

New Code Requirement for Plastic Venting Certification

By Sandra Cooke, Fuels Safety Engineering Manager, TSSA

TSSA, AS PART OF ITS CODE ADOPTION PROCESS, HAS HELD IMPORTANT INDUSTRY MEETINGS TO DISCUSS IMPLEMENTATION OF THE 2007 SUPPLEMENTS TO THE NATIONAL NATURAL GAS AND PROPANE INSTALLATION CODE (NGPIC). AN IMPORTANT AND MAJOR ISSUE OF DISCUSSION WAS THE NEW REQUIREMENT FOR CERTIFICATION OF PLASTIC VENTING MATERIALS. STEMMING FROM THE IN-FIELD PERFORMANCE ISSUES OF SOME PLASTIC VENT SYSTEMS, THE NATIONAL NGPIC HAS BEEN REVISED TO REQUIRE ALL PLASTIC VENTING MATERIALS BE CERTIFIED, SPECIFICALLY AS A GAS VENT, TO THE ULC S636 STANDARD. THIS CODE CHANGE WILL AFFECT ALL NEW NATURAL GAS OR PROPANE INSTALLATIONS INCLUDING REPLACEMENT APPLIANCES ONCE THE NGPIC IS ADOPTED IN ONTARIO.

Appliance manufacturers reference a variety of plastic venting materials in their installation instructions including ABS, cellular core ABS, SCH 40 PVC, DR21 and DR26 PVC, Cellular core PVC, and CPVC. Currently, these vent materials are not required to be certified to ULC S636 as part of the appliance certification. Recognizing the need for safety improvement, not addressed at the appliance standards level, TSSA, in collaboration with other provincial and territorial jurisdictions, addressed this matter at the national code level. Additionally, IPEX Inc., a leading plastic pipe manufacturer, does not support their product being used as a vent unless it is specifically certified for such an application.

All new appliance installations will comply with new code requirements, including replacement appliances. For example, if a water heater is replaced with a new water heater, it must comply with the code in effect when installed. Existing applications will not be affected as code changes are typically not retroactive unless there is an immediate safety issue. Since there have been no fatalities or injuries due to the use of plastic vents, the change will only effect installations

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going forward; however, this code change will have the effect of mandated removal of the existing



plastic vent at the end of an appliance's or water heater's life –estimated to be 10 to 15 years. The main concern of industry was smooth implementation of this requirement for plastic vent certification, primarily: the effective date and if flexibility or allowances would be permitted regarding replacement appliances. The proposed effective date is July 1, 2007 to coincide with appliance certification listing updates, vent product availability and proper communication to field. There was general agreement to apply the requirement to all new appliance installations in new buildings, and for replacement furnaces and boilers in existing buildings. Some industry concern with the code change, primarily from water heater rental companies and gas utilities, was voiced with specific reference to the following:

- cost to homeowners and service providers;
- household disruptions;
- potential switch to alternative energy source;
- potential increase in homeowners performing installations; and
- most of the reported problems occur in the vent portion closest to the appliance and, as such, only this portion of the pipe (for example the first five feet) should be replaced to reduce cost impact of this change.

The following safety concerns were identified with the continued use of uncertified plastic vent and in particular with Acrylonitrile-Butadiene Styrene (ABS) vent materials, most commonly used as gas vent in Ontario:

- unknown effect of ageing on ABS vent/pipe;
- ABS has known failures in Ontario, although there have been no injuries or fatalities associated with these failures;
- the national code requires full replacement and all other jurisdictions in Canada will require full replacements for new appliances including replacement appliances;
- certification listing (installation instructions) of the appliance will be updated to require full replacement;
- appliance listing specifies vent configuration for safe use – partial replacements may have difficulty meeting this requirement; and
- if the allowance were given, the existing vent would never be replaced, surviving multiple appliance replacements and be present for the life of the house.

While TSSA will consider any new information brought forward regarding the effects of ageing and compatibility of existing venting, the adoption of the code will not be delayed in waiting for the

development of this information. TSSA will work with industry on the type of testing needed for consideration, and has established a task group with industry participation to develop proposed variance conditions for installations that may impose challenges specific to the site itself, such as condominiums. A proactive communications strategy and plan has been developed and will be implemented to ensure effective and targeted communications to relevant stakeholders.

Communication initiatives will include a TSSA direct mail-out to natural gas and propane certificate holders and contractors advising them of the new requirements 90 days in advance of the new requirement taking effect. In addition to posting information on its website and issuing an e-notification to relevant fuels subscribers, TSSA will investigate further potential communication options with major industry stakeholders.



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B149.1 CODE AMENDMENTS

WILL CHANGE APPROACH TO PLASTIC VENTING

By Trevor Johnston, Business Development Manager, IPEX Inc.

For many years, ABS plastic pipe and fittings have been the most widely used venting material for gas and propane fired appliances throughout Canada. As a result of recent changes to the CSA B149.1 *Natural Gas and Propane Installation Code* (NGPIC), it will soon be mandatory in Ontario and other provinces for all plastic venting materials to be certified to ULC S636. At least one Canadian plastic pipe and fittings manufacturer has found that ABS is unable to meet the strict requirements of the ULC S636 standard, and thus will no longer be considered an approved vent system material. Conversely, PVC and CPVC have been successfully certified and will now be used in much greater quantities for venting gas-fired appliances. So how do the code change and the switch to PVC and CPVC impact installation of these appliances?

