EASY$ TIP SHEETS

Energy Advice Saving Yukoners Money

Quick Links

Draft proofing your home

Draftproofing can be a cost-effective measure you take to increase the energy efficiency of your home. Sealing holes and gaps can reduce heat loss, improve comfort, reduce moisture problems, save money and provide a quieter indoor environment.

How to check for leaks

A draft-proofed home together with a mechanical ventilation system allows you to exchange the air in your home in a controlled manner, ensuring energy efficiency, comfort and healthy air quality. All of the small cracks and holes in a home combined can amount to the equivalent energy loss of leaving a window open year round. The following checklist will help you to complete a thorough search for leaks in your home.

Areas of the home that deserve special draft proofing attention include:

- windows, doors and electrical outlets
- exhaust fans, vents, light fixtures and fireplaces
- doors and hatches into unheated spaces
- behind bathtubs and under sinks mounted on exterior walls or over unheated spaces
- around plumbing pipes and ductwork entering the home from unheated spaces

Goal and Summary

This Easy$ tip sheet explains many techniques and products you can use to identify and reduce drafts in your home.

When reducing air infiltration significantly, you should take appropriate steps to maintain indoor air quality and meet ventilation requirements. A Heat Recovery Ventilator (HRV) may be needed to ensure adequate ventilation. Adequate combustion air must be provided for heating appliances that use a fuel such as propane or oil. If you have any concerns, consult a professional Heating Ventilation and Air Conditioning (HVAC) contractor. They can perform tests and properly assess your ventilation requirements.

- corners where two outside walls meet
  or where the walls meet the ceiling and floor
- floor drains

Cold or windy days are usually the best time to check for air leaks.

A good method for finding air leaks is to use incense sticks to create smoke, which is susceptible to air movement. Large leaks will cause the smoke to dissipate and the tip of the incense to glow while slower leaks will cause the smoke to trail away or move toward the leak. Hold two or three sticks together for easier draft detection.

A more effective, but more costly method of finding air leaks is to do a blower door test. In this test, a powerful fan is inserted in a doorway, and all intentional openings—windows, doors, chimneys and vents—are closed or temporarily sealed. The fan depressurizes the house and leaks are identified by the sound made where air rushes into the home. A blower door test can also be used to determine the total leakage area in the home, the extent of the work required to seal the leaks and the effectiveness of the work as indicated in a post-retrofit test. It may also show where there is the potential for backdrafting and dangerous gas spillage problems.

You can contact the Yukon Housing Corporation for an energy audit that includes a blower door test.

Draft proofing products

There are a variety of products available to seal air leaks in the home and each product class has an application to which it is best suited. Check with the retailer to ensure the draft proofing products you want to purchase are approved or recommended for your job.

Sealants

Sealants are used for sealing around windows or doors or to seal joints between building components. Make sure the sealant you are using is compatible with the surface you are applying it to.

Acoustical sealant will bond to most surfaces and is excellent for sealing the joints in polyethylene air and vapor barriers but should only be used where it is sandwiched between two materials, as it does not harden and is sticky.

Acrylic latex is a water-based emulsion sealant, which works well on surfaces such as plastic, vinyl or metal. This material should be limited to uses where the maximum joint width is 9mm (3/8 inch) or less.

Butyl rubber is a synthetic rubber sealant, which will bond to most surfaces and is appropriate for joint widths up to 12mm (1/2 inch). This product is durable for up to 10 years.

Silicone sealant is a solvent-free silicone compound, which produces a flexible watertight seal upon curing. Silicone works on most surfaces but may require primer on wood, steel or anodized aluminum. This material is excellent for large moving joints, up to 25mm (1 inch) and is highly durable for up to 20 years.

Polysulfide sealant is flexible upon curing and is ideally suited for use on stone, masonry and concrete surfaces when used with a primer. It is best when used at a maximum joint width of 25mm (1 inch). Polysulfide has a life expectancy of approximately 25 years.

Urethane foam sealant is available in a dispensing system with spray nozzles or in individual aerosol spray cans with different rates of expansion depending on the ingredients. Check the cans carefully for details on the size of cracks that can be filled. High expansion urethane foam should not be used on window headers since it can transfer structural loads to the window glazing, causing it to break, if the walls settle. It has life expectancy of 10 to 20 years.

Gaskets

Specialty gaskets have been developed for sealing joints where caulking may not be appropriate. Sill plate gaskets are polyethylene foam strips that can be installed between the foundation and sill plate during construction or where a new addition is connected to an existing house.

Electrical outlet and lighting fixture gaskets are designed to fit behind cover plates of electrical receptacles and switches and on lighting mounts.

Neoprene gaskets are flexible and very durable. They can be used for sealing joints and penetrations where movement is expected, such as on plumbing stacks.

