Rainbow Restoration Blog

Continuing Education

What Is the Enhanced Fujita Scale? 6 Tornado Categories Explained

04/12/2024

Explore the six different EF Scale categories, ranging from weak to devastating, to understand the threat level posed by a tornado.

Understanding the Enhanced Fujita Scale and tornado categories can help communities better prepared to stay safe during these dangerous weather events, prevent damage to property, and have a recovery and restoration plan in place.

Enhanced Fujita (EF) Scale

Rating	Wind Speed (mph)	Damage Intensity
EF-0	65-85	Gale/minor
EF-1	86-110	Moderate
EF-2	111-135	Significant
EF-3	136-165	Severe
EF-4	166-200	Devastating
EF-5	>200	Incredible

The National Weather Service's meteorologists, engineers, and scientists classify tornadoes based on the Enhanced Fujita Scale. The scale has six categories, EF-0 through EF-5, with EF-5 being the most damaging storm.

No matter the category, prepare to act quickly when a tornado watch or warning is issued. Knowing what to do can save lives and help prepare for storm damage.

EF-0 Tornado

Wind Speed: 65-85 mph

Classification: Gale/minor

While often brief, EF-0 tornadoes can still cause damage.

Possible damage includes:

- Roof shingles loosened or ripped off
- Damaged siding on buildings and homes
- Shallow-rooted trees pushed over

EF-1 Tornado

Wind Speed: 86-110 mph

Classification: Moderate

With winds between 86 and 110 mph, EF-1 tornadoes can cause significant damage, even to well-built structures.

Possible damage includes:

EF-2 Tornado

Wind speed: 111-135 mph

Classification: Significant

EF-2 tornadoes are considered the first level of strong tornadoes on the Enhanced Fujita Scale. With wind speeds significantly faster than freeway speed limits, EF-2 tornadoes can wreak havoc on buildings and land.

Possible damage includes:

- Entire roofs of buildings and structures ripped off
- Large trees uprooted
- Boxcars overturned

EF-3 Tornado

Wind speed: 136-165 mph

Classification: Severe

Compared to the lesser tornado categories, EF-3 tornadoes can cause widespread devastation, such as leveling well-constructed houses or causing major roof and wall failures. The destructive winds can also generate large and dangerous debris from ripped-apart structures.

Possible damage includes:

- Strong, framed houses completely destroyed
- Large trees snapped or uprooted

Wind speed: 166-200 mph

Classification: Devastating

EF-4 tornadoes are rare but terrifying forces of nature. With wind speeds reaching a staggering 166 to 200 mph, they can cause catastrophic damage to entire neighborhoods, and turn ordinary objects into high-speed missiles.

EF-4 tornadoes are statistically rare, accounting for only about 2% of all tornadoes reported in the United States.

Possible damage includes:

- Well-constructed buildings leveled
- Cars and large objects thrown long distances
- Dirt and vegetation scored from the earth

EF-5 Tornado

Wind speed: >200 mph

Classification: Incredible

EF-5 tornadoes — the most destructive tornado classification — boast wind speeds exceeding 200 mph, making them the most powerful winds recorded on Earth. Picture entire buildings completely leveled, vehicles tossed around like toys, and massive debris generated by the destructive winds.

Possible damage includes:

Less than 1% of all tornadoes reported in the United States have been categorized as EF-5, but they remain a sobering reminder of the importance of preparedness for severe weather events.

What Is the Difference Between the Fujita and Enhanced Fujita Scale?

The **Fujita Scale**, developed in the 1970s, was the first scientific attempt to rank tornadoes based on the damage they caused.

However, the Fujita Scale had limitations. It relied on an investigator's interpretation of the damage, which could be subjective. Additionally, building codes and materials varied across locations and over time, making it difficult to accurately compare tornadoes from different areas or eras.

The **Enhanced Fujita Scale** was introduced in 2007 to address these shortcomings with a more standardized approach. The new scale considers wind speed estimates derived from detailed damage indicators, such as building types, structural damage, and tree damage. It also takes into account building code variations to provide a more accurate assessment of the intensity across different regions.

