

# CLEARING THE AIR

## Residential Ventilation Issues

by Dara Bowser & Bob Allison

### Is Plastic Flex Duct Allowed for Bathroom Fans?

Recently, some controversy has arisen over the use of combustible, plastic flex duct for bathroom fan exhaust. Some practitioners have suggested that the requirements 2.4. apply to these ducts in that sentence 6.2.4.1.(2) states:

*"The requirements of this Sub-section apply to individual dwelling units for the design construction and installation of air duct distribution systems which serve ventilating or air conditioning systems or which serve heating systems in which the rated input does not exceed 120 KW (410,000 btuh)."*

The requirements of sub-section 6.2.4. are such that ducts are required to be made of incombustible, corrosion-resistant material such as galvanized steel or aluminum. Return air ducts for heating systems are permitted to be constructed by using the spaces between studs and joists with certain provisos, such as

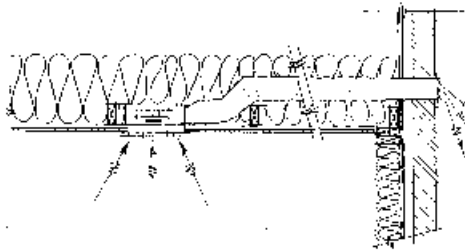
- 1) Flame spread not more than 150 (permits wood but not plastic).
- 2) Lined with non-combustible material below floor openings and under bottom-return furnaces.
- 3) non-combustible construction for the first 2 feet attached to the furnace

The requirements for flex ducts are found by reference to Sub-section 2.3. where sentence 6.2.3.2.(2)(a) permits combustible ducts provided they conform to CAN/ULC-S110-M with a rating of "Class I".

The subject duct is used for exhaust fans so it is not a return which would allow combustible construction. And so if the "Part 6" requirements are applied, the unrated, combustible white plastic flex duct commonly used for bath fans is not acceptable.

The saving grace for this type of duct is sentence 9.32.3.10.(1) which provides a clear exception for exhaust ducts which serve only a bathroom or water closet room. Such ducts are permitted to be combustible, but

must be reasonably airtight and impervious to water. This rules out unlined stud and joist cavities but does allow unrated plastic duct.



If the duct is located in an attic or other unheated space, it must be insulated with a minimum of RSI 0.5 (R) insulation. Typically, this amounts to about 1" of fiberglass type insulation. When this duct is purchased pre-insulated, the insulation

wrap is held in place with a vapour barrier sleeve. When used as an exhaust duct in an attic however, the duct itself because the vapour barrier because it is on the warm side of the assembly. This means that if the duct is buried under the attic insulation, next to the ceiling, no insulation is required on the duct itself. This is because the attic insulation (R12) provides about 10 times as much insulation as is actually required and the duct itself is the vapour barrier.

#### Duct Size

Another issue is the size of the duct itself. Typically, this type of duct is only 4" diameter. Yet tables 9.32.3.4.B and 9.32.3.5. allow only 5" diameter and greater flex ducts depending on the airflow and purpose. If a 4" duct is to be used then the installer should be providing a Part 6 design calculation to support the selection of a duct size less than that called for in the OBC.

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NOTE: The opinions expressed in this column are those of the writers and do not reflect the views of HRAI, OBOA or any other agency, corporation or individual.

*\*Illustrations courtesy HRAI*