

**Is  
Your Home  
Protected**



**From Hail  
Damage?**



***A Homeowner's Guide  
to Roofing and Hail***

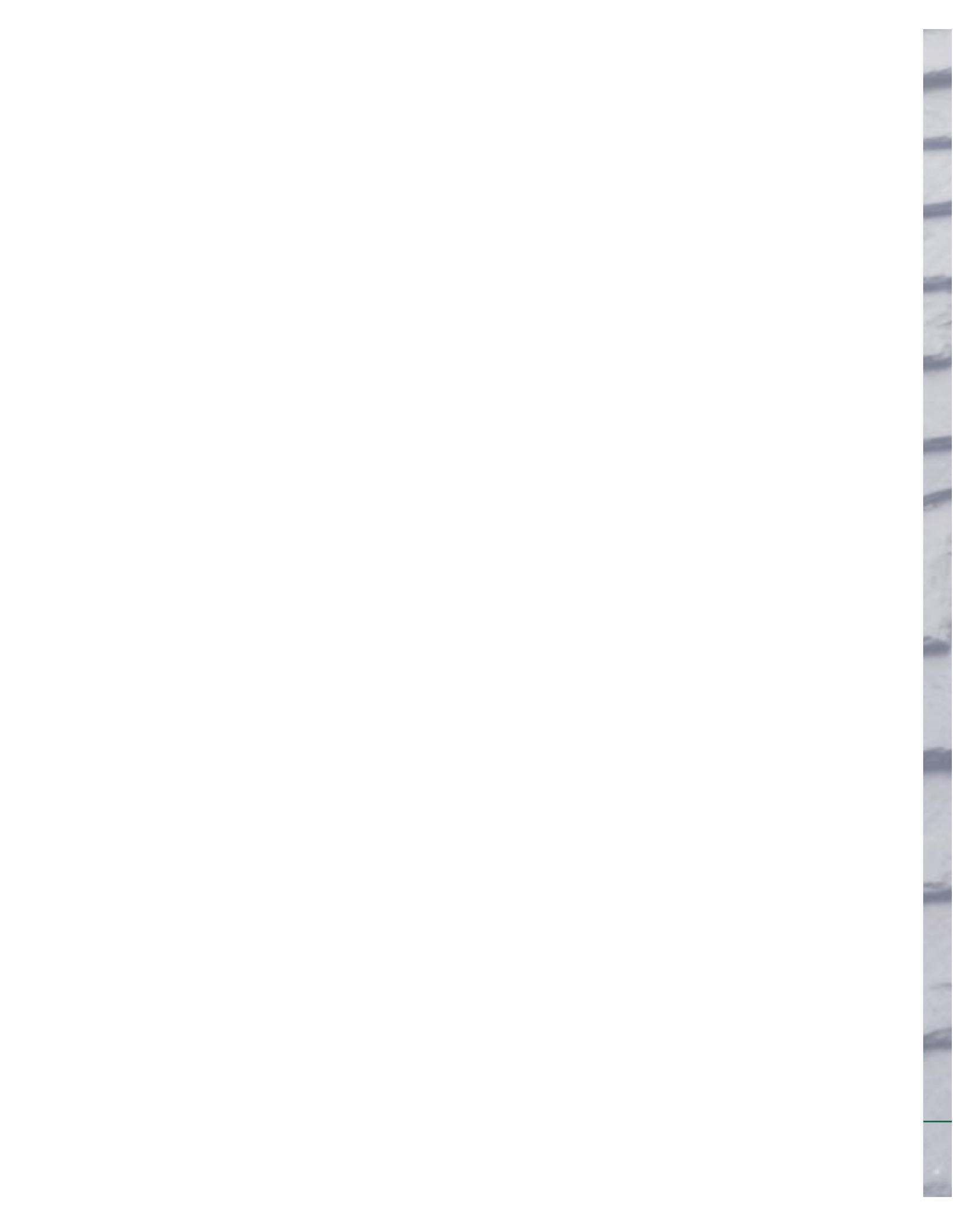
Prepared by the Institute for Business & Home Safety (IBHS). The Institute for Business & Home Safety is a nonprofit research and communications organization sponsored by the insurance industry and dedicated to reducing deaths, injuries, property damage, economic losses and human suffering caused by natural disasters.

