

## MEASUREMENT TIPS

### STAY SAFE

Don't retrieve hailstones while it is still hailing. Once it is safe, collect hailstones off grassy surfaces to avoid those that may have broken on impact.

### MEASURE MAXIMUM DIAMETER

The best way to measure is with a digital caliper.



Measure between the two widest points, visualizing a straight line through the center of the hail between the two points—even if the hailstone is spiky in appearance. Measure from the tip of the spike feature.

If using a ruler, try to estimate the maximum diameter to the 1/8 of an inch.

### WEIGH THE HAILSTONE

If possible, weigh the hailstone using a typical kitchen scale. Make sure the scale is on a level surface, zero the scale, and make sure no water is on the scale before weighing the hailstone.

### TAKE A PICTURE

If you take a picture of the hailstone, make sure to place a reference object in the frame next to the hailstone. Pictures of hailstones in people's hands can give a false perception of hailstone size. A ruler is the best reference object, but objects like a coin, golf ball, baseball, etc., are very helpful when estimating hail size from a picture. It is better to take a picture and submit the picture, rather than estimating the size from a reference object.



### MINIMIZE MELTING

Avoid excessive handling of hailstones for measurement. If possible, wear gloves (latex, leather, rubber, wool, cotton) as this helps minimize melting.

Do not place the hailstone on metallic objects—this speeds up melting.

### STORE HAILSTONES

To store hailstones for later measurement, place them in separate sealable plastic bags (freezer/sandwich bag) to keep them from freezing together, squeeze excess air out of the bags before sealing, and then place in freezer.

It is best to measure hailstones that have been stored in a freezer within 72 hours, before sublimation begins to accelerate.

### ESTIMATE HOW MANY

If possible, estimate the concentration of hailstones per square foot that are on the ground (i.e., 15 stones per square foot) or consider estimating the concentration within a 10 foot by 10 foot square. This is helpful in assessing total damage.



### SUBMIT MEASUREMENT

Submit your hail measurement to the local National Weather Service office and/or local broadcast meteorologists via phone, email, social media, or mPING mobile device app. Include your location and be specific. Latitude/longitude are best, but you can also reference your location to the nearest intersection, or use the distance and direction from a nearby landmark. Do NOT post specific address-level information on social media.

If you are a home or business owner, make sure your cell phone location service is turned on and your photos have the appropriate time and location data. This can be helpful if you need to file an insurance claim.

In general, humans overestimate the size of small hailstones (less than 1.75 inches) but underestimate large and very large hailstones (over 2 inches). It is better to estimate diameter in inches than to relate the hailstone to a reference object (e.g., hail estimated as 1.5 inches rather than "golf ball-size hail").

# RECORD HAILSTONE



**IT IS IMPORTANT TO MEASURE AND PRESERVE POTENTIALLY RECORD-BREAKING HAILSTONES.**

If you think you have a record-setting hailstone, follow these 5 steps:

1. Wear gloves when handling the hailstone and measure the maximum diameter, the smallest diameter, and an intermediate dimension.
2. Weigh the hailstone.
3. Photograph the hailstone with a reference object and record the time, date, and location of your observation.
4. Place the hailstone in a plastic sandwich bag or freezer bag, making sure to squeeze the air out of the bag before sealing.
5. Contact your local National Weather Service Office or local broadcast meteorologist.

DATE/ TIME/	LOCATION	MAXIMUM DIAMETER	SMALLEST DIAMETER*	MASS	WEIGHT

*\*This helps determine the general shape of the hailstone.*

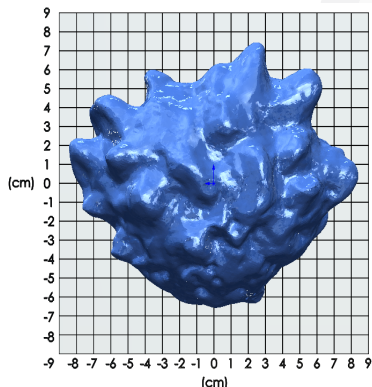
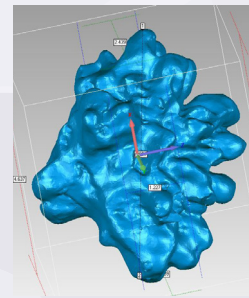


## ACTIVE HAIL RESEARCH

IBHS has a quick response team that can deploy to a location where a possible record-setting hailstone fell. The team uses 3D laser scanning to capture highly precise digital models of record-setting hailstones to preserve them for future scientists to study. You can also contact IBHS through [ibhshailstudy@ibhs.org](mailto:ibhshailstudy@ibhs.org) or through social media channels:

 @IBHSHailStudy    
  @disastersafety

NWS offices please contact IBHS at [ibhshailstudy@ibhs.org](mailto:ibhshailstudy@ibhs.org) or through social media platforms.



3D scan of Vivian  
(South Dakota record hailstone)



Hailstone next to reference objects  
(Image courtesy of NWS Wichita, Kansas)

## HAILSTONE RECORDS BY STATE

STATE	DIAMETER (INCHES)	OFFICIAL RECORD	LOCATION	DATE MEASURED
Alabama	5.38	Official*	Walter	3/19/2018
Alaska	1.5	Unofficial	Talkeetna	6/15/2005
Arkansas	5	Official - tie	Little Rock	1/21/1999
Arkansas	5	Official -tie	Searcy	4/2/2006
California	3	Unofficial	Tehama County	1/23/2005
California	3	-----	San Diego County	9/2/1960
Colorado	4.83	Official*	Bethune	8/13/2019
Connecticut	2.5	Unofficial	Hamden	7/10/1989
District of Columbia	4.15	Unofficial	Washington	5/26/1923
Hawaii	4.25	Official	Kailua, Oahu	3/9/2012
Illinois	4.75	Official	2 NNW Minooka	6/10/2015
Illinois	7.5	Unofficial	Aurora	5/1/1933
Indiana	4.5	Unofficial	Cayuga	5/5/2000
Iowa	5.5	Unofficial	Dubuque	6/16/1882
Kansas	7.75	Official	Wichita	9/15/2010
Kentucky	5	Unofficial	Princeton	4/3/1974
Maine	4	Unofficial	Cumberland County	6/1/1986
Maryland	4.5	Unofficial	Annapolis	6/22/1915
Michigan	4.5	Unofficial	Stony Point	3/27/1991
Minnesota	6	Official - tie	Edgerton	7/4/1968
Minnesota	6	Official - tie	Reading	7/28/1986
Nebraska	7	Official	Aurora	6/22/2003
New Jersey	2.5	Unofficial	Perth Amboy	6/23/1906
New York	4	Unofficial	Ostego County	8/16/1951
Oklahoma	6	Official	2 N Gotebo	5/23/2011
Pennsylvania	5.5	Unofficial	Meadville	6/26/1950
South Carolina	4.25	Unofficial	Turbeville	4/16/2011
South Dakota	8	Official - US Record	Vivian	7/23/2010
Tennessee	4.25	Unofficial	Rogersville	4/9/2011
Texas	6.0 – 8.0	Unofficial	Gay Hill	12/6/1892
Texas	6.416	Official*	1 SSW Hondo, TX	4/28/2021
Utah	3.5	Unofficial	Coalville	7/21/1987
Vermont	3.3	Official	Westford	7/16/2009
Virginia	4.5	Unofficial	Saltville	4/27/2011
Wisconsin	5.7	Official	Wausau	5/22/1921

*\*Documented and 3D scanned by IBHS Researchers*