The “System” Certification

One very important change for industry will be the strict requirements of vent certification to ULC S636, which eliminate the mixing of plastic vent components from various manufacturers.

ONE VERY IMPORTANT CHANGE FOR INDUSTRY WILL BE THE STRICT REQUIREMENTS OF VENT CERTIFICATION TO ULC S636, WHICH ELIMINATE THE MIXING OF PLASTIC VENT COMPONENTS FROM VARIOUS MANUFACTURERS.

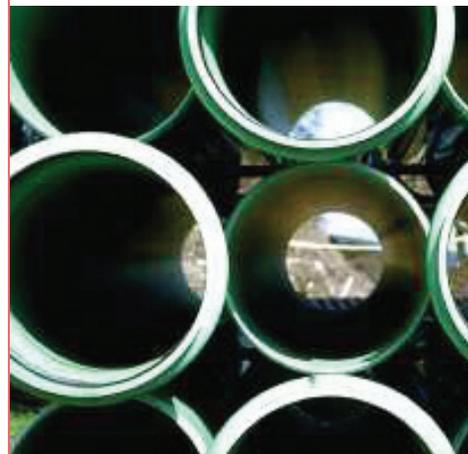
ULC S636 is a system standard that physically tests and verifies that the assembled plastic vent system meets appliance-venting requirements and is suitable for the application. Part of the certification process includes formal approval of all installation instructions, and special marking and labeling requirements for pipe, fittings and cement. If a different fitting, pipe or cement is substituted in the field than what was tested during the certification process, this new combination of components will be considered untested and not be classified as a certified vent.

Solvent Cementing PVC and CPVC versus ABS

Overall, installation techniques for plastic venting materials remain largely unchanged. Most installers are familiar with proper solvent

cementing techniques and many will have experience with solvent cementing PVC or CPVC. Still, it is important to remind users of the subtle differences between ABS and PVC or CPVC solvent cementing.

The key difference in solvent cementing ABS versus PVC has to



SINCE PVC IS A RELATIVELY HARDER AND DENSER PLASTIC MATERIAL THAN ABS, THE USE OF A JOINT PRIMER IS RECOMMENDED FOR INSTALLATION TEMPERATURES AT OR BELOW FREEZING.

do with the pipe and fitting material itself. Although classified as a rigid plastic, ABS is relatively soft and of lower tensile strength than PVC. As such, the solvent

component of ABS cement can easily penetrate and liquefy the ABS surfaces being joined. Thus, the cementing process has always been a one-step procedure with relatively quick set and cure times.

For the majority of installations, it is acceptable to utilize a similar one-step solvent cementing approach with PVC. PVC solvent cements contain special solvents and resin that differ from the ABS cement and are specifically designed to create the fusion and bonding required for a permanent PVC pipe/fitting joint; however, since PVC is a relatively harder and denser plastic material than ABS, the use of a joint primer is recommended for installation temperatures at or below freezing. Primer is essentially concentrated solvent and it helps pre-soften the PVC joining surfaces in cold temperatures, ensuring the solvent cement can adequately penetrate the pipe and fittings to create proper bonding.

The procedure for solvent cementing CPVC vent materials is identical to PVC vent. CPVC is a modified form of PVC that has enhanced high temperature ability. This is why CPVC vent is rated for flue gases up to and including 90°C while PVC is rated to 65°C. CPVC has its own solvent cement and will also require the use of primer below freezing temperatures.

It is important for installers to note as well that ABS cement

cannot be used on PVC or CPVC. It is colour coded yellow to distinguish it as being different than the traditional gray for PVC cement or orange for CPVC cement. When PVC or CPVC must be attached to ABS, as is the case for some ABS appliance connectors, special transition cements should be used. Consult with the certified vent manufacturer for a list of approved flue gas vent solvent cements. To make consistently good PVC or CPVC solvent cement joints, remember the following guidelines:

1. Pipe ends must be cut squarely and be free of burrs to ensure the cement is not scraped or plowed out of the joint during joint assembly. Best results can be obtained by using a beveling tool to prepare the pipe end prior to solvent cementing.
2. Use only the proper ULC certified PVC and CPVC cements as supplied by the vent system manufacturer.
3. The joining surfaces must be softened and made semi-fluid. For installation temperatures at freezing or below, use a joint primer on the mating surfaces immediately before applying cement as recommended.
4. Sufficient cement must be applied to fill the gap between pipe and fitting.

5. Assembly of pipe and fitting must be made while the surfaces are still wet and the cement is still fluid.
6. Excess cement that comes out of the joint after assembly should be wiped away with a clean rag.
7. Always read and follow the certified vent installation instructions provided by the vent manufacturer, including those for solvent cementing.

TO HELP INDUSTRY PREPARE FOR THE IMPENDING CHANGES IN 2007, CERTIFIED PLASTIC VENT MANUFACTURER IPEX INC. OFFERS TECHNICAL INFORMATION ON ITS SYSTEM636™ PVC AND CPVC FLUE GAS VENT SYSTEM AS WELL AS A SOLVENT CEMENT REFRESHER COURSE.

To help industry prepare for the impending changes in 2007, certified plastic vent manufacturer IPEX Inc. offers technical information on its System 636™ PVC and CPVC flue gas vent system as well as a solvent cement refresher course, both online at www.ipexinc.com/product/system636. Trevor Johnston is the Plumbing and Mechanical Business Development Manager at IPEX Inc. For more information on certified vent materials contact IPEX at (866) 473-9462.



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