

# Icemax FAQ

## THE BENEFITS

### **Q: What does Icemax do? Why would I want to buy it?**

Icemax creates a denser, more durable ice surface at a higher temperature. The higher freezing temperature makes the ice set up harder, set up faster, and allows the rink operator to raise and maintain the ice at a higher temperature, using cool flood water. This results in reduced energy load on the chillers and hot water heaters, which extends the life of the equipment and gives a significant return on your investment.

### **Q: How does Icemax work in order to do that?**

Icemax consists of what scientists call an ice nucleator\*. As a naturally occurring ice nucleator, Icemax has the ability to freeze water at a higher than average temperature. The hexagonal structure (similar to ice) of specific proteins in the cell wall of the bacteria mimic the structure of a frozen water droplet. Icemax is manufactured in bulk, then freeze-dried and irradiated to ensure a safe product is sent out to the customer.

### **Q: By how much does using Icemax typically reduce energy usage?**

As is the case with almost any product, the energy cost reduction is going to vary depending on the energy efficiency of the rink and related equipment prior to use. Obviously, by increasing the leave temperature by 2° - 4°F, the chiller equipment won't work as hard. By using cold or cool water for flooding the rink, the dehumidifiers won't work as hard, as well as the gas or electricity usage to heat the water is not used as much, if at all. And by not working the equipment as much, maintenance costs are lower and life expectancy is longer.

\* An ice nucleator is a particle which acts as the binding center for the formation of an ice crystal.

### **Q: How is it possible to use cool or warm floodwater? How does the cooler water get the oxygen out of the water?**

It may seem counter-intuitive to use cool or warm water when flooding the rink. However with Icemax added to the water, the water freezes at a higher than average temperature and through the freezing process, it can force oxygen and other minerals and sediment in the water to the surface of the ice. When customers are using Icemax for the first time, it is recommended to start use when there is flexibility to find the new set point temperature and scrape the sediment off of the surface of the ice over the first week or two.

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## Q: Are there other advantages in using additives?

There are four main advantages to using Icemax:

### 1. Energy cost-savings

Cost-savings are a huge benefit due to less energy usage to keep the ice cold and to use room temperature water to fill the ice resurfacing machine. Because Icemax can produce a strong ice layer bond even when cool water is used in the resurfacing equipment, it allows substantial energy cost savings with quality ice. However, the true cost savings come when rink operators can run their base ice temperatures 2 – 4°F higher to save energy (and money) with a better quality ice surface.

### 2. Faster setup

During a flood, Icemax will freeze the water faster, leaving a smooth, hard surface. By freezing faster, skaters can get back on the ice faster, with no wet ice to worry about.

### 3. A harder ice surface

Icemax will produce a tighter grained ice crystal that will behave much like de-ionized or reverse osmosis water, without the associated investment and maintenance. Icemax leaves a clean, smooth surface and increases the bond cohesion between ice layers to give a better, stronger and more durable ice surface without the risk of ice layer delamination.

### 4. Simple to use

With Icemax, there is no equipment to purchase, chemicals to handle or complicated instructions to follow. Just use one packet with every flood, and the quality of the ice will remain dense and freeze faster.

## THE SCIENCE

### Q: I've heard that Icemax is a type of bacteria. Why would I want to put a bacteria on my ice surface?

Most people don't realize that in the typical day, they eat, drink and breathe thousands of bacteria. One of those bacteria is *Pseudomonas Syringae*, the main component in Icemax. However, there are many different types of *Pseudomonas Syringae* bacteria, some more virulent than others. The strain of *P. Syringae* used to manufacture Icemax was picked due to its non-plant pathenogenic and high freezing temperature characteristics. Additionally, we make Icemax safer for humans through pelletization, freeze-drying, and then irradiation so that our customers get a product that has passed through a rigorous quality control process.

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**Q: Is there a Icemax MSDS dedicated to the users?**

Yes. All potential customers receive an MSDS sheet, and it is also available on our website ([www.johnsoncontrols.com/icemax](http://www.johnsoncontrols.com/icemax)). Condensed handling instructions are also printed on the back of the Icemax packets.

**Q: Is Icemax a genetically modified organism?**

No. While Icemax is cultivated in a lab, the manufacturing process is not very different than cultivating cheese, yogurt, beer, or other foods that contain a bacterium. In addition, before being shipped to the customer, any active bacterium within the product is killed through irradiation.

**Q: What is the dilution ratio given to rink managers?**

A: The dilution rate of Icemax is 3 grams per 150 – 250 gallons of water – approximately .02 grams/gallon of water.

**Q: What if a customer or official asks about the safety of Icemax? What else can I tell them to let them know that this product is safe?**

A: Over the years, there have been many government, research and university studies to repeatedly ensure that Icemax is a safe product to the environment, humans and animals. These studies can be made available to anyone that is interested in them. Please call our 800 number (1-800-724-0046) or visit our website ([www.johnsoncontrols.com/icemax](http://www.johnsoncontrols.com/icemax)) and click on Contact Us.