



## Lead Industries Association, Inc.

222 Madison Avenue • New York, N. Y. 10017 • Telephone: (212) 679-8026

May 7, 1973

TO: ALL MEMBERS OF LEAD INDUSTRIES ASSOCIATION, INC.

Gentlemen:

Attached are copies of the advertisements which we will be running for Lead Industries Association, Inc. in the trade press during the first six months this year.

They include Volume 17, Numbers 1 through 7 of our Lead Newsletter. At the bottom of each advertisement there is an indication as to where the advertisement will appear. The last two advertisements, as you will note, are intended for and are appearing in College Engineering publications.

As an indication of the success we are having with the advertisements, please note the attached letter from Lieberman-Harrison, Inc., our Advertising Agency, which we believe presents an extremely interesting and favorable study of our Newsletter, Vol. 17, No. 3, which recently appeared in MACHINE DESIGN.

As always, any suggestions, leads, new advertising or public relations material will be most welcome.

Sincerely yours,

Lewis E. Gage  
Assistant Secretary and  
Director of Communications

LEG:mki  
Encls.

LH

## Lieberman • Harrison, Inc.

880 Third Avenue, New York, N. Y. 10022 • (212) 751-2820

April 30, 1973

Mr. Lewis E. Coge  
 Director of Communications  
 Lead Industries & Zinc Institute  
 292 Madison Avenue  
 New York, N. Y. 10017

Dear Lew:

We have just received the Starch Report on the March 8 issue of MACHINE DESIGN in which our first LIA ad for this year appeared. I have the complete report for your review, but I thought it would be timely to send you a fast summary.

Basically the report is a highly favorable one. First, it demonstrates that our Newsletter, "long copy" approach is paying off. Second, our very attractive cost ratios confirm that we are getting LIA high yield per dollar spent in advertising. Of the 91 ads in the issue, our ad ranked:

|                      |    |        |
|----------------------|----|--------|
| By number of readers | 30 | (30)** |
| By cost per reader   | 16 | (90)   |
| % Noted              | 39 | (40)   |
| % Associated         | 28 | (28)   |
| % Read Most          | 20 | (9)    |

## COST RATIOS\*

|            |     |      |
|------------|-----|------|
| Noted      | 150 | (57) |
| Associated | 130 | (48) |
| Read Most  | 260 | (43) |

\* These figures mean that our ad is 50% better than average in number of "Noted" readers per dollar, 30% better than average in "Associated", and 160% better than average in "Read Most".

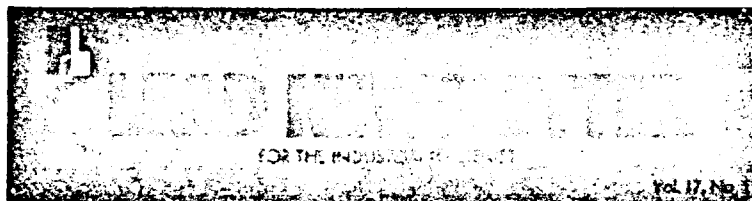
\*\* Figures in parenthesis are those of metals association who ran in this issue a two-page, four-color, bleed ad.

On any level of analysis or comparison, I think you will agree we did very well indeed.

Sincerely,

*Paul V. Higgins*  
 Paul V. Higgins  
 Senior Vice President

FVR:mjr



The role of the industrial hygienist in implementing Federal health regulations is a critical one. Knowledge of how lead and lead products can be applied may prove useful in helping you solve plant noise problems.

### Noise control

Lead, either alone or in combination with other materials, has for many years been used as a sound barrier wherever the most exacting noise standards prevailed. This experience now is being widely applied in industry. Many of the noise problems in industry involve both sound and vibration. Though related phenomena, sound is airborne, vibration transmitted through a solid. Lead has a solution for both problems as demonstrated in these case histories.

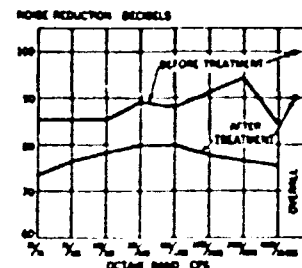
### Airborne noise

Several materials are available for the attenuation of airborne noise. Thin sheet lead, leaded plastic sheet, and composite lead foam sandwiches, make ideal barriers because of their inherent limpness and density. The simplest way to reduce the noise generated by a piece of machinery is to control the noise at the source. This is how engineers reduced the peak noise level of a gas turbine generator by 10 db in the 20 to 10,000 Hz band. The generator's air intake, which gulped in a howling 11,000 cubic feet every minute at full power, was the worst source of noise. Lead loaded sheet vinyl was used to solve the problem.

