

Dryer Fires. Is Yours Ready To Ignite?

(By Donald Grummett)

In recent years there has been many rumours about dryers catching on fire. Should we be concerned? Yes of course. We should take seriously anything that may put our family at risk.

Was the problem the dryer? Rarely. After investigating it is usually determined to have been the venting within the home catching on fire, and not the dryer.

Obviously appliance manufacturers are concerned about the possibility of any dryer related fires. They have made it a policy to advise both service companies and consumers that the use of plastic venting is prohibited. Also they have begun stressing not to exceed maximum limits for venting length. Let me try to explain the details of this problem.

The drying process

When clothes are being dried inside your family dryer there are two processes happening. Firstly, heat is applied to the air inside the dryer drum as it turns. This raises the internal drum temperature to approximately 175 Fahrenheit. This causes moisture to be driven out of the clothing fibres by evaporation. Secondly, there is a vast volume of air being passed through the clothes. Surprisingly, the real trick to drying clothes is the air.

Ever wonder why the clothes on the clothesline dry so fast on a windy day? The hero is the wind. Well, the same process takes place inside your family dryer.

To make them dry faster air is constantly blown through the clothes during the drying cycle. The tumbling action of the drum allows further exposure of the clothing to the hot air flow. As they tumble the air picks up moisture from the clothes, carries it down the venting, and dumps it outside the home. Most people think the venting is to push the lint outside. Actually, its primary purpose is to dump the moisture outside the home.

It is a process that works efficiently. That is, as long as nothing interferes with the process. Slow down, or stop the airflow and the process quickly fails.

In the past homeowners who wanted to vent their dryers did it using rigid sections of venting. The dryer would always sit against an outside wall in the basement. The sections were secured together (using screws or duct tape), and elbows were added if necessary to connect the dryer and venting to the wall outlet. Although time consuming to install, straight venting sections were durable and would usually outlive the dryer.

Then along came flexible venting. It was basically a coil of wire covered in a plastic sheath. It made installations and servicing easier. It turned an hour installation into a ten minute job. The flex though tended to become brittle and break easily. Also it

was prone to blockage and needed to be replaced every few years.

But, since flex venting was so much more convenient we continued with its use.

Then came a change in lifestyle. As both parents went off to work the household dryer was moved to accommodate our faster paced lifestyle. To save us time it was moved from the basement to a ground floor laundry room. Although moved to the working level of the home, it was still near an outside wall.

So you are saying, "I know all this, but what does it have to do with venting fires".

I answer, "Have patience, we are almost there".

Taking this desire for easy access still further the dryer was moved again.

The laundry room is now often located near the centre of the home, close to the family room or kitchen. If located upstairs it is often centrally located between the bedrooms, allowing faster access to where most dirty laundry is produced. Easier for the homeowner that is, but no longer near an outside wall. The distance from the dryer to the outside wall of the home is now substantially longer.

Presto, we have come to the crux of our problem. The venting is too darned long.

Physics and the venting pipe

It is a lot more difficult to push air down a long venting pipe than a short one. This is because air inside the pipe has weight and volume. Obviously, the air inside a longer pipe would weigh more than a shorter one.

After about twenty feet of venting pipe the dryer begins to have difficulty pushing against all this weight. The average dryer motor does not have enough strength to overcome the weight of the air inside the pipe. The result is that the air in the pipe begins to slow down.

Since the air slows down the moisture will accumulate in the venting rather than being carried outside. This causes the venting interior to become wet and lint traveling down the venting it will cling to the wetness.

This starts a vicious cycle as follows: The more lint inside the venting pipe, the more blockage; The more blockage, the slower the air flow; The slower the air flow, the more moisture inside the pipe; The more moisture, the more lint inside the venting.

I think you get the scenario now.

Taken to extremes the lint can block the venting closed. When this happens it can cause the dryer to overheat. The normal drum temperature of 175 Fahrenheit can quickly shoot up to 300 Fahrenheit or higher. It may even get hot enough to allow lint in the venting (or in the dryer) to ignite.

"So who is to blame for this problem"?

I say there is no culprit in this scenario. If you want to blame anything, blame our fast paced lifestyle. Gone are the times when laundry day was a full days work. We all want instant gratification and instantaneous results - even with our laundry chores.

Calculating true venting length

Manufacturers generally suggest a venting length of 15 feet to be the maximum. As service technicians we commonly see venting lengths of forty feet or more.

“So how do I know if my venting is too long”?

If you want to determine the actual length of your venting do the following:
(An elbow or abrupt turn is equivalent to an additional 4 feet)

1. Measure all the straight lengths and add them together
2. Count all the turns or elbows and multiply this number by 4
3. Add up the totals

Example 20 feet of venting with 4 turns would actually be:
 $20 \text{ feet} + 4 \times 4 \text{ feet} = 36 \text{ feet}$

Don't be surprised by the true equivalent length of your venting. In modern homes it can be substantial. Often it is 300% longer than recommended by the manufacturers.

Telltale signs

If the blockage becomes critical the dryer will stop doing its job properly. As a homeowner watch for the following signs that the venting may be starting to block.

- Clothes coming out wet
- Excess lint left on clothes at cycle end
- Inside of dryer feels wet
- Taking too long to dry a load
- Clothes very hot at end of cycle
- Electrical consumption greatly increased

So as a consumer what can you do to alleviate this problem? Well you cannot move the laundry room. The best thing you can do is to be aware that the problem exists. Lastly, consider taking down the venting and cleaning out the lint buildup during your annual spring cleaning. A small investment in time could make your family safer.