## disclaimer

The purpose of this document is to provide homeowners with guidance on ways to retrofit one- and two-family homes in order to reduce losses from hail damage. It contains suggestions and recommendations based on professional judgment, experience and research and is intended to serve only as a guide. The authors, contributors and publisher disclaim all warranties and guarantees with respect to the information in the document and assume no liability or responsibility with respect to the information.

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# introduction

**B**uilding? Buying? Need to do some repairs? This is the perfect time to give serious thought to the hazards your home is exposed to. One of the most vulnerable spots on your home is the roof. And one hazard most homeowners can expect to face at some point is hail.

Compared to earthquakes and hurricanes, hail might seem like a minor concern. True, hailstorms don't cause the loss of life, but they can shatter windows, leave pockmarks in siding and, most important, destroy or damage roof coverings. Here are some tips to help you protect your investment.



Slate roof damaged by hail.

*Haag Engineering Co., copyright 1992.*

# selecting an impact-resistant roof covering



How do you know if a roof covering is impact-resistant? One way is to look for Underwriters Laboratories' measuring stick: the UL 2218 standard. The UL test involves dropping steel balls of varying sizes from heights designed to simulate the force of free-falling hailstones. Four impact-level designations will help you compare products: roof coverings that show the most resistance earn a Class 4 rating; the least, a Class 1 rating.

You put a lot of time, work and money into your home. Naturally, you want to use the best products available. In terms of roof coverings, this means a UL 2218 rating of Class 4. A Class 4 rating tells you that a sample of the product did not crack when hit twice in the same spot by a 2-inch steel ball, which, in a storm, would translate into quite a hailstone. A Class 1 rating signifies resistance to a 1 1/4-inch steel ball; Class 2, a 1 1/2-inch steel ball; and Class 3 a 1 3/4-inch ball.

The UL 2218 standard is the best method to test impact resistance, but it isn't perfect and works better for some coverings than for others. UL 2218 measures whether a product cracks under impact. Some roof coverings, in particular some made of metal, may resist

cracking but can be dented and dimple. So while they test well, they may perform poorly in practice. Keep this in mind when using the UL standard as a gauge of quality.

And to cover all the bases, also check for wind-resistance features and a fire-resistance rating. Consult a design professional, your insurance company or roofing installer about steps you can take—fastening vulnerable rows of asphalt shingles with adhesive, for example, or tying down tile with a screw and wire instead of nails—to help your roof covering stand up better against high wind.

Fire ratings range from Class A materials that are effective against severe fire exposure to Class C materials that are only effective against light exposure. Products that are untested or have failed a test are listed as “nonrated.”

Tile roof damaged by hail.



*Haag Engineering Co., copyright 1992.*

*Although asphalt shingles are the most common, roof coverings come in a variety of colors and styles. Which is best for your home?*



asphalt



cedar



metal



slate



clay tile

*William Spaulding*

# types of roof coverings

There are many different types of residential roof coverings to choose from.

What type best suits your taste and the level of hail risk where you live?

**Asphalt shingles** are found on most homes in the United States and can be reinforced with either organic or fiberglass materials. Fiberglass shingles last up to 20 years and have a Class A fire rating.

**Modified asphalt shingles** include SBS (a rubber-type compound) or APP (a plasticizer) and are likely to perform well in hailstorms. Without them, fiberglass composition shingles stand up moderately well to hail.

**Metal**, primarily thought of as a commercial roofing material, has become an attractive alternative for some homeowners. Not only do they last up to 40 years, metal roofs are also relatively lightweight and may have a Class A or B fire rating. But beware of their performance in hailstorms. Unlike other shingles that can ease back into shape, metal can dimple permanently.