The material cut 10 db from the peak noise level of the unit (see graph).

In many cases it is not possible to enclose the complete machine because it must be accessible to the operator. In such instances, it may be possible to shroud the gears and other noise producing elements and still have the work station accessible. If this is

not possible, the entire unit can be isolated in a "room" or "tent" made from leaded vinyl plastic curtains. If this type of solution is necessary don't forget to "sound-proof" the machine operator by supplying a set of hearing guards, ear muffs, plugs or other hearing protectors.

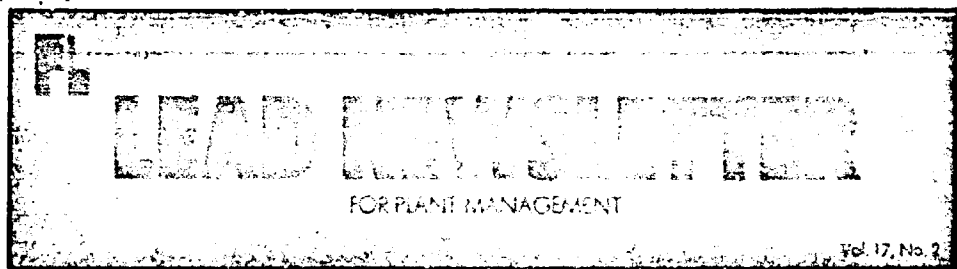


### Vibratory noise

Many types of machinery such as printing presses, air conditioners and compressors, where a heavy reciprocating load is present, create vibrations that can radiate to other areas of a building. Various types of lead anti-vibration pads have been used successfully to solve this kind of noise problem. The pads are usually made up of an envelope of 8-lb., 1/4-in. thick lead enclosing one or two layers of 1/2-in. thick asbestos roll fire felt or synthetic rubber. Some 150 lead asbestos pads were used to tame the vibration of a newspaper press installed in a metropolitan New York area. The machine feet rest on the pads that are retained within a box to prevent movement which would short circuit the pads.

Lead Industries Association has on its staff two qualified industrial hygienists who can help you with problems similar to those described here. Write to Lead Industries Association, Inc., 292 Madison Avenue, New York, N.Y. 10017.

Lead Industries Association, Inc.  
Industrial Noise Program 1973  
Appearing in AMERICAN INDUSTRIAL HYGIENE ASSOC. JOURNAL  
Ad No. 9511



Industrial plant management is directly responsible for seeing that noise levels meet OSHA regulations. In scores of applications, lead partitions, sheet lead and other lead products are providing successful answers to this problem.

## How to meet the 90 db noise limit with lead

Presses, automatic riveters, screw machines, lathes, many other types of machines, and a variety of assembly line operations common to metalworking, run at noise levels potentially injurious to hearing. Lead and lead composites fill all the prerequisites of a maximum efficiency sound barrier: density, lumpness and impermeability. And they are normally unaffected by coolants, cutting oils, drawing compounds and other industrial materials. Lead's "workability" and ease of installation make it a natural for enclosures that demand complex configurations. Complete enclosures, partial enclosures, curtain walls, lead loaded epoxies or vinyl sheets, laminates, shrouds, anti-vibration pads—all are used to reduce noise to acceptable levels.

## New foam/Lead machinery enclosures

Sound insulated machinery enclosures are used to control noise from industrial equipment that originally was considered either too large to equip with adequate sound control, or else had already been installed without built-in noise control.

An increasing number of manufacturers of such machinery enclosures are taking advantage of the sound barrier properties of lead to insure



Lead-acoustical foam panels in place in shop enclosure.

their sound attenuation effectiveness. Many of these enclosures are made up of panels consisting of sheet lead and acoustical foam combinations, some of which contain more than one sheet of lead separated by layers of foam to enhance sound attenuation properties over that of an equal mass of lead in a single sheet.

One typical sound modular system consists of 1½" thick lead/foam material; an extruded aluminum framing system, and flat aluminum sheets, in gages ranging from .049" to .062".