Fujita Scale	Wind Speed (mph)	Enhanced Fujita Scale	Wind Speed (mph)	Damage Intensity
F-0	40-72	EF-0	65-85	Gale/minor
F-1	73-112	EF-1	86-110	Moderate
F-2	113-172	EF-2	111-135	Significant
F-3	158-206	EF-3	136-165	Severe
F-4	207-260	EF-4	166-200	Devastating

Tornadoes can strike with surprising speed and ferocity, leaving little time for reaction. Being prepared in advance is critical for safety. By taking proactive steps to develop a plan, assemble an emergency kit, and identify safe shelter locations, businesses and property owners can significantly increase their chances of staying safe during a tornado event.

Here's how to prepare for this sort of threat:

1. Prepare Your Property

While there's no way to completely tornado-proof a property, certain measures can strengthen a home or business against high winds and flying debris. Here are a few ways to fortify a property against a tornado:

- **Install impact-resistant windows** or storm shutters to protect a property from windblown objects.
- **Consider adding bracing to garage doors** to prevent them from collapsing.
- **Remove or securely anchor loose objects** such as outdoor furniture, signage, grills, or decorations that could become projectiles in a tornado.
- **Trim overhanging tree branches** that could break and damage a roof or nearby power lines.
- If property does suffer damage from the storm, contact a trusted restoration provider for emergency board-up services and roof tarping.

2. Understand the Signs of a Tornado

The sooner the warning signs of a tornado emerge, the more time there is to seek safe shelter. Early detection can provide precious minutes to react, though tornado warnings may not always come through in time.

- **An approaching cloud of debris**, especially near the ground.
- **A sudden and significant change in air pressure**, creating an eerie calm or quiet.
- **Very dark or greenish-colored sky** within a thunderstorm.

3. Create a Tornado Emergency Plan

A well-defined tornado emergency plan can mean the difference between confusion and decisive action during a critical moment. Here's how to create a plan to ensure safety in the event of a natural disaster:

- **Assemble a team:** Discuss tornado safety with all property occupants. Assign roles and ensure everyone understands their responsibilities.
- **Pick a safe place:** Identify a designated shelter location in a home or building, ideally a basement or an interior room on the lowest level away from windows and exterior walls.
- **Prepare an emergency kit:** Stock a kit with essential supplies to last for at least a few days.
- **Practice makes perfect:** Conduct regular tornado drills. Walk through the process of seeking shelter and ensure everyone knows where to go and what to do.
- **Stay informed:** Sign up for local weather alerts and monitor weather forecasts during severe weather threats.

4. Set Notifications for Tornado Alerts

Tornadoes most often occur during the spring and summer months, particularly between March and June. While certain parts of the country are struck more than others are, tornadoes can hit anywhere. It is a good idea to set notifications for tornado alerts on your phone to stay informed.

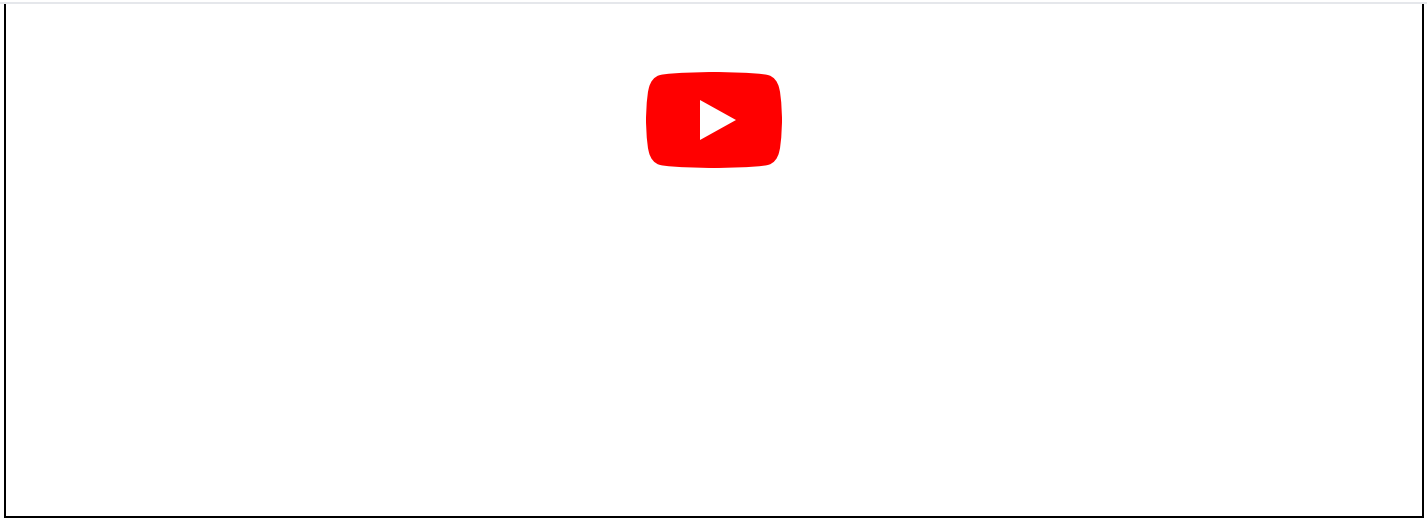
Tornado warning: A tornado has been sighted or indicated by weather radar. This means that there is danger and to seek shelter immediately.

