

SAFETY MEASURES FOR DRIVING ON ICY ROADS IN WINTER

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Since the beginning of the 21st century, with the frequent occurrence of extreme weather worldwide, freezing disasters have occurred frequently. When the road is covered with snow, the road surface adhesion performance will be greatly reduced, which is extremely detrimental to the safety of vehicles. In this paper, the method of snow removal is sorted out, the research status of road snow removal technology is summarized, and the development trend of future snow melting technology is put forward.

Mechanical snow shoveling is a method of removing snow with mechanical equipment. The places suitable for shoveling snow with mechanical equipment are generally in areas where the temperature is low, the snowfall is relatively large, and the winter duration is long. This method can be relatively quick to remove the snow on the road, and the traffic can be restored as quickly as possible. However, this method also has its disadvantages, because it cannot fundamentally solve the problem of snow accumulation on the road. The road is uneven, and the thick snow is removed, after shoveling, there will be some residual snow on the road, which will become frozen in cold weather, to make the road smoother. Vehicles traveling on slippery ground are even more dangerous. Therefore, the method of mechanical snow shoveling can only be used in the first stage of snow removal, after mechanical snow shoveling, some anti-slip agent or salt should be sprinkled on the road surface[1].

Chemical melting is the chemical process of melting snow from the road, this method of snow removal is usually used in places where there is less snow. The principle of the chemical melting method is actually not complicated, mainly by spraying snow melting solution or snow melting powder on the snow to reduce the freezing point of the snow, so that the snow is no longer solid, but becomes liquid water, which is collected into the drainage system of the city[2]. The chemical melting method has certain advantages and disadvantages, its advantage is that it can melt the snow on the road more cleanly and completely to ensure the safety of vehicles. But its disadvantage is that the efficiency of the snow melting agent is relatively low, and the cost is relatively high. In addition, the main disadvantage of the snow melting agent is that it has strong destructive power, corrosive to the road and bridge, and will also cause environmental pollution, which has caused the world's attention[3].

In addition, in some areas, thermal melting method, renewable energy snow melting method and freezing pavement suppression method are used to melt snow. The thermal melting method is to bury some heat sources under the road, then heat the road to increase the road temperature, melting the snow naturally. Renewable energy snow melting method has two main stages, heat storage stage and heat release stage. In summer, heat storage equipment is used to gather heat, and in winter, the heat is released to heat the road and melt snow[4]. Inhibition freezing method is a new way of snow removal, which changes from passive snow melting to active snow removal, and changes the state of the road by adding some special materials during the road paving period.

The global warming has increased the probability of extreme weather worldwide. Disastrous weather such as freezing rain and snow has brought great challenges to road safety. In the current road ice melting and snow removal technology, traditional passive snow removal technologies such as mechanical snow shoveling and chemical melting are still the most widely used methods at present, and active snow melting technologies such as electric heating, geothermal heat, and new road surface materials are still in research and small-scale tests. stage. With the increase in traffic volume and people's emphasis on safety and environmental protection, the traditional deicing methods (mechanical method, snow melting agent method, etc.) have been difficult to meet the needs of society, and it is necessary to further develop and promote new snow melting technologies.

LITERATURE

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