Panel can easily be installed by one man without the use of mechanical materials handling equipment.

for the exterior face of the panel. The lead-acoustical foam material consists of two sheet lead septa, each weighing ½ lbs. per sq. ft. (.0078" thick), that are sandwiched in acoustical foam. Selected because it meets UL-94 regulations for fire retardancy,

the acoustical foam will not "dust out" or delaminate from the sheet lead like some other materials. In addition, the lead/acoustical foam tends to be self-healing should workmen have to drill holes in the panel, e.g., for electrical conduit. The material encircles the cable and tends to seal potential openings through which sound could travel.

Designed to meet Occupational Safety and Health Act standards, the machinery enclosures can achieve reductions of between 35 to 50 decibels (db), depending on how carefully the enclosure is installed and the original noise levels encountered. The enclosures can be custom-built to enclose any type of machinery regardless of size and configuration. Ports can be designed into the panel enclosures to permit stock input and output and, if needed, a specially designed door can be installed to permit operators to enter the enclosure. Standard-size panels are also available to facilitate do-it-yourself noise control machinery enclosures. The panels, available in standard 2' x 4', 2' x 6' and 4' x 4' sizes, are supplied with the aluminum extrusion framing to permit construction of the sides and roofs of machinery enclosures.

For further information and technical assistance, write Lead Industries Association, Inc., 292 Madison Avenue, New York, N. Y. 10017.



View of combination lead-acoustical materials used in machinery noise control panels.

Lead Industries Association, Inc.  
Industrial Noise Program 1973  
Appearing in FACTORY  
Ad No. 9514

# LEAD NEWSLETTER

FOR ORIGINAL EQUIPMENT DESIGNERS

Vol. 17, No. 3

More and more buyers of plant equipment are specifying that the equipment meet Occupational Safety and Health Act (OSHA) standards from the outset. To meet this requirement many design engineers and acoustical specialists are turning to lead. Lead provides maximum efficiency as a sound barrier because of its density, limeness, and impermeability.

The noise problem many designers have to combat is in the form of both sound and vibration. While sound is airborne, vibration is transmitted through a solid. Both are related. Also, sound can cause vibration and vice versa. Lead has a solution for both problems as demonstrated in three case histories.

## Suppressing vibratory noise

Many types of machinery such as printing presses, air conditioners, compressors, and the like, where a heavy reciprocating load is present, create vibrations that, if not properly suppressed, will radiate to other areas of a building. Lead-asbestos or lead-polychloroprene anti-vibration pads



Panels can easily be installed by one man without the use of mechanical materials handling equipment.

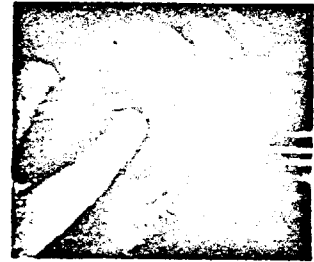
have been used successfully to solve this type of noise problem. These are usually made up of an envelope of 8-lb.,  $\frac{1}{4}$ -in. thick lead, enclosing one or two layers of  $\frac{1}{4}$ -in. thick asbestos roll fire felt or single sheet of polychloroprene rubber. Some 150 lead asbestos pads were used to tame the vibration of a newspaper press recently installed in the metropolitan New York area. The machine feet rest on the pads and are retained within a box to prevent movement without short-circuiting the anti-vibration pads.

## Suppressing airborne noise

Several materials are available to the designer for the attenuation of airborne noise: thin sheet lead, leaded plastic sheet, and composite lead foam sandwiches. The simplest way to reduce the noise generated by a piece of machinery is to enclose it.

One typical sound enclosure system consists of  $1\frac{1}{4}$ " thick lead/foam material; an extruded aluminum framing system; and flat aluminum sheets, in gages ranging from .049" to .062", for the exterior face of the panel. The lead/acoustical foam material consists of two sheet lead septa, each weighing  $\frac{1}{2}$  lbs. per sq. ft. (.0078" thick), that are sandwiched in acoustical foam. Selected because it meets UL-94 regulations for fire retardancy, the acoustical foam will not "dust out" or delaminate from the sheet lead like some other material. In addition, the lead/acoustical foam tends to be self-healing should workmen have to drill holes in the panel, e.g., for electrical conduit. The material encircles the cable and tends to seal potential openings through which sound could travel.