5. Build an Emergency Preparedness Kit

A well-stocked emergency kit is vital for surviving a tornado and its aftermath. Having essential tornado shelter supplies readily available can make a big difference during a stressful situation. Here's what to include in a tornado preparedness kit:

- **Nonperishable food:** Pack enough food for at least three days to sustain everyone taking shelter. Choose options that don't require cooking or refrigeration, such as canned goods, energy bars, and granola bars.
- **Water:** Stockpile at least one gallon of water per person per day for three days. Consider including water purification tablets or a water filter in case clean water becomes scarce.
- **First-aid kit:** Be prepared for potential injuries by including bandages, antiseptic wipes, pain relievers, and any prescription medications.
- **Flashlight and batteries:** Power outages are common after tornadoes. Pack a reliable flashlight with extra batteries to ensure a source of light.
- **Battery-powered radio and extra batteries:** Stay informed about the situation by having a battery-powered radio on hand.
- **Cash and important documents:** Keep a small amount of cash on hand in case ATMs or credit card systems are unavailable. Include copies of important documents such as passports, insurance papers, and identification cards in a waterproof container.

These are just the basics — more can always be added to the kit to fit specific needs. Consider including additional items such as a whistle to signal for help, a dust mask for dust storms after the tornado, and a basic toolkit for minor repairs.



6. Seek Shelter

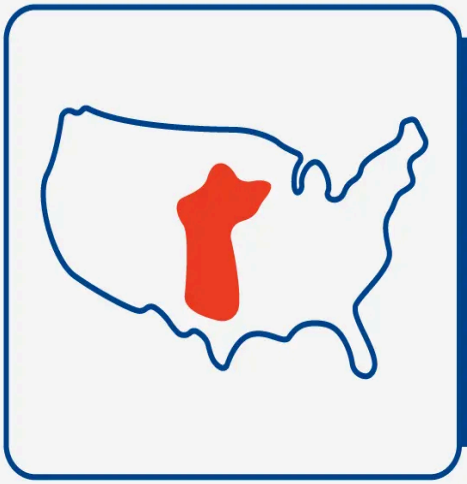
In the event of a tornado warning, it's crucial to have a predetermined safe space in your home or business for occupants to go to. A designated tornado shelter, if available, offers the most protection.

However, if time is short and there isn't a storm shelter available, here are a few other options:

- **In a home or business:** The lowest level of a building generally provides the most safety. Ideally, this should be an interior room on the ground floor, located away from windows and exterior walls. A basement is the best choice, but a small central bathroom or closet can also offer some degree of protection.
- **In a building:** If caught outside during a tornado warning, seek shelter inside a sturdy building away from windows and glass. Large open areas such as cafeterias, gymnasiums, or auditoriums should be avoided, as these can collapse during a tornado.
- **As a last resort:** If suitable shelter isn't available within a building, lie flat in a low-lying ditch or other depression in the ground, covering your head with your arms. This position helps shield you from flying debris.

