

LEAD INDUSTRIES ASSOCIATION

292 MADISON AVENUE

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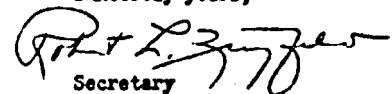
SUBJECT: REPRINT FROM
STEEL MAGAZINE

To Members of the Lead Industries Association:

We believe you will be interested in the attached reprint of an article which appeared in the July 25th issue of STEEL MAGAZINE, relating to the use of lead as a sound and vibration barrier.

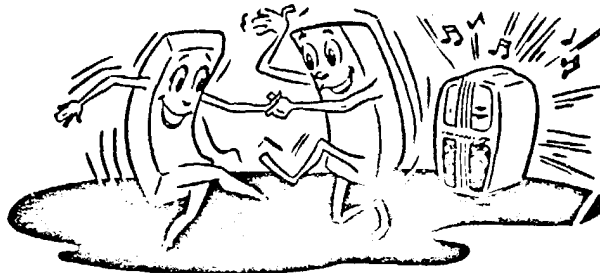
The article was prepared by Mr. Brian Wilson of the magazine's staff, with the cooperation of L.I.A. and others interested in the subject.

Sincerely yours,


Secretary

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Shakes, Rattles, Roars



... Lead Loves Them

LEAD people hope to develop an important new market out of shakes, rattles, and roars.

They know they have a good thing because the control of sound and vibration is becoming increasingly vital in many areas. In architecture, for example, the move toward airiness and the open look has created a new set of problems. And the need for noise and vibration control has been accentuated by greater use of complex equipment in the home, office, and factory.

• **How It Works**—Watch how a sponge sops up water, and you'll see just what happens when high frequency sound or vibration comes in contact with lead. Technically, this is known as internal damping (sound is converted into heat energy).

When sounds and vibrations of low frequencies (the kinds that bother human ears) contact lead, two things happen: Part of the sound is absorbed as in high frequencies, the other part bounces back—similar to a tennis ball hitting a wall. It means that lead forms a barrier which effectively denies passage to sound and vibration.

Lead's antisound and vibration qualities are due to two metallurgical traits: It's limp—like a wet dishcloth, and it has high density. Both characteristics are necessary in a good sound and vibration damping material.

Those properties have been known for years, but real interest in the application is recent. But it now looks like a major breakthrough in use may be in the making!

R. L. Ziegfeld, secretary of the Lead Industries Association, reports that his group has had more inquiries for information in the last six months than in the previous 20 years. Requests for data on lead-asbestos antivibration pads alone have hit 1000 in the last six months, and they're currently running at a rate of about 45 a week.

"For the first time, designers and engineers in general are thinking of lead as a sound and vibration control material," says Mr. Ziegfeld.

• **Where Lead Is Used** — Small amounts of lead now going into sound and vibration control fall into three categories: 1. Lead-asbestos pads. 2. Sheet lead and laminated plastics. 3. Lead-plastics.

By far the biggest market is in lead-asbestos pads for vibration control. One such use is in building foundations to prevent transmission of vibration from the ground into the structure. The recently completed, 54 story Union Carbide Corp. building in New York City has 115 such pads incorporated in the foundation. They'll also be used in Grand Central City, said to be the world's largest office building. (It's scheduled for completion in 1962.) So will the Philharmonic

Hall at the Lincoln Center for the Performing Arts in New York City. (It's under construction.)

Probably the biggest potential for lead-asbestos pads is in roof top cooling towers for commercial air conditioning equipment. One of the first installations was on a 35 story office building in New York. The cooling tower, with a wet weight of 205,000 lb., is supported on ten steel angle columns resting on the building's structural girders. The tower's posts rest on ten lead-asbestos pads which provide an antivibration bearing surface of 928 sq in., or about 220 psi.

The air conditioning field holds promise of becoming a 50,000-ton-a-year market for lead, says Mr. Ziegfeld. The potential is also bright for antivibration pads in central home air conditioning, he believes.

Other uses, current and potential: All types of heavy machinery compressors, printing presses, laundry equipment.

• **Sound Barriers**—The potentials for lead in sound control may be even greater than they are for antivibration applications—though the area is less explored and less developed. When the vibrations created by a loud noise come in contact with lead, they are unable to pass through. As one lead man puts it: "It's like trying to ring a bell in mashed potatoes."

Sheet lead has been traditionally used in this application. For example, the studios of the National Broadcasting Co. in New York have 112 doors that are soundproofed with 0.0625 in. sheet lead. Now it seems that lead in combination with plastics offers the versatility that could open a full scale market.

Currently, the most promising of the lead-plastic combinations appears to be the leaded vinyls. Cordo Chemical Co., Norwalk, Conn., one of the pioneers in the field, explains that the product consists of lead powder dispersed in a vinyl and then coated to a fabric. The product runs 66 to 75 per cent lead by weight and can be colored and embossed, says Fred Hall, Cordo sales manager.

The biggest immediate potential appears to be in building products. Lead researchers mention such possible growth areas as movable par-

titions, ceiling materials, flooring, doors, windows, portable space dividers, and air conditioning ducts.

One of the best prospects is business machines, says Mr. Hall. He also mentions machinery surfaces; small spot applications (like a noisy part on an appliance).

The Navy has been experimenting with a number of lead compounds for hull damping on some of its new ships. Applied to the inside of the pressure hull, the material keeps vibrations from affect-

ing sonar equipment. The same type of material might be used in machinery housing to control sound vibrations, believe industry people. Also mentioned: A lead spray for machinery shrouds and housings.

● **Lack of Data**—A lack of test and performance data for engineers and designers has been a major stumbling block to wide scale acceptance of lead's usage as a sound and vibration attenuator. Frank Kiernan, treasurer, J. F. Abernethy & Co., Brooklyn (a leading maker of lead-

asbestos pads), says that when sufficient data are available "we will have a tremendous potential in all types of machinery."

Projects have been launched to get basic data and to develop prototype lead-contained products. Says IIA's Mr. Ziegfeld: "We expect that by 1965 the tonnage market for lead in sound and vibration control will be in five figures."

About a dozen companies are manufacturing lead-based products; perhaps another two dozen are set to enter the field.

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