Designed to meet Occupational Safety and Health Act standards,



View of combination lead and acoustical foam material used in machinery noise control panels.

the machinery enclosures can achieve reductions of between 35 to 50 decibels (db), depending on how carefully the enclosure is installed and the original noise levels encountered. The enclosures can be custom-built to enclose any type of machinery regardless of size and configuration. Ports can be designed into the panel enclosures to permit stock input and output and, if needed, a specially designed door can be installed to permit operators to enter the enclosure. Standard-size panels are also available to facilitate do-it-yourself noise control machinery enclosures. The panels, available in standard 2' x 4', 2' x 8' and 4' x 4' sizes, are supplied with the aluminum extrusion framing to permit construction of the sides and roofs of machinery enclosures.

In many cases it is not possible to enclose the complete machine because it must be accessible to the operator. Here, it may be possible to shroud the gears and other noise producing elements and still have the work station accessible. If this is not possible, the entire unit can be isolated in a "room" or "tent" made from leaded vinyl plastic curtains.

For further information and technical assistance, write Lead Industries Association, Inc., 292 Madison Avenue, New York, N. Y. 10017.

Lead Industries Association, Inc.  
Industrial Noise Program 1973  
Appearing in MACHINE DESIGN  
Ad No. 9513

# LEAD INDUSTRIES ASSOCIATION

FOR ARCHITECTS AND BUILDERS

Vol. 17, No. 4

## New building material—Lead clad steel

A new composite, lead clad steel, has recently been developed. Because it combines the durability of lead with the strength of steel, it has potential of wide architectural application. It has already been specified by British architects. This office building of the National Life Association of Australasia Ltd., London, provides an example. In this application, the lead clad steel provides lead's corrosion resistance, aesthetic appeal and sound barrier properties as well as the strength of steel.

Lead clad steel is produced by pressure bonding lead to steel which has been pre-coated with lead-tin alloy. In extensive test programs, the lead clad steel was subjected to mechanical and thermal stresses without bond failure. Lead clad steel is currently being produced in sheet form in the United Kingdom. Both single (one side) and double (both sides) cladding are available. The standard coating for building applications ranges from .020-inch to .030-inch thickness of lead bonded to 20 gage steel.

## Installation data

Lead clad steel can be bent through 180° without loss of adhesion and, although some thinning of the lead occurs where it forms the outer surface of the bend, the local reduction in thickness is normally acceptable.

Most types of fasteners can be used to mechanically join lead coated steel. When decorative architectural panels are secured to wood battens or other structural members, lead capping pieces can be incorporated

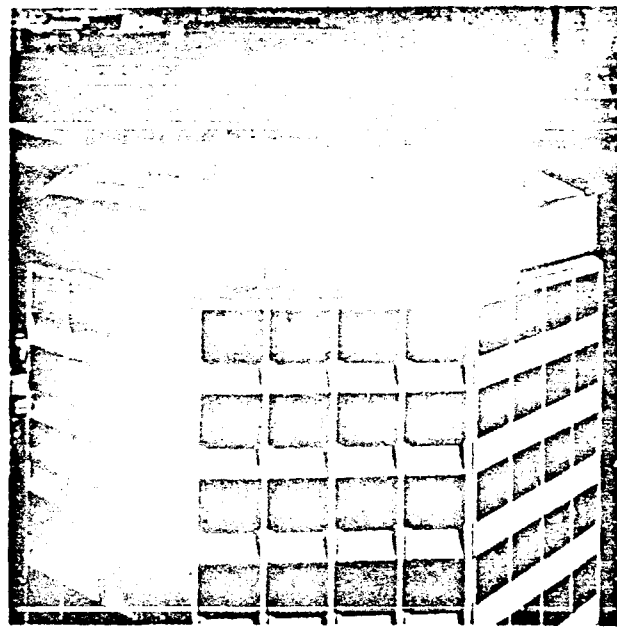
to provide a continuous lead surface. The use of lead capping pieces also helps to waterproof the fastener and retain the pleasing appearance of lead throughout.

With certain limitations, lead burning and soldering can be performed on lead clad steel almost as easily as when using sheet lead. Welding the steel section of the composite material will destroy the lead coating in the heat affected zone of the weld and therefore requires special care. However, stud and projection welding can be used to produce satisfactory joints; similarly mechanical fasteners can be attached by these methods without detriment to the lead coating.

## Building applications

Applications of lead clad steel include fascias and wall covering. Design applications include roof coverings, ventilating ducts and related equipment, gutters, rainwater pipes (downspouts) and parapet coverings. Formerly it was often impractical to use lead for such applications because the lead normally requires structural support which the steel now supplies.

