

Pin 1 - Members of LIA
Pin 9 - Metallic Lead Products Div.

LEAD INDUSTRIES ASSOCIATION

80 EAST 42ND STREET

NEW YORK 17, N. Y.

January 15, 1959

SUBJECT: "FLASHING WITH HARD LEAD"

To Members of the Lead Industries Association:

We are pleased to attach a reprint of an article entitled "Flashing with Hard Lead," which appeared in the December, 1958, issue of "American Roofer & Siding Contractor."

This is essentially a "how-to-do-it" type of article on the use of lead alloy in roofing and flashing.

Copies of the reprint will be distributed by the Association at the National Association of Home Builders Show in Chicago, Ill. on January 19-22, 1959, and will also be used in answer to specific requests received by the Association. Extra copies, up to 25, are available to members free of charge, and above this quantity, at our cost of \$3.90 per hundred.

The article, including photographs, was supplied to the magazine by L.I.A.

Sincerely yours;

John L. Ziegler

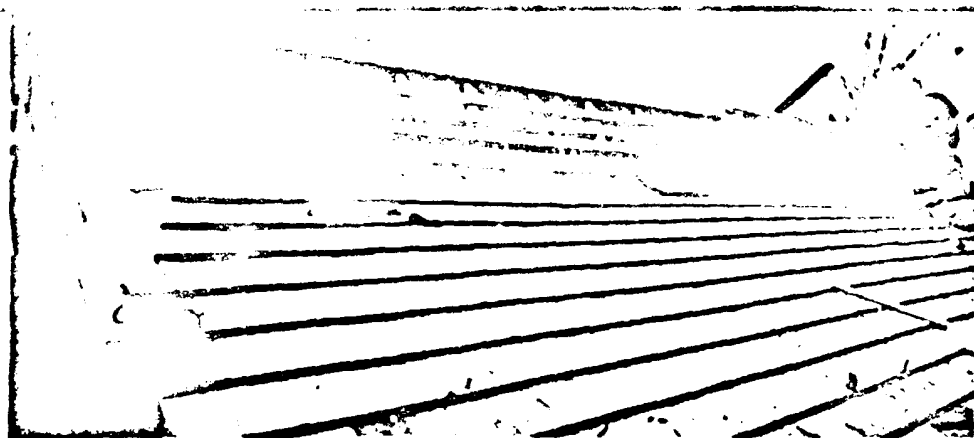
Secretary.



**FLASHING
WITH
HARD LEAD**

Reprinted from
AMERICAN ROOFER & SIDING CONTRACTOR
December, 1938

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LEAD INDUSTRIES ASSOCIATION
60 East 42nd Street
New York 17, N.Y.



Change of pitch where dormer was flashed by laying hard lead sheet in strips lapped every 6" George O'Hall, Sanford, Conn., sheet metal contractor

Flashing with hard lead

A complete "how-to-do-it" article on the use of lead alloy in roofing and flashing

L EAD HAS BEEN used for roofing and flashing more frequently since it has become available in a new alloy that retains the best properties of soft lead and adds some important improvements. The new hard lead, containing from 6 to 7½ per cent antimony, is about twice as strong and much more rigid. In common with soft lead, it is highly malleable, non-staining, and durable. To make the most of these properties, however, the roofing contractor must adhere closely to the few simple rules set forth:

1. Preparation of the surface over which the lead will be installed
2. Use of the right tools
3. Use of sheets of the proper weight
4. Use of sheets of the proper dimension, and
5. Proper application of cleats, loose-locks and overlapping.

The surface on which hard lead sheet is to be laid must be smooth, even and free from sharp projections. It must be dry, sound and clean. Nail heads should be set, screw heads countersunk. Concrete should be screeded to a smooth, flat surface. Angles around which lead will be worked should be eased or chamfered. Wood sheathing should be straight and true.

All roofing surfaces over which lead is to be laid should be covered with 15-pound roofing felt lapped 2 inches

and nailed every six inches on center with large headed roofing nails.

