

Winter Precipitation Types And Your Bottom Line



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A clear understanding of winter precipitation types is essential to the snow and ice professional and business owner. To ensure that you are adequately compensated for the level of work performed, make sure the services provided match up with the terminology of your contracts.

After experiencing an unprecedented amount of mixed precipitation and ice events across the nation during the 2016-17 winter season, contractors and property owners often disagreed on whether ground accumulations were snow, ice or a combination of both. Here's a thorough explanation of winter precipitation types and how they may affect your operations, as well as suggestions that can help communicate the difficulty of work performed to the property owner.

Back to the basics

First, let's understand the precipitation fundamentals. Precipitation occurs when a warm, moist air mass cools and forms condensation within a cloud. Once the droplets or ice crystals within the cloud become heavy enough, they fall to the ground. The precipitation type that eventually reaches the ground largely depends on the vertical temperature profile of the atmosphere that the droplet or ice crystal falls through. The three most common winter precipitation types discussed below include snow, sleet and freezing rain.

Snow

Snow develops as an ice crystal in the cloud and requires all layers of the atmosphere that the crystal falls through to remain below freezing, except for the layer immediately above the ground surface. The composition of snow (wet or dry, small or large flakes) is determined by the temperature just above the surface. The type of snow has a direct impact on both accumulation

and compressibility of the snow cover. The colder the temperature profile, the drier and fluffier the snow accumulation. Snow is generally the easiest winter precipitation type to remove and is often defined best by snow and ice professionals in their winter contracts.



Chart created by WeatherWorks LLC

Sleet

Sleet forms when droplets or ice crystals refreeze into ice pellets on their way to the ground surface. A telltale sign of sleet is the distinct pinging sound of ice pellets often seen and heard bouncing off the windshield of your truck or the ground. Accumulated sleet does not compact, has a much higher density than snow and will often need to be plowed at a lower threshold. Finally, when sleet combines with groundwater at colder temperatures, it is likely to bond quickly to ground surfaces.

Freezing rain

Freezing rain is often confused with sleet and is the most dangerous regardless of surface temperature because the precipitation falls to the ground in liquid form. Freezing rain gives the appearance of “plain rain” but freezes on contact with a cold, below-freezing ground surface, which creates an ice accretion (glare ice) on exposed surfaces such as trees, cars and pavement. Ice buildup on electrical lines can also result in power outages and bring down branches, and sometimes even entire trees.

So how do you account for the different types of winter precipitation? There’s a famous cognitive riddle that relates winter precipitation types quite well: Which weighs more, a pound of lead or a pound of feathers? They might weigh the exact same amount, but we know they have vastly different physical compositions.

One commonality between snow, sleet and freezing rain is water content in its liquid form. As a standard rule of thumb, 1 inch of liquid precipitation is equivalent to:

- 10 inches of snow accumulation (10-to-1 ratio at about 28 to 34 degrees Fahrenheit),
- 1 inch of freezing rain (1-to-1 ratio), or
- 3 to 3.5 inches of sleet (3-to-1 ratio).

When you are dealing with a multitude of winter precipitation types within the same storm, ground accumulations become heavier than their height might lead you to believe. So, if you find yourself digging out of a few inches of sleet, it may actually feel like you are pushing the weight equivalent of 10 or more inches of snow.



When dealing with snow alone, winter contracts are the most straightforward based on the amount of plowed or treated snow accumulation. However, we know

that winter seasons are not always ideal. While sleet and freezing rain are measured the same way with a standard ruler, there is a greater effort required during the removal process.

Communication of contract language and the different winter precipitation types is a necessity between the snow contractor and the property manager. All parties should agree before the season begins on how to verify the amount of snow and ice that has fallen after each storm. With snow and ice professionals taking on more of the risk in recent years, contracts can be verified with some type of snow equivalency (as seen in the table at left) or, at the very least, be sure to clearly define the extra time and materials required for the more complicated sleet or ice events.