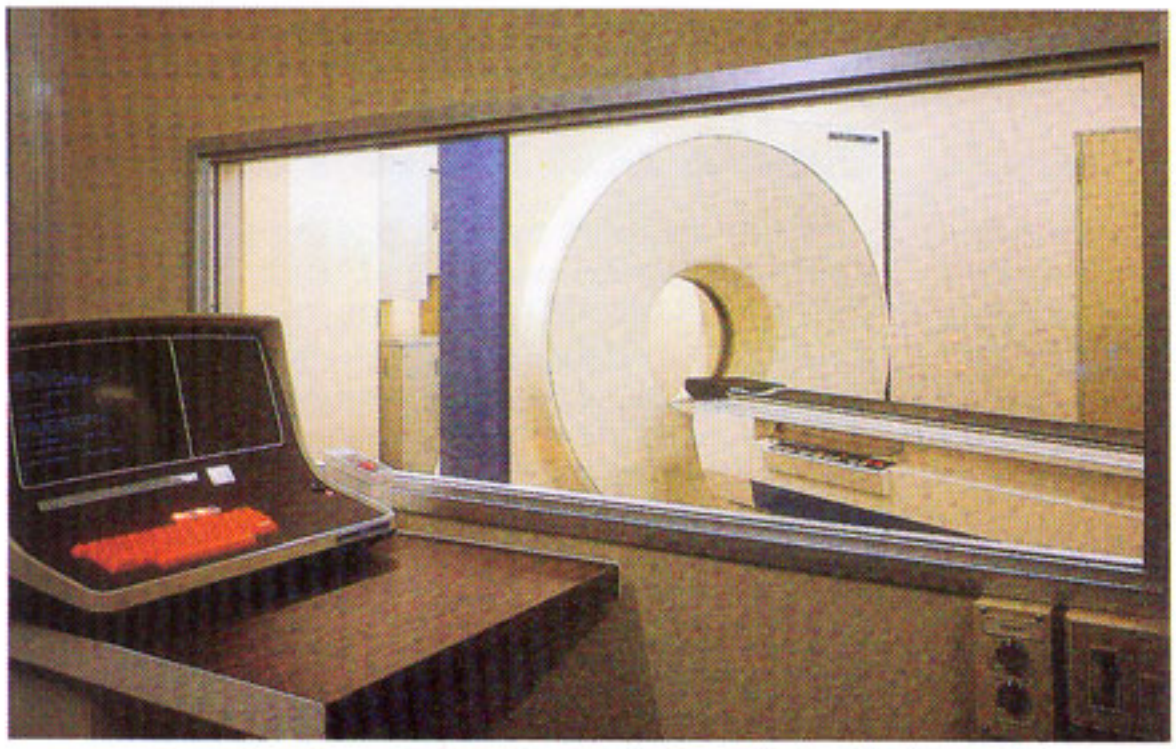
Amerope offers a full line of curved and flat radiation shielding lead glass for use worldwide. We offer the industry's largest sizes, to 48" X 96". Exclusive production methods result in superior clarity when compared with glass produced by conventional casting. LX glass earns superb performance ratings when compared with acrylic/plastic.





Amerope is proud to offer Nipon Electric Glass Co., Ltd. Radiation Shielding Lead Glass Products. NEG is an international leader in this field.



Observation window for angiography room

Properties

8mm LX-57B

Minimum density: 4.36
Refractive index (Nd): 1.71
Thermal expansion coefficient:
80 X 10^{-7}/°C (30-380° C)
Mohs' hardness: 6

The LX-57B, which has a grade of optical glass quality, provides excellent light transmittance in the visible light wave lengths. Fig.1 shows the relation between the light transmittance of LX-57B and the wavelength.

Fig.2 shows the result of measuring the X-ray absorption of LX-57B in terms of the thickness of the lead equivalent, by varying the X-ray tube peak voltage. The lead equivalent of LX-57B slightly decreases when the source potential exceeds 150kV, but remains nearly constant at 200kV and higher voltages.