**Slate** tends to be long-lasting (up to 100 years) but also more expensive than other materials. And you would need someone with



asphalt shingles



metal shingles

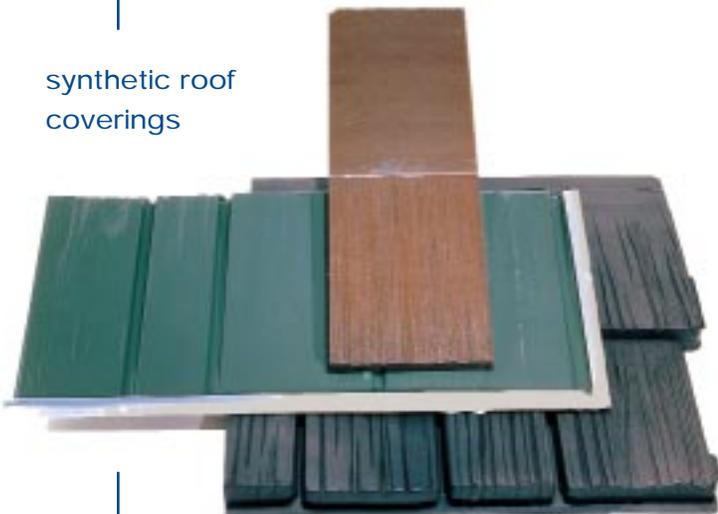


slate shingles

skill and experience to apply it, which can add to the cost. Another point to consider: slate is very heavy. Some roof structures are unable to support this type of roof covering. Be sure to check with a registered design professional before spending all of that money.

**Synthetic roof coverings** (e.g., fiber cement or molded plastic) simulate various types of traditional roof coverings, such as slate and wood shingles and shakes. Their performance varies by product.

synthetic roof coverings



types of roof coverings

**Tile** is popular in some areas, but its performance in hailstorms varies by type. Concrete tiles are more durable and can last more than 20 years, while clay tiles are brittle and can be easily chipped or broken. And another thing: like slate, tile is heavy. If you are replacing another type of roof with tile, you will need to verify that the structure can support the weight. Also, heavy products can take longer to install, so labor costs may be significantly more.

**Wood shingles and shakes** are made from cedar, southern pine or other woods. Though some like their appearance, wood shingles and shakes perform only moderately well against hail. Two other things to consider: 1) some local codes limit their use; and 2) unless they're treated with a fire retardant, they may not have a fire rating.

Before making your roofing selection, take your time and check out the variety of products. Look at full-size samples of the roof covering you're considering. You can also get information by looking at manufacturers' brochures or visiting a house that is roofed with a particular product. Most roofing materials will come with some type of warranty, but they have limited value. Even the most comprehensive warranties will not cover all damages under every circumstance. Be sure to read the fine print.



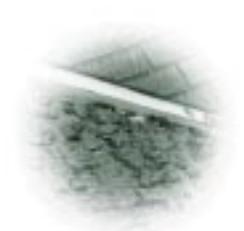
tile shingle



Roofing products have changed significantly over time. The variety of choices in materials, appearances and prices allows you to get the look you want without compromising quality. Above all, look for materials that will protect your home for many years.

*Information compiled in cooperation with the National Roofing Contractors Association.*

*Photos of roof coverings courtesy of Michael Grimm, This Old House magazine.*



# selecting a contractor

Of course you'll want to carefully evaluate any contractor you consider so you can be confident the job will be done right. Your insurance company may be able to give you names of qualified installers in your area. Or, you can contact the National Roofing Contractors Association at **1-800-USA-ROOF** for assistance or check their web site ([www.nrca.net](http://www.nrca.net)).

Here are some things to consider:

- Look for an established, licensed or bonded roofer. Ask for references and call them up.
- Ask to see certificates of insurance. Make sure that both liability and workers compensation insurance coverages are carried and are in force while the roofing work is being done.
- Insist on a detailed, written estimate that clearly states the quantity of materials needed; labor charges; work specifications, including approximate starting and completion dates, and payment procedures.
- Carefully review and understand any warranty and watch for conditions that would void it.
- Be skeptical about lowest bids or those considerably lower than others written for the same job. Many contractors seem attractive because of low bids; however, they may be uninsured and may perform substandard work. If it looks too good to be true, it probably is.
- Contact your local Better Business Bureau to check for complaints filed against the contractor.