Lead is so easy to work that it is often most convenient to prepare the sheets in place on the roof. Tongs are handy for bending. Most lead work can be done with only the hands and a wooden mallet. It is important to remember that even hard lead is relatively soft and that hard tools should not be used. For example, a mallet or wood dresser should be used instead of a metal hammer. Brakes should be adjusted to the extra thickness of lead so that the metal will not be cut and bends will have an easy sweep.

When lead sheets are formed in a brake on the ground, they should be hoisted to the roof on a flat lift in order to avoid bending.

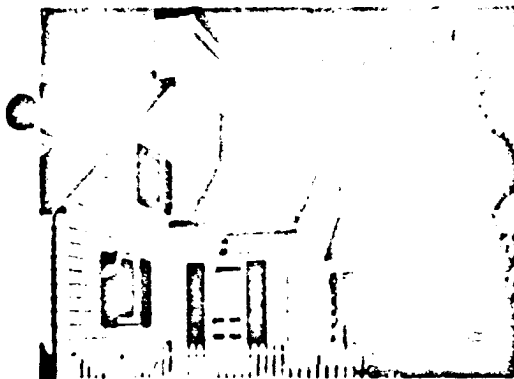
Weight of hard lead sheet is commonly designated by its weight per square foot of surface. The weights of hard lead for roofing and flashing are as follows:

2½ lb. per sq. ft. is 5/128 in. thick
3 lb. per sq. ft. is 3/64 in. thick

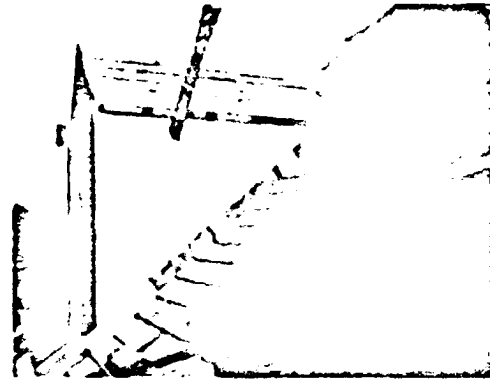
For most applications in residential work, where areas covered are generally small and sheets are narrow, 2½-lb. hard lead should be specified. For most applications on large build-



Hard lead valley flashing, top and folded with pitch of roof. Inset: new sheet supports sheet at sides, folded into loose-locks with existing sheet at 6" intervals.



Hard lead flashing, 2 1/2 lb. weight, used to make Stamford, Conn., home waterproof. Note the use of lead for chimney cap and gutter flange.



In the same house, the hard lead interior flashings and the valley flashings entering the dormer window are interspersed with shingle courses.

ings where areas covered are apt to be large and sheets wider, 3-lb. hard lead is recommended.

Both dimensions of individual sheets and the methods of linking them together are determined by thermal contraction and expansion. The coefficient of linear expansion of hard lead is approximately 15-millionths of an inch per linear inch per degree Fahrenheit. Put in terms that are easier to visualize, an increase of 100°F. in temperature would cause a 4-foot length of hard lead sheet to expand slightly less than 1/12th of an inch. That doesn't seem like much, but it is enough to tear or buckle the sheet... depending on whether the action is expansion or contraction... if due allowance is not made in construction.

Lead roofing construction may be of either the batten or standing seam type. Batten type is generally preferred for

large roof areas, while standing seam construction is recommended for porch, bay window and other smaller roof areas. In general, dimensions of roof sheets should not exceed 2 by 4 feet, with the larger dimension laid parallel to the batten or standing seam. To solder or otherwise join adjacent sheets by a rigid bond would, of course, defeat the purpose of small individual sheets: in effect of expansion, two rigidly joined 4-foot lengths are no different from one continuous 8-foot length.

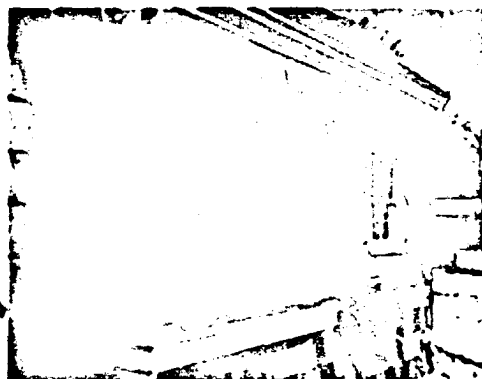
Roof sheets are secured by cleats staggered at 24-inch intervals along the sides of the sheets. Flat, horizontal, house locks are formed at 4-foot intervals. Oriented in the direction of flow, these have cleats tacked into them. These seams are staggered in adjoining bays.