Fig.3 indicates the relation between the LX-57B thickness and the lead equivalent for the X-ray source potential of 150kV and 200kV.

Fig.1: Light transmittance of LX-57B.

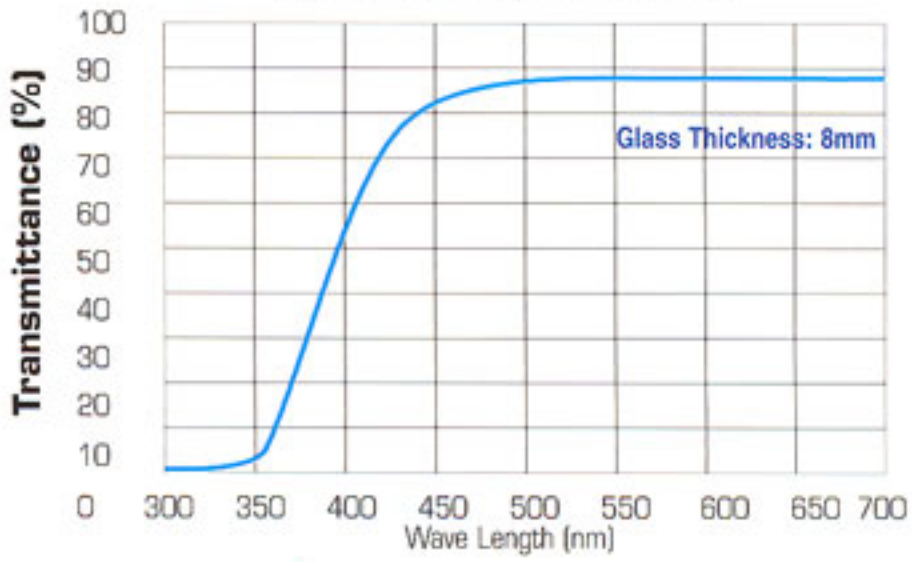


Fig.2: Lead Equivalent and X-ray Tube Peak Voltage.

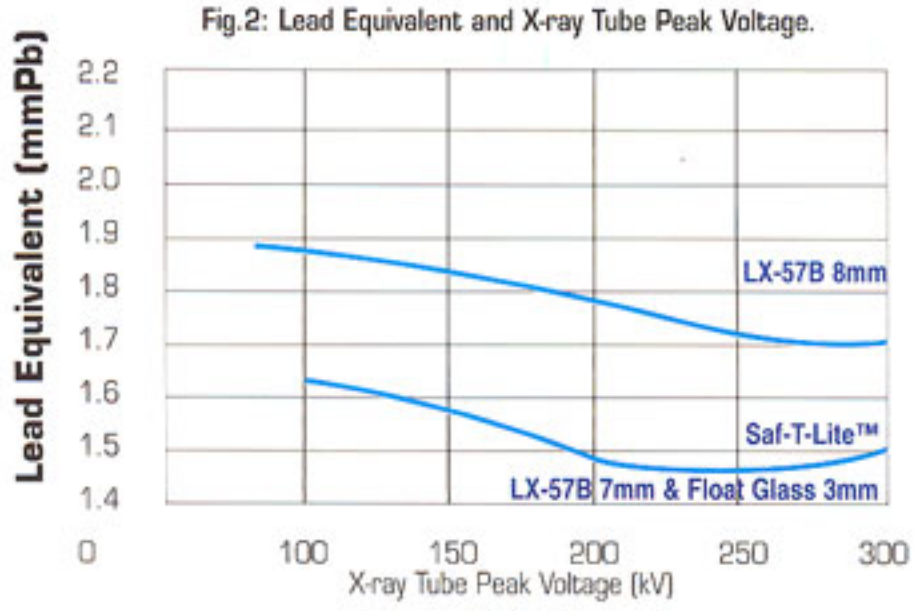
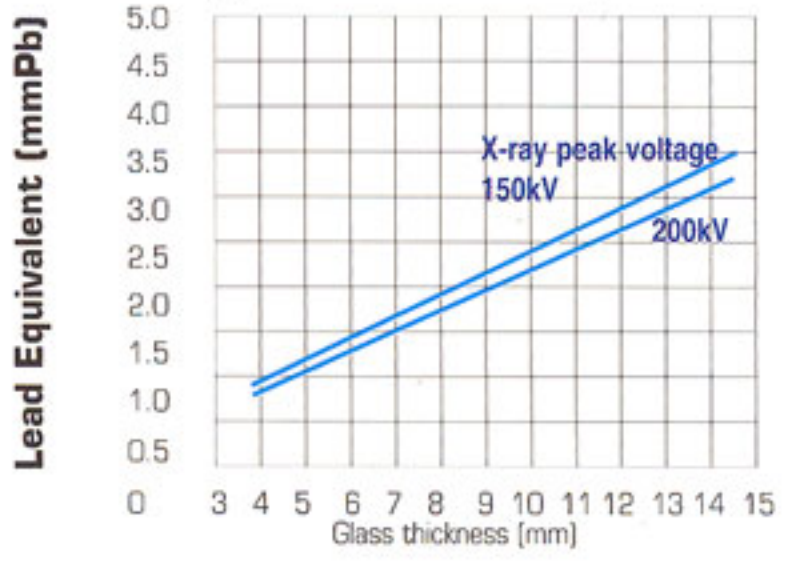