*Courtesy of National Roofing Contractors Association.*



Asphalt roof shingles damaged by hail.

# commonly asked questions

## Won't the experts pick the best roof covering for me?

No. Building codes do not require that roofs be impact resistant, so don't rely on codes or regulations to protect you. And if you are having a home built, don't assume that the architect or designer will do your planning for you. For the most part, they call for a generic type, such as wood shakes, asphalt composition shingles, or clay or concrete tiles. If you are putting on a new roof covering or replacing an existing one, *it's up to you to make sure your new roof covering will resist impacts*, especially if you live in a hail-prone area.

## I have insurance. Why should I worry about hail damage?

Sure, standard homeowners policies will cover hail damage. But that doesn't mean you're free and clear and can just leave the problem to your insurance company. All policies have some kind of deductible or co-payment. No matter what your type of coverage, as a homeowner, you will be reaching into your own pocket to repair or replace a roof

damaged by hail. Repairing or replacing a roof covering is a major inconvenience. Knowing which roof coverings resist impact well, and which do not, can save you a lot of trouble and a lot of money.

## What causes a roof to wear out?

Several factors can speed a roof's decay, including ultraviolet light from the sun and temperature extremes in your area. Exposure to wind, snow, ice and rain and foot traffic on the roof don't help either. Darker color shingles, because they absorb more light, may have shorter service lives than lighter colors in southern climates.

## Why do wood roof shingles split and crack?

Wood naturally splits and cracks as part of the aging process. This is largely due to swelling and shrinking caused by moisture and subsequent drying.



Photo: Gene E. Moore

## Can an existing asphalt shingle roof be covered with another?

A roofer may be able to apply the new material directly on top of the old layer, depending on its condition. Although this saves a little bit of time and money, experts strongly recommend against it, especially in hail- or wind-prone regions. Hail tends to cause more damage when there is more than one layer of shingles. In windy areas, the new layer will not grab as tightly as it should if there is a pre-existing layer under it. Any other type of roof covering is typically removed before the new roof covering is installed.

## Can composition shingle roofs be repaired?

Yes. If damage is minor, a roofing contractor can remove individual shingles and replace them.

## Can't I just do the work myself?

Only if you have sufficient experience in replacing roof coverings. Otherwise, don't try it. Most roofing jobs are not for the do-it-yourselfer. Novices can do more harm than good if they use improper roofing techniques. More importantly, they can severely injure themselves by falling off or even through a roof. Professional roofing contractors are trained to do the job safely and efficiently.

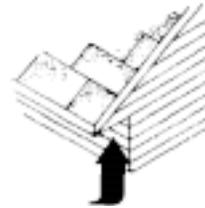
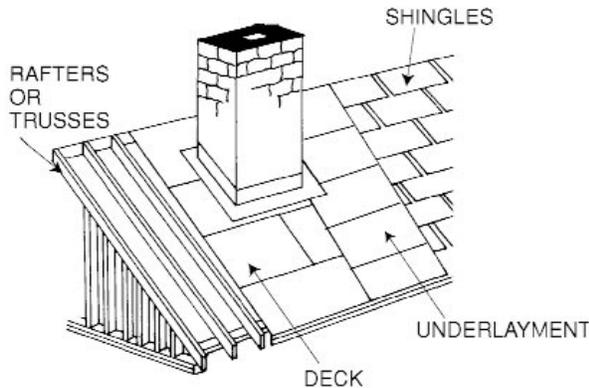
## What sort of ongoing maintenance should I do?

Inspect the roof in the fall and spring for cracked or curling shingles, and clean rain gutters filled with dead leaves and other debris. It's best to use binoculars and do this from the ground. If you really feel that you need a closer look, use a firmly braced or tied-off ladder equipped with rubber safety feet. Wear rubber-soled shoes and stay on the ladder (and off the roof) if possible so you don't damage your roof or yourself.

# terms you should know

Whether you're considering roofing options or just doing routine maintenance, it's important to know your way around. Here's a brief lesson in roofing anatomy.

The basic components of a roofing system.