For additional information write to Lead Industries Association, Inc., 292 Madison Avenue, New York, N.Y. 10017.



The fascia of the roof of this six-story building is in the form of an open screen comprised of 200 panels of lead clad steel. The panels are fabricated from 20 gage steel with a lead coating of about 1½ pounds per sq. ft. (.0234" thick) on each side.

Lead Industries Association, Inc.  
Architectural Program 1973  
Appearing in ARCHITECTURAL RECORD and CONSTRUCTION SPECIFIER  
Ad No. 9514A



# LEAD NEWSLETTER

FOR THE INDUSTRIAL HYGIENIST

Vol. 17, No. 8

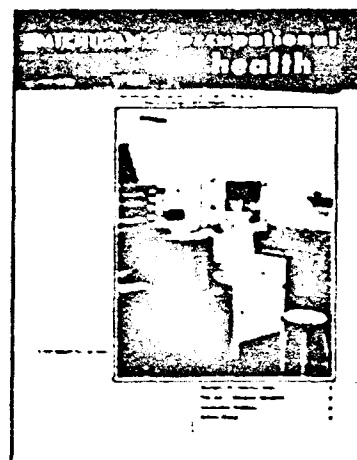
## Fume-Free Electrics Improve Plant Air Quality

Plant air quality must be effectively controlled to insure employee safety and well being. Recent studies show that the use of battery powered vehicles can be a definite help.

One such study on carbon monoxide control has been conducted by the Michigan State Health Department. Narrowing the focus to in-plant industrial vehicles, Irving H. Davis, Regional Chief of the Division of Occupational Health, conducted tests that led to the establishment of an allowable carbon monoxide level in typical enclosed industrial plants.

Among industries regarded as typical were auto assembly, appliance manufacturing, and auto parts fabrication. The allowable CO level for such industries in Michigan was established at 50 parts per million (ppm). This standard was subsequently adopted by the American Conference of Governmental Industries Hygienists, and the Federal Occupational Safety and Health Act (OSHA), of 1970.

Mr. Davis' field investigations turned up interesting data supporting increased electric vehicle use. For one thing, contrary to popular opinion, propane-powered equipment may emit as much or more CO than gasoline-fueled equipment. Propane users, believing themselves free of CO hazard, may neglect preventive maintenance and find themselves with critical problems. Others have relied on catalytic devices installed on IC engine units to improve combustion and lower emissions. Mr. Davis' investigation found that the devices were totally inoperative on 85% of the vehicles



Study points up sanitary and economic advantage of electric powered vehicles.

tested by the Michigan State Health Department.

The Michigan experience concluded: In an enclosed manufacturing plant using 6 gas or propane lift trucks 20,000 cfm of additional ventilation is required to stay within the 50 ppm maximum CO level. Hardware to provide the additional air, including roof units, ductwork, fans, wiring, but not maintenance, would cost \$13,000, or \$2,166 per truck. Operating costs (electricity and air conditioning) would add another \$1,300 per year, or \$220 per truck.

Lead Industries Association has on its staff two qualified industrial hygienists who can help you with problems similar to those described here. Write to Lead Industries Association, 292 Madison Avenue, New York, N.Y. 10017.

Lead Industries Association, Inc.  
Industrial Noise Program 1973  
Appearing in AMERICAN INDUSTRIAL HYGIENE ASSOC. JOURNAL  
Ad No. 9986

# LEAD INSULATION

## FOR PLANT MANAGEMENT

Vol. 17, No. 7

### Draft Fan Noise Hushed

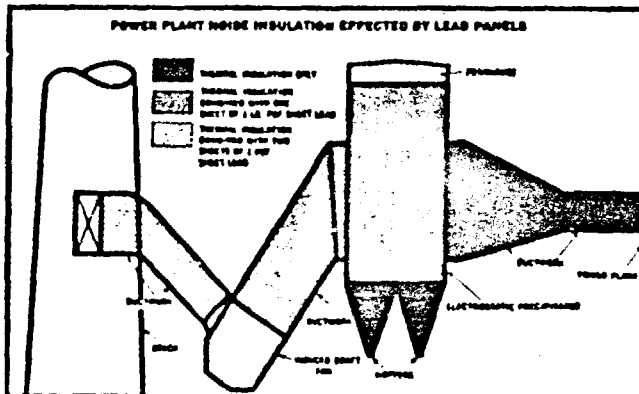
Induction draft fans widely used in air pollution control are powerful noise makers. But today's technology offers an effective answer to the problem: prefabricated, thermally insulated panels designed to provide noise reduction of up to 52 decibels. These panels are usually of sandwich design. They employ five materials to produce thermal-acoustical efficiency: an exterior sheet of corrugated or box-rib galvanized steel or aluminum; a layer of mineral wool insulation; single or double layers of sheet lead sandwiched between one or more additional layers of mineral wool insulation; a layer of aluminum foil; and a wire mesh retainer on the sound-source side of the panel. The box-rib panels are commercially available in 40" widths; corrugated panels in 32" widths.