Fig.3: Glass thickness and Lead equivalent.



Uses & Applications

Medical:

Used in the medical field for X-ray observation equipment, electron beam/plasma generators and X-ray TV detectors, LX lead glass protects doctors and staff from X-ray irradiation with no glass discoloration or deterioration in viewing quality. Use of the larger size LX windows facilitates remote control of X-ray equipment.

Industrial:

LX is used in airport luggage inspection equipment as well as in radiation testing equipment for industrial products.

Nuclear:

LX observation windows are used at radioactive storage stations, nuclear fuel development and reprocessing plants, and for applications near nuclear reactors.

Specifications

Acceptable Manufacturers

All radiation shielding glass shall be LX-57B as supplied by Amerope.

Materials

LX-57B shall be of lead barium type glass of high quality optical grade with over 60 percent heavy metal oxide, including at least 55 percent PbO.

Thicknesses & Lead Equivalents

Thickness (mm)	8mm	11mm	14mm
Lead Equivalent (mmPb)	1.8-2.0	2.5-2.7	3.0-3.2
X-Ray Tube Peak Voltage (kV)	150	150	200
Lead Equivalent (lbs./sq.ft.)	4.2-4.6	5.8-6.2	6.9-7.4
Minimum Density (gm/cm3)	4.36	4.36	4.36
Weight: (lbs./sq.ft.)	7.1	9.8	12.5

To calculate the values of the range of "Lead Equivalent (lbs./sq.ft.)", we converted from the values of the range of "Lead Equivalent (mmPb)" using the mentioned figures and rounded off the fractions to one decimal place.

1 foot = 30.48 cm
1 pound = 453.59 gm
Density of lead = 11.3 (gm/cm3)

Sizes

Any size up to and including 48" x 96" is available. For cost effectiveness, the following standard sizes are offered: (sizes in inches)

8x10 10x10/10x12
14x18 12X12/12X16/12x18/12X20/12X24
16x20/16x24 18x24/18x26
20x24 24x24/24x30/24x36/24x48
30x30/30x36 32x40
36x36/36x48/36x60/36x72/36x84/36x96
48x48/48x60/48x72/48x84/48x96

Safety

When required by local building codes, Safe-T-Lite™- laminated safety lead glass is available. Our Safe-T-Lite™ meets the requirements of ANSI Z97.1-1984 and 16 CRF 1201 II which constitutes acceptance of its safety characteristics and the retention of these characteristics.

Advanced Production Methods

LX-57B is manufactured under strict quality control using advanced production methods that result in superior clarity. A continuous, automatic melting/rolling process allows for production of the industry's largest sizes, 48" x 96" for medical or industrial applications. For glass in nuclear installations, Amerope supplies single block for radiation protection. Glass surfaces are mirror polished resisting abrasives and scratches. A special coating reduces glass reflection loss where required.