## Eave:

The horizontal lower edge of a sloped roof where it extends past the outer wall of the house.

## Deck/Sheathing:

The surface — usually plywood or oriented-strand board (OSB) — to which roof underlayments and coverings are applied.



## Dormer:

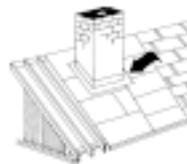
A small structure projecting from a sloped roof, usually with a window.

## Drip edge:

An L-shaped strip (usually metal) installed along the edges of the roof to allow water to drip clear of the deck, eaves and siding.

## Fascia:

A flat board, band or face located just below the eave.



## Flashing:

Pieces of metal used to prevent water seepage around any intersection or projection in a roof, such as vent pipes, chimneys, valleys and the joints at vertical walls.



### Louvers:

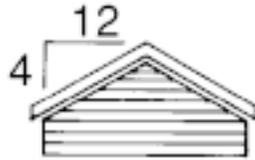
Slatted devices installed in a gable end wall or in a soffit (the underside of the eaves) to ventilate the space below the roof deck and equalize air temperature and moisture.

### Rake:

An extension of the roof over a wall at the gable end.

### Ridge:

The top edge of two intersecting sloping roof surfaces.



### Slope:

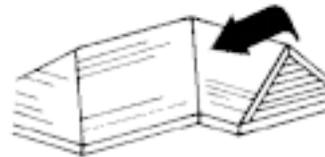
Slope is measured by rise in inches for each 12 inches of horizontal run. A roof with a 4-in-12 slope rises 4 inches for every horizontal foot, for instance. The steeper the slope, the more difficult the repair and more costly the labor.

### Square:

The most common measurement for roof surfaces, it equals 100 square feet (10" x 10").

### Underlayment/Felt:

A sheet of asphalt-saturated material (often called "tar paper") used as a secondary layer of protection for the roof deck. It is rolled out on top of the roof deck and sits under the roof covering.



### Valley:

The angle formed at the intersection of two sloping roof surfaces.

### Vapor Retarder:

A material designed to restrict the passage of water vapor through a roof or wall.

*Graphics and text in cooperation with the National Roofing Contractors Association.*

# additional sources of information

## APA — The Engineered Wood Association (APA)

PO Box 11700  
Tacoma, WA 98411-0700  
Tel: 253-565-6600  
Fax: 253-565-7265  
<http://www.apawood.org/>

## American Society of Home Inspectors (ASHI)

932 Lee Street, Suite 101  
Des Plaines, IL 60016  
Tel: 800-743-2744  
Fax: 847-759-1620  
<http://www.ashi.com/>

## Asphalt Roofing Manufacturers Association (ARMA)

4041 Powder Mill Road, Suite 404  
Calverton, MD 20705  
Tel: 301-348-2002  
Fax: 301-348-2020  
<http://www.asphaltroofing.org/>

## Building Officials & Code Administrators, International, Inc. (BOCA)

4051 West Flossmoor Road  
Country Club Hills, IL 60478-5795  
Tel: 708-799-2300  
Fax: 708-799-4981  
<http://www.bocai.org/>

## Cedar Shake & Shingle Bureau (CSSB)

P.O. Box 1178  
Sumas, WA 98295  
Tel: 604-462-8961  
Fax: 604-462-9386  
<http://www.cedarbureau.org/>

## Institute for Business & Home Safety (IBHS)

175 Federal Street, Suite 500  
Boston, MA 02110-2222  
Tel: 617-292-2003  
Fax: 617-292-2022  
<http://www.ibhs.org>

## International Code Council (ICC)

5203 Leesburg Pike, Suite 708  
Falls Church, VA 22041  
Tel: 703-931-4533  
Fax: 703-379-1546  
<http://www.intlcode.org>

## International Conference of Building Officials (ICBO)

5360 South Workman Mill Road  
Whittier, CA 90601-2298  
Tel: 310-699-0541  
Fax: 310-692-3853  
<http://www.icbo.org>

**International Residential  
Code (IRC)**

5203 Leesburg Pike, Suite 708  
Falls Church, VA 22041  
Tel: 703-931-4533  
Fax: 703-379-1546  
<http://www.intlcode.org>