For general flashing purposes, in-

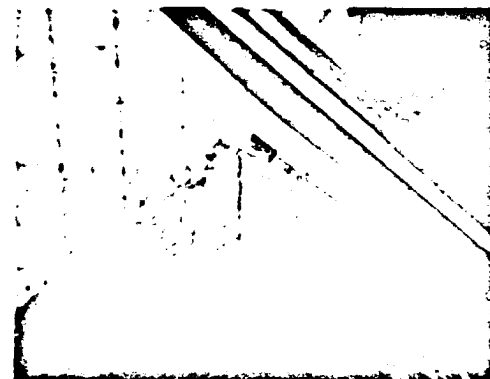
dividual sheets should not exceed 8 feet in length. However, for unusually wide flashings, say 24 inch or more, the length of sheets should be reduced to 6 feet. However, where a bend parallel to the long dimension is used in wide flashings, such as for valleys, the added rigidity given the lead by the bend permits the use of 8-foot lengths.

Joints between roofing and flashing sheets should be house locked or overlapped. In valleys with a pitch of more than 6 inches per foot, on batten caps, ridges, hips, cap flashings or through flashings built into walls, overlapping may be used. Base flashings on roofs pitched less than 3 in 12 must be house locked.

Cap flashing on masonry walls of a length dependent on the roof pitch should be stepped with the masonry joints and should extend into the walls



Bay window is waterproofed by hard lead sheeting. Sheets extend up beneath shingles over the window. House is in Portsmouth, N.H.



Side wall is protected by stepped sidewall flashing. Siding shingles will overlap hard lead flashing rising from beneath roofing shingles.

(continued from preceding page)

at least 4 inches. It should cover base flashing and other adjacent sheets for 4 inches. A 1/2 inch bein should be formed along the bottom edge of all cap flashing. Where sheet is placed between rigid members, allow room for expansion.

Where the roof intersects a vertical surface, base flashing should extend 5 inches or more onto the roof and 6 inches up the vertical surface. It should be lapped at least 4 inches in the direction of pitch and should not be more than 8 feet long. Where the base flashing extends more than 6 inches vertically, it should be loose-locked to the cap flashing.

Edges of sheet turned over copings and cornices should be turned under projections, if any, or loose-locked to continuous cleats.

Window capping

Windows and door heads, porch column caps and similar projecting wood members should be capped with 2 1/2 pound hard lead sheet extending up the wall at least 3 inches under siding or cap flashing. Upper edge should be nailed to the wall at 8 inch intervals; the exposed edge formed down snug over the mudding edge.

On other types of flashing nails should never be driven through lead sheets unless the sheets are less than 18 or 20 inches long and the nails covered. Even then, sheets may be nailed at one end only. Where very small sheets are used, as, for example, those interlaid with shingle or slate courses, they may be nailed on one edge only.

Loose-locks

Loose-locks should have a turn back of 1 1/2 inches and should be filled with a non-hardening compound, such as Vulkatek or Kaulit. A 1/4 inch space should be left between the edge of one sheet and the bend in the other.

Overlapping should extend 3 or 4 inches in the direction of pitch. When it is horizontal, as on ridges, it should be made away from prevailing weather in a non-hardening compound.

Cleats may be of 16-ounce soft copper if concealed but if exposed must be of 2 1/2 or 3-pound hard lead. Cleat with loose-locks, the cleat is folded into the locking joint. With overlapping, the cleat is folded into the hem of the sheet. In either case, the cleat should be turned back over the nail head.

For further information about the use of lead in building construction, please refer to Sweet's 1959 Light Construction or Architects' File or write to the Lead Industries Association, 60 East 42nd Street, New York 17, N. Y.