LX-57B.- The Answer to Your X-Ray Shielding Glass Needs. Clearly.

X-ray shielding lead glass from Amerope, made of high quality optical grade material, offers excellent radiation protection and superb visual clarity.

It offers high light transmittance and does not discolor due to radiation. (The hard, polished surfaces have greater scratch resistance.)

LX-57B glass comes curved or flat. New production processes yield optically clear lead glass in the industry's largest sizes, to 48" X 96".

Additional Radiation Protection Products

Other radiation protection glass products include glass block, eye glasses, and glass tubing (ampules, syringes, and vials) for laboratory use.

LX Lead Glass VS. Acrylic/Plastic

Results Favor Lead Glass

Relative Thickness

For the same lead equivalent, acrylic/plastic has to be approximately five times thicker than LX lead glass - significantly reducing observation capabilities. For example, at 1.8 mm - 2.0 mm Pb, lead glass would be 5/16" thick. Acrylic/plastic would be approximately 1 1/2" thick for the same protection.

The extra thickness of acrylic/plastic may require special framing. LX fits standard sized frames.

Weight Factor

For the same size requirement and lead equivalent, acrylic/plastic has nearly twice the weight of glass (1.8 times).

Light Transmittance

For the same lead equivalent, glass transmits more light than acrylic/plastic.

Combustibility

LX-57B is an incombustible material because it's glass. Acrylic/plastic is combustible. When acrylic/plastic burns, it emits toxic fumes. When acrylic/plastic is cut, it may emit toxic fumes. This does not happen with LX lead glass.

Surface Hardness

Both surfaces of LX-57B glass are mirror polished. Using Mohs' hardness scale, LX-57B tests at Level 6 (comparable to feldspar, a constituent of granite). Acrylic/plastic tests at Level 3 (equivalent to calcite, a constituent of limestone and chalk).

Abrasive Resistance

LX-57B has greater resistance to scratches because of its hard surface. Unlike glass, acrylic/plastic can easily be scratched in cleaning because of its softer surface, reducing its light transmittance and clarity.

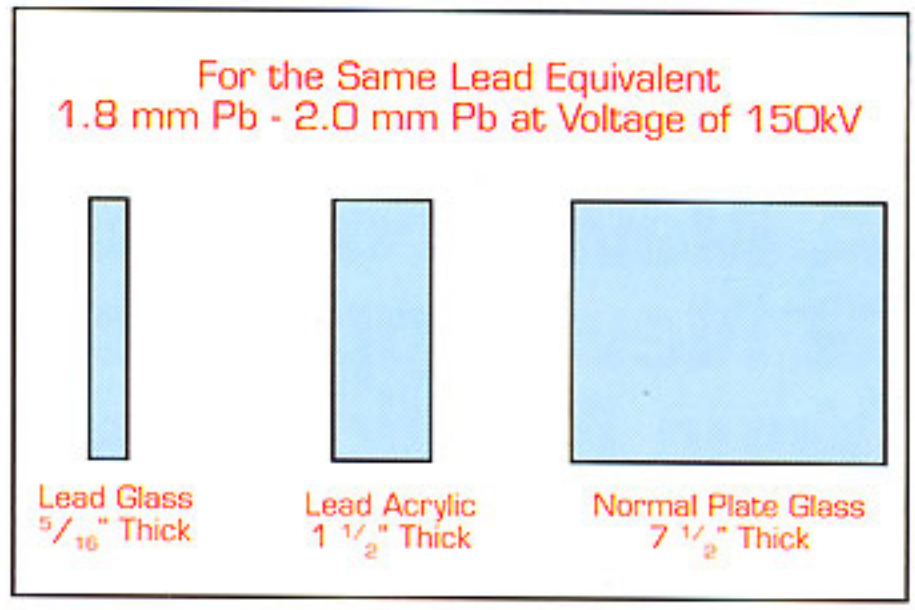
Resistance to Discoloration

Acrylic/plastic discolors when exposed to ultraviolet rays. Acrylic/plastic is also susceptible to discoloration from chemicals in everyday use, such as cleaning materials ... or even smoke. LX-57B glass suffers no discoloration due to radiation and has a high chemical resistance as well. The durable LX glass retains its appealing visual clarity.