1. The United States experiences the most tornadoes globally, with an average of 1,200 tornadoes per year.
2. "Tornado Alley" (Texas to Mississippi Valley) accounts for nearly a third of all U.S. tornadoes.
3. There are an average of 1,200 waterspouts — tornadoes that form over water and can reach speeds of up to 150 mph — reported globally each year.
4. It takes an average of 15-30 minutes for a tornado to fully form, but some tornadoes can form with minimal warning.
5. Tornado damage paths can be more than 1 mile wide and over 50 miles long.
6. Tornadoes may be nearly transparent until they pick up dust and debris or a cloud forms within the funnel.
7. Tornadoes are the fastest rotating winds on Earth, with recorded wind speeds exceeding 300 mph.
8. Flying debris produced from tornadoes causes over 70% of tornado-related deaths and injuries.
9. Violent (EF-4 and EF-5) tornadoes cause 70% of all tornado-related deaths but make up only 2% of all tornadoes reported in the U.S.
10. The most destructive tornadoes occurred in the U.S. August 8-12, 2020, across 16 different states, with an estimated $9.2 billion in damages.
11. More than three-fourths of tornadoes in the U.S. are considered weak (EF-0 or EF-1).
12. 95% of all U.S. tornadoes are below EF-3 intensity.
13. Only 0.1% of tornadoes are classified as EF-5.

TORNADOES

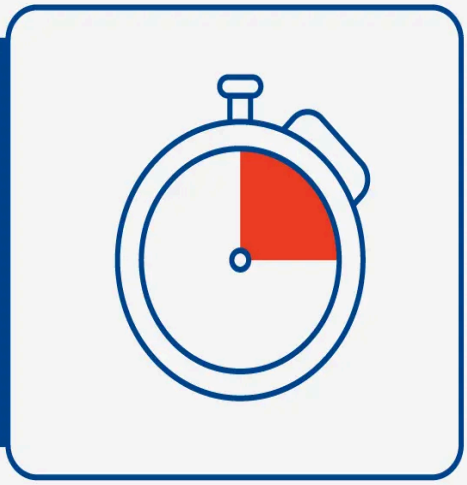


Nearly a third of all tornadoes in the U.S. occur in “Tornado Valley.”

Source: NOAA National Severe Storms Laboratory

It takes about 15-30 minutes for tornadoes to form, but some can form with minimal warning.

Source: National Weather Service



Tornado damage paths can be more than 1 mile wide and 50 miles long.

Source: National Weather Service

Tornado Categories FAQ

How Are Tornadoes Classified?

Tornadoes are rated by the damage they cause, which helps meteorologists and scientists determine their wind speed. The worse the damage, the higher the category and the more dangerous the tornado.

What Is the Fujita Scale for Tornadoes?

The Fujita Scale — which was updated in 2007 and renamed the Enhanced Fujita Scale — rates tornadoes on a scale of EF-0 to EF-5, with EF-5 tornadoes being the most devastating. Ratings are based on the damage the tornado causes.

How Many Tornado Categories Are There?

There are six tornado categories included on the Enhanced Fujita Scale: EF-0, EF-1, EF-2, EF-3, EF-4, and EF-5.

Is an EF-5 Tornado Worse Than an F5?

the rare event that wind speeds exceed 318 mph, the EF-5 tornado is definitively worse than an F5 is.

Is an F6 Tornado Possible?

There has never been an (E)F-6 tornado recorded, but they're technically not impossible. An F-6 tornado would need to reach wind speeds beyond 318 mph; however, the highest wind speeds ever recorded on Earth were 302 mph.

How Bad Is a Category 1 Tornado?

A category 1 tornado is on the lower end of the scale, but it can still cause significant damage, like ripping off roofs or flipping cars. However, well-built structures typically hold up fairly well.

Find Professional Storm Damage Repair Near You

While the Enhanced Fujita Scale provides a helpful way to understand tornado strength, it's important to remember that no tornado is safe. Even the weakest tornado category can cause injuries and property damage.

If your residential or commercial property has been damaged by a tornado or heavy storm contact Rainbow Restoration® to quickly restore your property and get you back to normalcy.

If you have a need for storm damage restoration, call us now for emergency services.

This article is intended for general informational purposes only and may not be applicable to every situation. You are responsible for determining the proper course of action for your property. Services should be performed by licensed and experienced professionals. Rainbow Restoration is not responsible for any damages that occur as a