**Metal Building  
Manufacturers Association  
(MBMA)**

1300 Summer Avenue  
Cleveland, OH 44115-2851  
Tel: 216-241-7333  
Fax: 216-241-0105  
<http://www.mbma.com/>

**National Association of  
Home Builders (NAHB)**

1201 15th Street, N.W.  
Washington, DC 20005  
Tel: 202-822-0200  
Fax: 703-243-3465  
<http://www.nahb.com/>

**National Association of the  
Remodeling Industry**

4301 North Fairfax Drive  
Suite 310  
Arlington, VA 22203  
Tel: 703-276-7600  
Fax: 703-243-3465  
<http://www.nari.org/>

**National Roofing  
Contractors Association  
(NRCA)**

10255 West Higgins Road  
Suite 600  
Rosemont, IL 60018  
Tel: 847-299-9070  
Fax: 847-299-1183  
<http://www.nrca.net/>

**National Tile Roofing  
Manufacturers Association  
(NTRMA)**

PO Box 40337  
Eugene, OR 97404-0049  
Tel: 541-689-0366  
Fax: 541-689-5530  
<http://ntrma.org/index.htm>

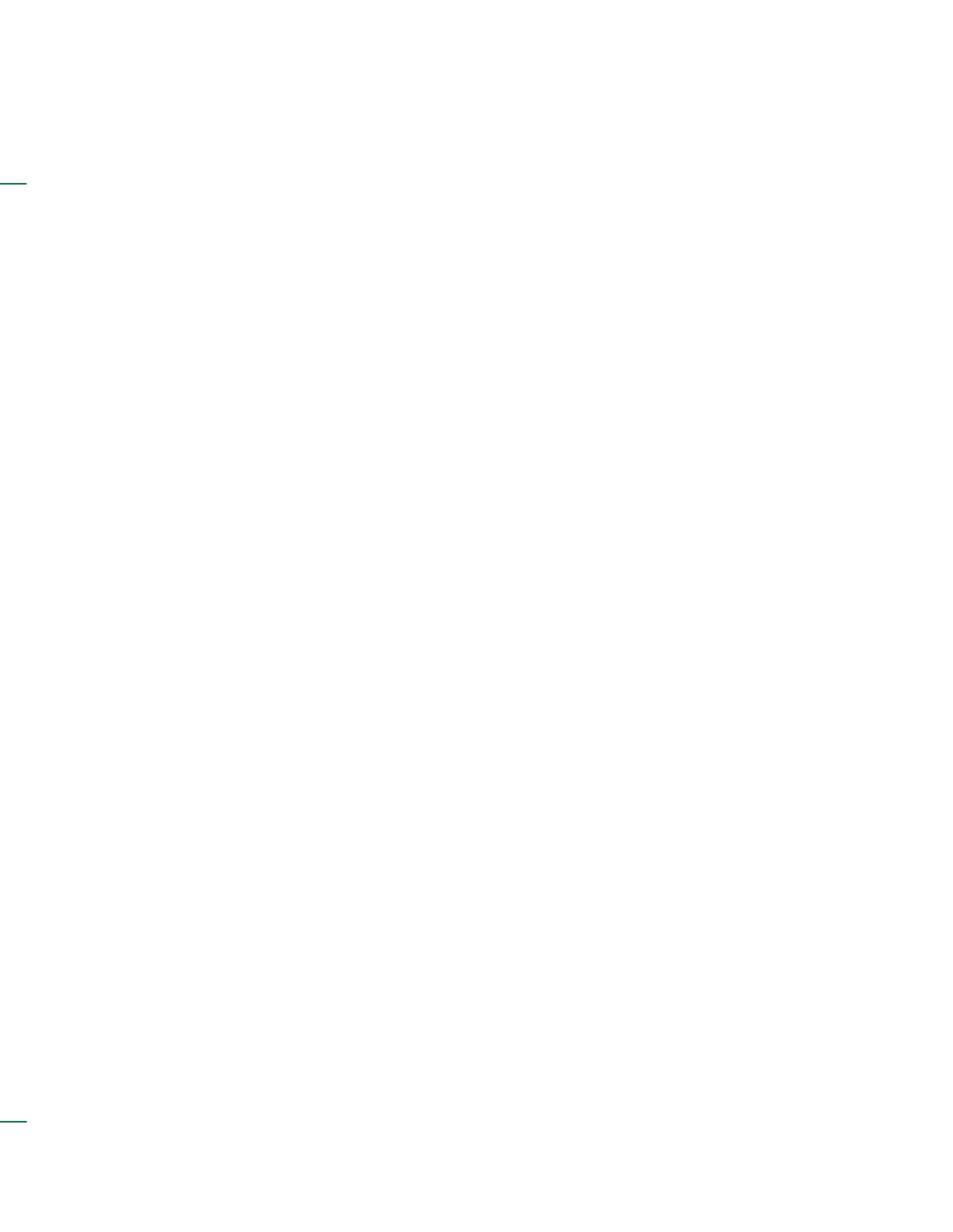
**Southern Building Code  
Congress International, Inc.  
(SBCCI)**