Lead Glass vs. Normal Glass Plate

To meet the same X-ray shielding requirements, normal plate glass may have to be 24 times as thick as LX-57B lead glass!

For example, normal plate glass must be approximately 7 1/2" thick to achieve the lead equivalent of 1.8 mm - 2.0 mm Pb at X-ray voltage of 150kV. In contrast, LX-57B need only to be 5/16" (8mm) thick to meet the same X-ray shielding requirement.



Comparison Table	LX-57B Lead Glass	Lead Acrylic/Plastic Sheet	Best Product
Combustible	No	Yes	LX-57B Lead Glass
Effect of Water Absorption	None	Effect Length & Thickness	LX-57B Lead Glass
Installation	Standard	Requires Special Care	LX-57B Lead Glass
Light Transmission (1.8 mm Lead Equiv., at 150kV)	87.3%	59.5%	LX-57B Lead Glass
Thickness (1.8 mm Lead Equiv., at 150kV)	8mm	42 mm (5 times thicker)	LX-57B Lead Glass
Weight	7 lbs. per sq.ft.	14 lbs. per sq.ft.	LX-57B Lead Glass
Effects of Sun	None	Causes Cracking	LX-57B Lead Glass
Chemical Resistance			
a) acid	Greater	Less	LX-57B Lead Glass
b) Alkali	Greater	Less	LX-57B Lead Glass
Price	50% Savings	Much Higher Cost	LX-57B Lead Glass

Clearer, Lighter, Easier Install & Better Looking

Best of all...

They're from

Amerope

Saf-T-Lite™ Shields

Portable & Fixed Shields

Featuring Saf-T-Lite™

A New Product... & New Approach for Your Medical Facility

The ultimate protection! All viewing areas are equipped with Saf-T-Lite™, laminated, safety, radiation shielding lead glass. Our Saf-T-Lite™ meets the requirements of ANSI Z97.1-1984 and 16 CFR 1201 Cat. II which constitutes acceptance of its safety characteristics and the retention of these characteristics.

Portable Saf-T-Lite™ Shields are delivered fully assembled to your site (except for attachment of the legs and castors). Each portable shield is equipped with ball-bearing castors for easy movement. Fixed Saf-T-Lite™ Shields require minimum installation and can be customized to fit all your needs.

The frames are made with anodized aluminum and the opaque front panels come in a variety of colors to meet any color scheme required. No fuss or special engineering required to install the ultimate protection right away. **Labor dollars saved!**

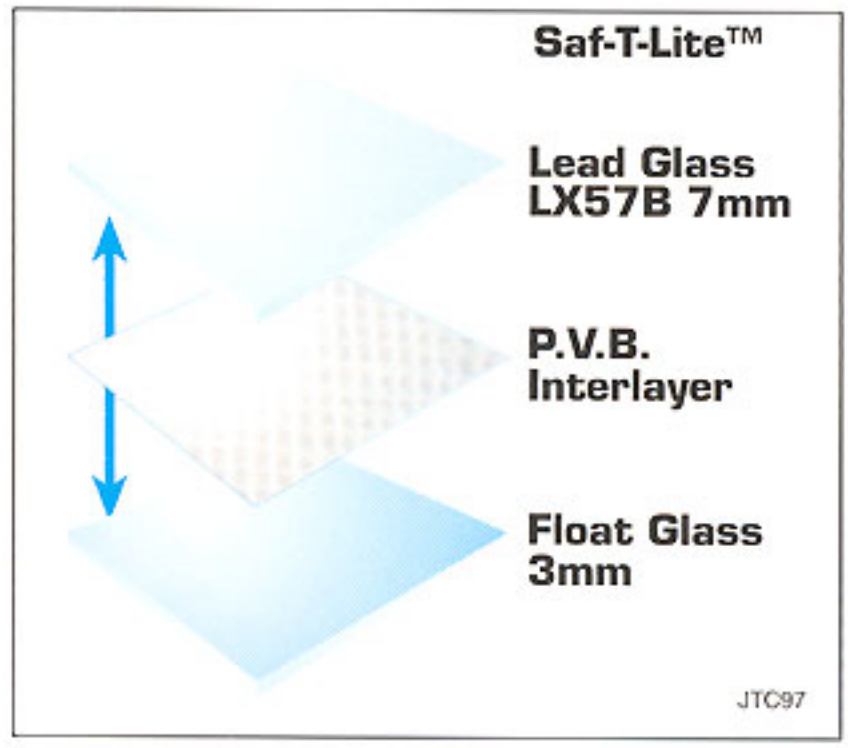
Saf-T-Lite™ Shields provide a 1.59 mm lead equivalency, superb visual clarity, will not discolor and are made with Saf-T-Lite™, laminated, safety, radiation shielding lead glass.

