

# ANTIFREEZE 101

## Understanding Burst Points and Freeze Points

The burst point of an antifreeze is the temperature at which a sealed copper pipe filled with the undiluted product will burst. Burst points are a standard created by the plumbing industry in the 1930s to indicate the relative strength of antifreeze. They have since become synonymous with the name of antifreeze products used for winter storage. Burst points help consumers choose the proper product based on the lowest expected temperatures for their specific area.

A freeze point is the temperature at which ice crystals begin to form in the undiluted product. Freeze points are the measurements given when using refractometers and hydrometers. Note: Most refractometers provide readings on both a PG and an EG scale, so it is important to use the PG reading when testing PG antifreeze. Hydrometers are either made to provide PG or EG readings. It is critical to test this product with a hydrometer specifically designed to provide PG readings. Most hydrometers are purchased at auto supply stores and are designed for use with EG, so they cannot be used to test PG antifreeze. (Note: Hydrometers are very inaccurate instruments when used to measure freeze points on glycol based antifreezes. For best results we suggest using a refractometer). A PG refractometer will not give accurate readings for antifreeze containing alcohol and PG. Keep in mind that it is normal to see readings that may vary by several degrees from the product's stated freeze point based on ambient temperature or the age of the product. For example, the freeze point of the -50°F PG product is +12°F, but it is not unusual to see readings in a range of +12°F to +16°F. A -50°F antifreeze containing alcohol and PG will have a freeze point of +25°F, but it is not unusual to see readings in a range of +21°F to +25°F. Shake PG antifreeze well before testing as the heavier PG component may have settled toward the bottom.

Because the stored engine or water system is not in use, preventing ice crystals is not necessary, and to do so would require the use of a more expensive product with a higher PG content. As an example, the -50°F PG antifreeze has a freeze point of +12°F while the -100°F antifreeze has a freeze point of about -60°F.



However, as the temperature drops the solution begins to solidify and expand, putting pressure on pipes that can lead to damage. This is why it is important to select an antifreeze that will provide burst protection appropriate for a specific region's lowest anticipated temperatures. Products providing lower burst point temperatures contain higher concentrations of PG and are thus more expensive, but they will provide the protection needed in the event of extreme weather. Note: Antifreeze containing alcohol and PG are not recommended for engine use; these formulas are designed for use in water systems.

## STAR BRITE® WINTERSAFE -50°F (-46°C) NON-TOXIC ANTIFREEZE

Star brite® #31200 1-gallon, 210 Per Pallet      Star brite® #312G55 55-gallon, 4 Per Pallet

Star brite® Wintersafe -50°F (-46°C) Non-Toxic Antifreeze provides excellent cold weather and corrosion protection for drinking water systems and all engines at an attractive price. Its premium additive package prevents corrosion of aluminum, copper, brass and solder, but will not harm rubber, seals or hose materials. The 3X-dyed pink color provides excellent blow-through visibility. Formulated with virgin, non-toxic, USP-grade ingredients, it is tasteless and contains no alcohol. This product is ready-to-use; do not dilute it.

Star brite® Wintersafe -50°F (-46°C) Non-Toxic Antifreeze will provide burst protection to -50°F (-46°C) and freeze protection within a range of +14°F to +18°F (-10°C to -8°C). When testing with a refractometer designed for use with PG, freeze point readings on the PG scale will range from +14°F to +18°F. When winterizing water systems with plastic pipes in regions where temperatures can fall below -10°F (-23°C), we recommend using West Marine Pure Oceans -100°F (-73°C) Antifreeze or Star brite® -200°F (-129°C) Non-Toxic Antifreeze.



## WEST MARINE® -50°F (-46°C) MARINE ANTIFREEZE

West Marine #499848 1-gallon, 210 Per Pallet      West Marine #363770 55-gallon, 4 Per Pallet

West Marine -50°F (-46°C) Marine Antifreeze provides the ultimate in cold weather and corrosion protection for drinking water systems and all engines. Its premium additive package prevents corrosion of aluminum, copper, brass and solder, but will not harm rubber, seals or hose materials. The 3X-dyed bright pink color provides excellent blow-through visibility. Formulated with virgin, non-toxic, USP-grade ingredients, it is tasteless and contains no alcohol. This product is ready-to-use; do not dilute it.