900 Montclair Road  
Birmingham, AL 35213-1206  
Tel: 205-591-1853  
Fax: 205-592-7001  
<http://www.sbcci.org/>



# ibhs member companies

Alfa Insurance Group  
Allendale Group  
Alliance Insurance Companies  
Allstate Insurance Group  
American Agricultural Insurance Company  
American Family Insurance Group  
American Re-Corporation Group  
Amica Mutual Insurance Company  
Andover Group  
Auto Club Insurance Association  
Auto Club South Insurance Company  
Baldwin Mutual Insurance Company  
Bankers Insurance Group  
Barnstable Group  
Brethren Mutual Insurance Company  
CIGNA Group  
Cincinnati Financial Corporation  
CNA Insurance Companies  
Colonial Penn Group  
Country Companies  
EMC Insurance Companies  
Employers Insurance of Wausau —  
A Mutual Company  
Employers Re Group  
Farm Bureau Group of Iowa  
Farmers Insurance Group  
FCCI Insurance Group  
First Floridian Auto and Home  
Insurance Company  
Florida Farm Bureau Casualty  
Insurance Company  
Foremost Corporation Group  
General Re Group  
Gerling Global Reinsurance Corporation  
of America  
Germania Mutual Group  
Grange Mutual Insurance Company  
Harleysville Insurance Companies  
The Hartford Insurance Group  
The Hartford Steam Boiler Group  
Holyoke Mutual Insurance Company in Salem  
IPC Re Ltd.  
Kemper Insurance Companies  
Keystone Insurance Companies  
LaSalle Re Ltd.  
Liberty Mutual Group  
Maine Mutual Fire Insurance Company  
Merastar Insurance Company  
Metropolitan Group  
Millers Mutual Insurance Company  
Montgomery Insurance Companies  
Motor Club of America Group  
Mutual Assurance Society of Virginia  
Mutual of Enumclaw Insurance Company  
Mutual of Omaha Group  
NAC Reinsurance Corporation  
National Grange Mutual Insurance Company  
Nationwide Insurance Enterprise  
North Pointe Insurance Company  
Oregon Mutual Group  
Orion Capital Companies  
Patrons Mutual Group of Connecticut  
PEMCO Insurance Companies  
PMA Reinsurance Corporation  
Prudential of America Group  
Redland Insurance Group  
Renaissance Reinsurance Ltd.  
Royal & SunAlliance U.S.A.  
SAFECO Insurance Companies  
Selective Insurance Group  
South Carolina Farm Bureau Mutual  
Insurance Company  
State Farm Group  
Swiss Reinsurance Group  
Tempest Reinsurance Company Ltd.  
TIG Holdings Group  
Toa-Re Insurance Company of America  
Union American Insurance Company  
Union Insurance Company  
United Farm Bureau of Indiana Group  
US Re Insurance Group  
USAA Group  
Utica First Insurance Company  
X.L. Mid Ocean Reinsurance Company Ltd.  
Zurich Personal Insurance







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