### Compressor Noise Made Acceptable

Turbine compressors are another source of high level noise that have been successfully muffled with lead panel enclosures.

In a recent instance, two utilities were determined to find a way of decreasing the 115 decibel (db) sound of the turbines to an acceptable level that would not disturb residents of the communities where the gas compressor stations were to be constructed.

Rather than be concerned with the noise problems after the two compressor stations were built, the two companies joined forces to solve them as the stations were being designed. To make it possible to de-



crease the sound of the turbines to acceptable levels, a new composite acoustical building was created.

Aware of similar noise levels encountered at other compressor stations built adjacent to residential areas, the utilities involved drew up rigid specifications for the new compressor stations. The requirements called for noise controls to be built into the turbine equipment as well as the structures that would house them.

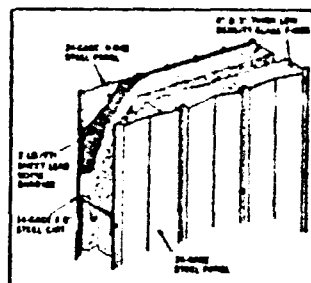
The design that was finally approved for use in the two installations included the following components and materials:

- Inside face — 2 lbs. per sq. ft. (.0312" thick) sheet lead bonded to the back side of 24 gage (.0239" thick) V-rib galvanized steel sheet.
- Center core — one 4" and one 3" thick low density glass fiber layer with vinyl backing.
- Exterior face — 26 gage (.0179" thick) galvanized steel sheet with baked enamel finish.

The building panel girts (stiffeners) were cold rolled from steel Z-sections.

The building panel, when tested

for noise barrier quality, received a Sound Transmission Class (STC) rating in excess of 40 decibels.