West Marine -50°F (-46°C) Marine Antifreeze will provide burst protection to -50°F (-46°C) and freeze protection within a range of +12°F to +16°F (-11°C to -9°C). When testing with a refractometer designed for use with propylene glycol, freeze point readings on the PG scale will range from +12°F to +16°F. Note: The burst point of PVC pipes used in most drinking water systems is about -10°F (-23°C). When winterizing water systems in regions where temperatures can fall below -10°F (-23°C), we recommend using West Marine -100°F (-73°C) Marine Antifreeze or Star brite® -200°F (-129°C) Non-Toxic Antifreeze.



55-gallon drum also available

## WEST MARINE® -60°F (-51°C) MARINE ANTIFREEZE

West Marine #3556610 1-gallon, 210 Per Pallet

West Marine -60°F (-51°C) Marine Antifreeze provides the ultimate in cold weather and corrosion protection for drinking water systems and all engines. Its premium additive package prevents corrosion of aluminum, copper, brass and solder, but will not harm rubber, seals or hose materials. The 3X-dyed purple color provides excellent blow-through visibility. Formulated with virgin, non-toxic, USP-grade ingredients, it is tasteless and contains no alcohol. This product is ready-to-use; do not dilute it.

West Marine -60°F (-51°C) Marine Antifreeze will provide burst protection to -60°F (-51°C) and freeze protection within a range of +7°F to +10°F (-14°C to -12°C). When testing with a refractometer designed for use with PG, freeze point readings on the PG scale will range from +7°F to +10°F. When winterizing water systems with plastic pipes in regions where temperatures can fall below -10°F (-23°C), we recommend using West Marine -100°F (-73°C) Marine Antifreeze or Star brite® -200°F (-129°C) Non-Toxic Antifreeze.



## WEST MARINE® -100°F (-73°C) MARINE ANTIFREEZE

West Marine #363798 1-gallon, 210 Per Pallet      West Marine #208341 55-gallon, 4 Per Pallet

West Marine -100°F (-73°C) Marine Antifreeze provides the ultimate in extreme cold weather and corrosion protection for drinking water systems and all engines. Its premium additive package prevents corrosion of aluminum, copper, brass and solder, but will not harm rubber, seals or hose materials. The 3X-dyed blue-green color provides excellent blow-through visibility. Formulated with virgin, non-toxic, USP-grade ingredients, it is tasteless and contains no alcohol. This product is ready-to-use or may be diluted – please follow label directions for dilution ratios.

West Marine -100°F (-73°C) Marine Antifreeze will provide burst protection to -100°F (-73°C) and freeze protection within a range of -58°F to -63°F (-50°C to -52°C). When testing with a refractometer designed for use with PG, freeze point readings on the PG scale will range from -58°F to -63°F.



55-gallon drum also available

## STAR BRITE® -200°F (-129°C) NON-TOXIC ANTIFREEZE

Star brite® #31600 1-gallon, 210 Per Pallet      Star brite® #316G55 55-gallon, 4 Per Pallet

Star brite® -200°F (-129°C) Non-Toxic Antifreeze provides the ultimate in extreme cold weather and corrosion protection for drinking water systems and all engines. Its premium additive package prevents corrosion of aluminum, copper, brass and solder, but will not harm rubber, seals or hose materials. The 3X-dyed blue color provides excellent blow-through visibility. Formulated with virgin, non-toxic, USP-grade ingredients, it is tasteless and contains no alcohol. This product is ready-to-use or may be diluted – please follow label directions for dilution ratios.

Star brite® -200°F (-129°C) Non-Toxic Antifreeze will provide burst protection to -200°F (-129°C) and freeze protection within a range of -98°F to -103°F (-72°C to -75°C). Note: Most PG refractometers will not provide freeze point readings below -70°F.



West Marine® 500 Westridge Dr., Watsonville, CA 95076 • Made in USA