

In cold regions, snow and ice during winter can pose serious risks to road surfaces and driving conditions. Icing always occurs on roads during winter. Heavy snow and freezing temperatures result in slippery road pavements. Driving on these surfaces is difficult and may cause heavy traffic and vehicular traffic accidents. Under such conditions, drivers should drive slowly and be prepared for delays. Icing reduces the friction between tires and the pavement surface, which increases the risk of accidents. Winter maintenance is highly important for icy pavement surfaces. Winter maintenance practices include plowing, sanding to improve traction, and applying winter anti-icing liquids that melt snow and ice on a road surface to prevent them from sticking. The combinations of practices used at each site may vary according to climate, traffic, and storm conditions. Road salt can melt snow and ice effectively, but it causes severe rust damage to vehicles, degrades road surfaces, corrodes bridges, and harms roadside vegetation. Therefore, the application of an abrasive granular material is important for preventing snow and ice from sticking to a road surface. However, sand, which is the most commonly used abrasive material, tends to be easily removed from the road surface by traffic. This study introduces new low-cost testing equipment, namely, the Ice Melter Experiment Mechanism (IMEM), which is used to evaluate abrasive materials for snowy or icy pavement surfaces and a new abrasive material that cannot be easily removed from road surfaces. In this study we tested the performance of IMEM and analyzed the results. The operational process of IMEM is also elaborated.