For the ultimate in protection... specify Saf-T-Lite™ Shields!

Saf-T-Lite™ Shields

Portable & Fixed Shields

Amerope's Saf-T-Lite™ Shields, made with Saf-T-Lite™, laminated, safety, radiation shielding lead glass, are the best protection you can buy for your Medical Testing & Diagnostic Facility Installations



Saf-T-Lite™ products are LX-57B Lead Glass, P.V.B. interlayer and Float Glass in a laminated sandwich. Required thickness of material types to achieve **1.59 mm Pb at 150kV** are shown below.

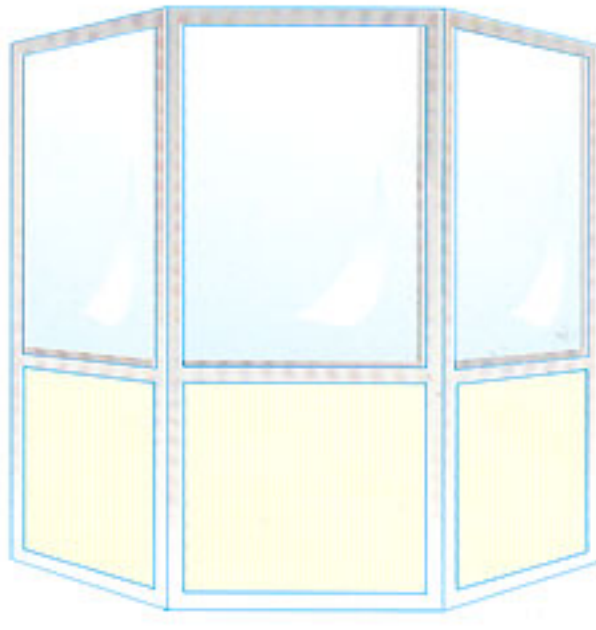
Saf-T-Lite™		Lead Acrylic Sheet
Light Transmission (1.59 mm Lead Equiv.@ 150kV)	87.8%	63.5%
Thickness (1.59 mm Lead Equiv.@ 150kV)	11mm	35mm
Weight	8 lbs. per sq.ft.	11 lbs. per sq.ft.

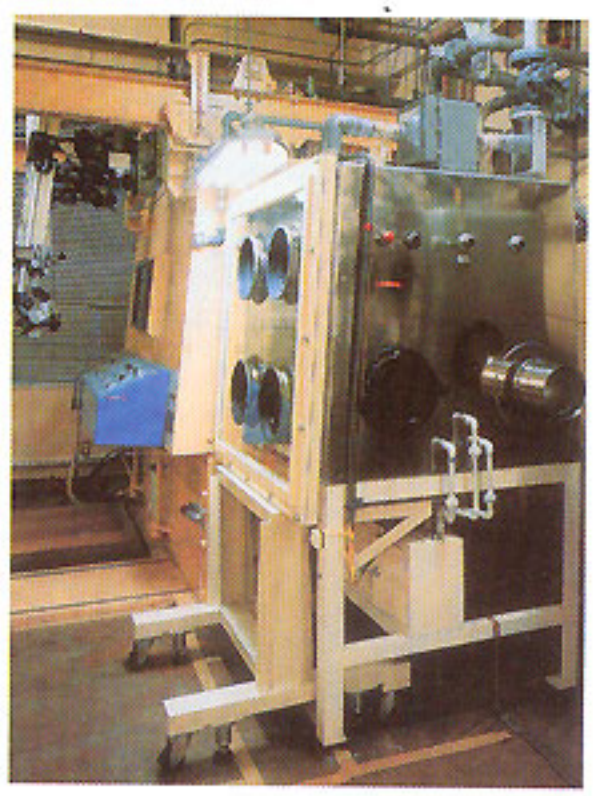
Here are some reasons why!

