



Wilco Tips!

Wilco Temperature Tips for Gutter Installation

It's important to keep in mind when you're installing gutters that temperature changes will cause expansion and contraction of aluminum. It's a natural property of the material you use for your gutter installations and can occur regardless of the manufacturer. It is important for you and your customers to know that heat buckling does occur, although very rarely. One or more of the factors we'll talk about here lead to the gutter expanding or contracting to the point that a deformity can be seen from time to time.

Most materials are subject to what is called "thermal expansion". That's a scientific way of saying that there's a tendency for gutter material to expand when heated and to contract when cooled. In fact, aluminum will expand or contract 13.1 micro inches per linear foot for each 1-degree change in temperature! Look at it this way; a 50-foot run of aluminum gutter is subject to a 51-degree change in temperature and could expand or contract .401 inches (just over 3/8"). $50\text{ft} \times 12\text{ inches} = 600\text{ inches} \times .0000131 \times 51\text{ degrees} = .401"$.

Since you're fastening gutters to a fascia board, keep in mind that if the wood material used on the fascia is new or wet, it will shrink—and it can make the aluminum actually shrink, when it's trying to expand. This is especially common on pole barns, which seem to be the worst for heat buckling. For example, new construction using western types of lumber may shrink longitudinally (lengthwise) by .2% as it dries and the moisture content declines to 0%. That means that a 50-foot run of wood can shrink as much as 1.2 inches.

Bottom line, all this shrinking and expanding, whether on aluminum gutters or wooden fascias, can cause heat buckling of gutter material if precautions are not taken during gutter installation. And when both materials experience expansion and contraction at the same time, you're talking almost 2 inches—and that could have severe consequences to the gutter material.

We know it's not always practical to run gutter as short as 50 foot according to the Sheet Metal Association, but as the installer, you must know the chances of heat buckles are the responsibility of either you or your customer!

Here are some of our **Wilco Tips** to help with heat buckling:

1. For every run out stand you use, you should have the same number of people helping to carry the gutter level when installing, trying your best to not flex the metal.
2. Run the gutter as level as possible. This will take the stress out of the aluminum. If you're not able to run it level, keep the gutter to a minimum drop.
3. We have seen fewer problems with customers that use the galvanized pole barn spikes and ferrules. The reason is that the gutter is secured to the front and back of the gutter. This keeps the face of the gutter from moving while holding it. A hidden hanger is fastened to the back of the gutter and allows the front to move. In most cases this causes the front to move—which in turn, causes a more pronounced buckle in the face of the gutter.
4. All colors of gutter expand to the same amounts
5. Using a thicker gauge aluminum such as .032 will expand just the same as any gauge of aluminum (basically, all aluminum has the same fraction for expansion and contraction)
6. We also have noticed that the majority of the buckles we've seen have come from older gutter machines instead of the newer poly driven machines. Many times, older machines are out of adjustment and each roller station is putting a lot of stress on the metal as it is formed. The rubber drive uses technology that pulls the metal through forming stations, causing less stress on the metal. Make sure that your machine is regularly adjusted to ensure that the gutter coming out of the machine is straight with no curving or rippling which could increase the chance of heat buckling during thermal expansion.
7. The ambient temperature you're experiencing when installing gutters also makes a difference when it comes to heat buckling! Keep in mind that the preferred temperature range for installing gutters is 60-90°F. Gutters installed in cold weather temperatures, below 30 degrees (when the gutter aluminum is completely contracted) and above 100 degrees (when it's fully expanded), could heat buckle when it experiences the opposite temperature later in another season.