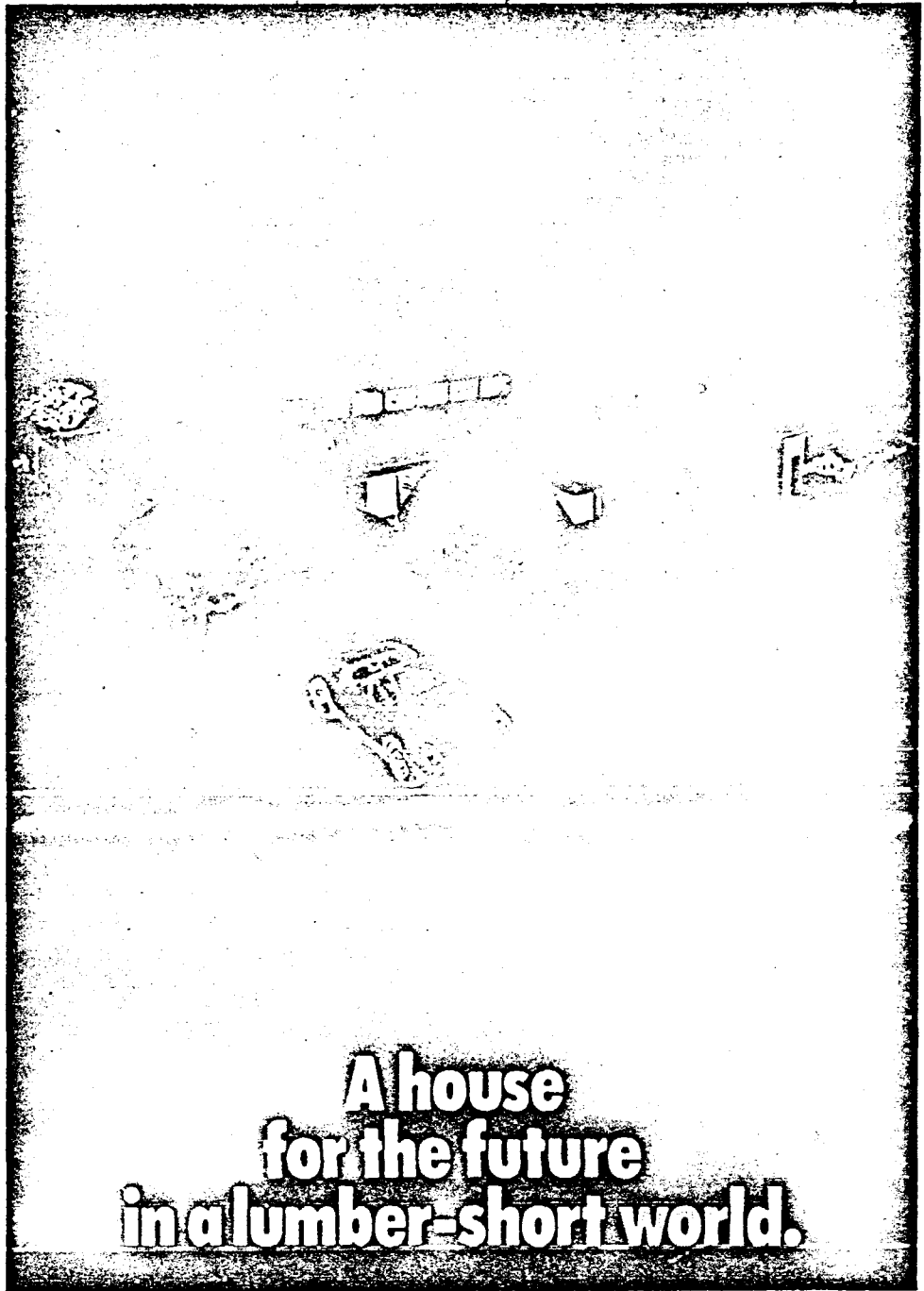


Panel used to muffle compressor noise.

Many other types of industrial machines including presses, automatic riveters, screw machines and lathes have had their noise levels reduced with lead. There is a wide variety of lead sheet, lead vinyls and composites now at work helping industry comply with regulatory codes on noise. For further information and technical assistance, write Lead Industries Association, Inc., 292 Madison Ave., New York, N.Y. 10017.

LIA14953

Credits: Design Rhode Island School of Design Sponsors: International Lead Zinc Research Organization



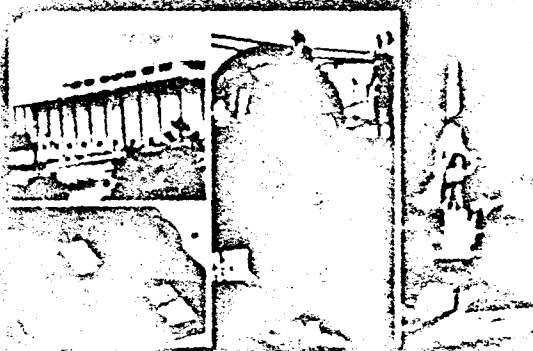
**A house  
for the future  
in a lumber-short world.**

Lead Industries Association, Inc.  
College Engineering publications, 1973  
U.S.M.A., U.S.N.A., M.I.T., CAL TECH, YALE, COLORADO SCHOOL OF MINES  
Ad No. 9549

N 3497.09

LIA14955

A MOVIE TO REMEMBER...  
**"THE LEAD MATRIX"**



Lead is the 5th most used metal on earth. Its functions in our technological society are indispensable. Consider its contributions in ultrasonics, piezoelectrics, emergency stand-by power, uninterruptible power systems, sound attenuation, X-ray shielding, space exploration, communications.

"The Lead Matrix", a half hour sound and color motion picture, produced by Lead Industries Association, can help you and your friends put lead into focus. Fill in the attached coupon and arrange for a showing. It's available without charge or obligation.

Name \_\_\_\_\_

College \_\_\_\_\_

Address \_\_\_\_\_

Dates (specify range) \_\_\_\_\_

Lead Industries Association, Inc.  
292 Madison Avenue, New York, N. Y. 10017

Lead Industries Association, Inc.  
College Engineering Publications, 1973  
U.S.M.A., U.S.N.A., M.I.T., CAL TECH, YALE, COLORADO SCHOOL OF MINES  
Ad No. 9521

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