Weather-stripping

Weather-stripping is used to prevent air leakage around doors and the operable parts of windows. It comes in a variety of shapes; flat, tube or V shaped, and is designed to work under compression. Weather-stripping is effective when it fills the gap and doesn't allow air to pass. Look for products that are flexible and spring back to their original shape quickly. Avoid products that make it difficult to operate the window or door. Various weather-stripping materials include compression strips, tension strips, combination types, door bottoms, sweeps and thresholds.

Compression strips should be used where there is a pressure stress, such as at the bottom of vertical sliding windows, along attic hatches or on hinged windows and doors.

Closed cell foam is adhesive-backed foam stripping available in rolls, which makes it an easy product to install.

Ribbed closed cell rubber is adhesive-backed weather stripping available in rolls. It's very durable and easy to install. It's good for irregular surfaces, but it is not suitable for long or varied-width gaps.

Home Energy Evaluation

A home energy evaluation focuses on how a house can be improved in order to reduce energy costs and increase comfort. Home energy advisors make their assessments by using energy analysis software to model a home's energy systems, evaluate its energy performance and calculate an energy efficiency rating. The evaluation includes a blower door test and comprehensive walk-through tour of your house. A written report with detailed energy efficiency recommendations is also provided. You can call the Yukon Housing Corporation for details and prices at (867) 667-5759.

Tubular stripping is made either with its own adhesive backing or an attachment strip of a different material. The rubber type is better than the plastic type for durability. This product is generally used as a window or door weather-stripping and is often installed with nails, staples or screws depending on the type of attachment strip used.

Tension strips
Types include the following:

Spring vinyl which can be used in the same applications as compression strips including in sliding joints, such as double-hung windows and doors. This material is adhesive-backed and is durable.

Spring metal is most often used as a door weather-stripping and is most effective under light compression.

Combination types
These types include:

Spring-loaded/Self-adjusting weather-stripping, which use a spring mechanism that allows them to adapt to unequal distances from the weather-stripping to the door or window.

Magnetic strip systems mount on the door or window frame and a metal strip mounted on the door or window provides the seal when the two are in contact. This system is effective for doors and hinged windows in moderate climatic conditions, but doesn't provide a good seal in cold temperatures due to frost formation. This product is relatively expensive compared to competing products

Door bottoms, sweeps and thresholds

The bottoms of doors can be sealed using a number of systems and include:

Door sweeps, used where carpet has a low pile or is absent altogether. Door sweeps are attached to the bottom of the door.

Partial thresholds, made of vinyl or rubber strips that are attached to the door threshold. They can provide a good seal.

Full threshold, is a combination strip that is also attached to the threshold. It usually requires at least a 16 mm clearance below the door in order to fit and seal properly.

Door bottoms, which are a combination strip of either a vinyl pile or compressible rubber. This strip is attached over the door bottom and requires 13 mm of clearance under the door.

Window coverings

Blinds and curtains will help reduce heat loss through windows, particularly at night. However, they also tend to inhibit the air movement on the surface of the window. If air movement is restricted, condensation is more likely to form, causing the window to 'sweat'.

Warning on combustion safety

Furnaces, fireplaces, wood stoves and any other fuel-burning appliances require air for combustion and for diluting and exhausting the products of combustion out of the home. If there is not enough air, it is possible that the chimney or flue could backdraft and spill dangerous gases into the home.

Do not seal or cover any exhaust or air intake vents, as all homes require some ventilation air. Sealing vents can result in a lack of sufficient air exchange, structural damage due to mould growth and long term health problems for the building occupants.

To ensure that your home has adequate air intake and venting to prevent these problems, some work to your home may need to be done. It is important that the work meets all safety and health regulations and recommendations.

Storm windows

Storm windows on the inside or outside of the existing window provide insulation value because of the still air space created between the two windows, reducing window heat loss. Generally, this will not eliminate all the drafts from the frame or seal the window as tightly as a well-constructed unit would. Storm windows can be permanent, seasonal or temporary.

Caulking

Caulking or sealant is a product commonly used to reduce air leakage around doors and non-opening windows. These products are not permanent and will have to be maintained and replaced over time as they deteriorate. Caulking is available for interior and exterior applications and should be used only for the application for which it has been developed. Using an exterior sealant for an interior application can lead to noxious gases mixing with the air in the living space. You can find more information on different types of weather-stripping and caulking materials, in Chapter Three of the Natural Resources Canada publication called "Keeping the Heat In". This publication is available at the Energy Solutions Centre or on-line at the following address: **http://oee.nrcan.gc.ca/residential/personal/heat/keeping-heat-in-toc.cfm?attr=4**.

This Easy$ tip sheet is provided by the Energy Solutions Centre.

If you have additional questions or comments, please contact the Energy Solutions Centre:

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