



WORLDWIDE PARTNER

# THE SCIENCE OF COOL

## HELPING ATHLETES ACHIEVE PEAK PERFORMANCE WITH PRECISE ICE CONDITIONS

Heat transfer fluids from Dow are being used to help enable precision control of temperatures to create ice surfaces tailored to the specific needs of different sports on ice in the Olympic Winter Games PyeongChang 2018.

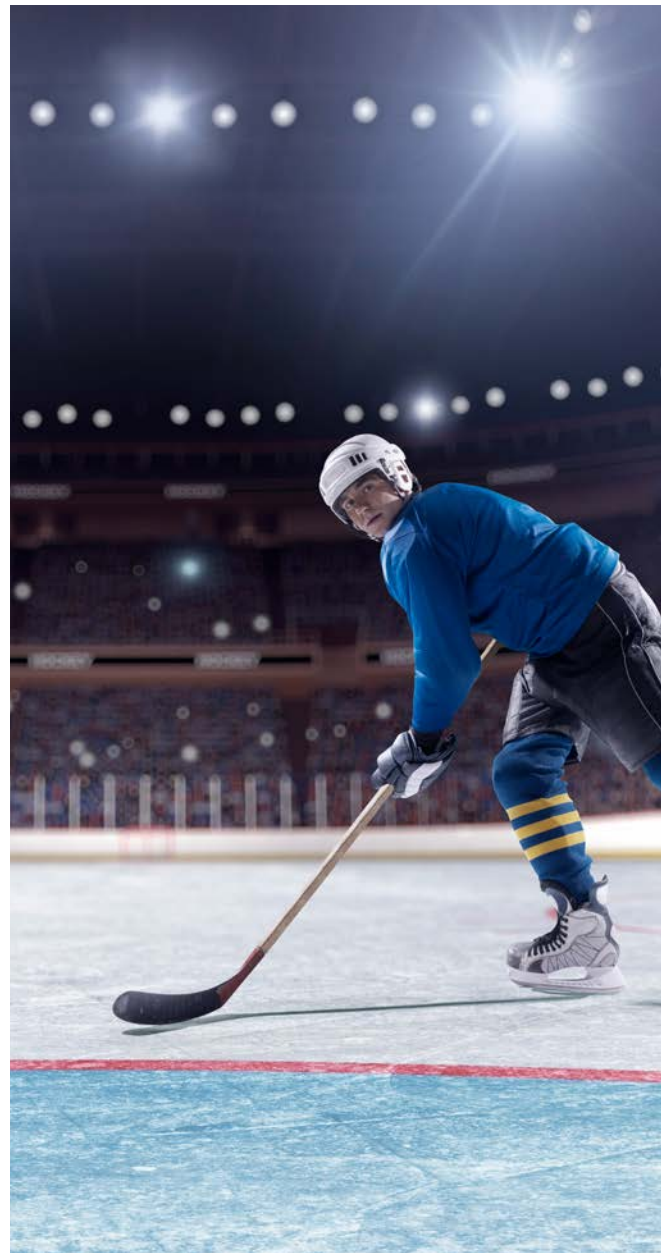
Dow heat transfer fluids made their Olympic debut at the Olympic Winter Games Sochi 2014 in one of Sochi's most iconic venues – the Bolshoy Ice Dome<sup>1</sup>.

DOWTHERM™ SR-1 Heat Transfer Fluid is used in hockey and speed skating surfaces at Olympic Winter Games ice venues including:

- The Gangneung Hockey Centre
- The Kwandong Hockey Centre
- The Gangneung Oval
- Sub-Track for Short Track

## ICE TAKES CENTER STAGE

All ice is not created equal. For each sport, the ice hardness requirement varies depending on the amount of surface resistance skaters require. Hockey athletes at the Gangneung and Kwandong Hockey Centres require ice that is harder and more compressed than the typical skating rink so that it can withstand the constant back-and-forth from the players and referees. Long-distance speed skaters competing at the Gangneung Oval also require hard ice to facilitate easier gliding with less resistance. On the other hand at the practice arena, speed skaters on short tracks need softer ice to help ensure a proper grip.



<sup>1</sup> <http://olympicpartnership.dow.com/en/solutions-at-play/sochi-2014>



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### REFRIGERATION FROM THE GROUND UP

DOWTHERM™ SR-1 Inhibited Ethylene Glycol-based Fluid is chilled by refrigeration equipment beneath the rink and then circulated through a network of pipes. The cold solution extracts any heat collecting on the floor, causing a layer of water to freeze into a smooth sheet of ice. The fluid is then circulated back to the refrigeration system where the heat is separated from the fluid and ejected. With Dow heat transfer fluid's unmatched ability to maintain temperatures, the technology helps ease maintenance and protect pipes from corrosion.

The same solutions used in PyeongChang are also used globally across different applications, including:

- Food industry for refrigeration and chilling of dairy products
- Building and construction industry for HVAC systems (heat ventilation and air conditioning)
- Chill water loops and thermal energy storage
- Hydronic heating and snow melt systems
- Geothermal (ground source heat pumps) and solar hot water heating

### PREPARING FOR THE COMPETITION

Olympic Games ice rinks in PyeongChang must be able to withstand multiple competitions per day at various temperatures. With the anticipated low temperatures of the Korean winter, freeze and pipe burst protection are essential to Olympic Games venue managers. Dow solutions applied to the water provide freeze protection below  $-50^{\circ}\text{C}$  ( $-60^{\circ}\text{F}$ ) and burst protection below  $-73^{\circ}\text{C}$  ( $-100^{\circ}\text{F}$ ).

DOWTHERM™ SR-1 Inhibited Ethylene Glycol-based Fluid has the highest industry purity and advanced formulation technology, making it the ideal solution for supplying superior ice temperatures in hockey and speed skating.



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*\*High-resolution photography available upon request*

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