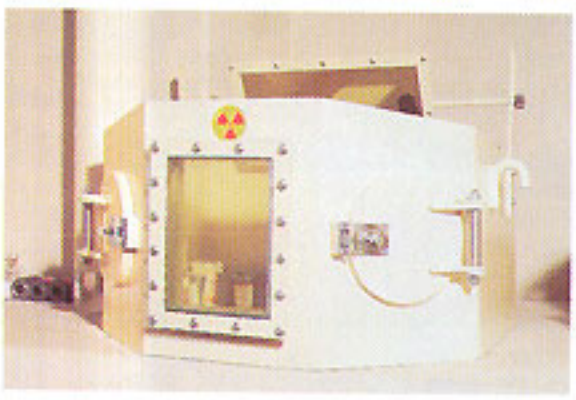
- **Safety - Shatter Resistant Glass**
- **Safety - 1.59 mm lead equivalency in all shields**
- **Superb Visual Clarity**
- **Anodized Aluminum Frames**
- **Opaque Panels in a Variety of Colors**
- **Available in standard sizes... but we can customize**

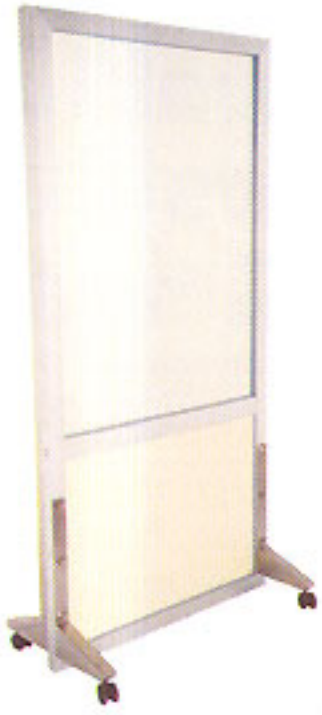
Better than Acrylic/Plastic!

- **Much lighter than acrylic/plastic screens!**
- **Transmits more light than acrylic/plastic**
- **Will not discolor due to ultraviolet rays as will acrylic/plastic**
- **Greater resistance to scratching than acrylic/plastic**



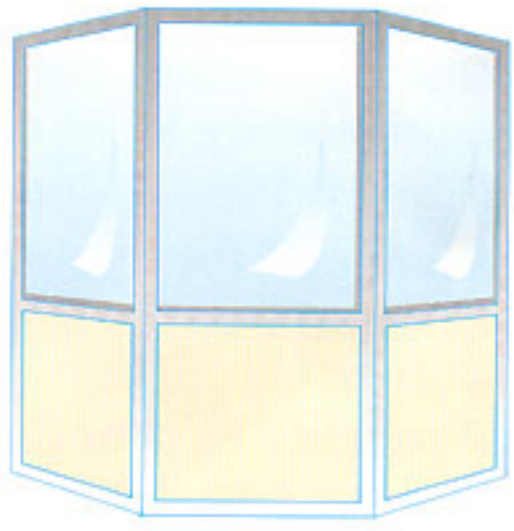






Makers of...

Saf-T-Lite™ Shields



Exclusive Production Methods Result in Superior Clarity, Reduced Weight, Easier Installation... hence less cost.
Our Glass Products Earn Superb Performance Ratings.

AMEROPE ENTERPRISES, INC.

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