

9(a). Explain skidding along with the factors determining skid resistance and road construction practices for obtaining skid resistance surfaces.

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Skidding refers to the loss of traction or control between the tires of a vehicle and the road surface. It occurs when the forces acting on the vehicle exceed the available friction between the tires and the road.

Skidding can lead to reduced vehicle control, longer braking distances, and an increased risk of accidents. The skid resistance of a road surface plays a vital role in maintaining vehicle stability and preventing skidding. Here's an explanation of skidding, factors determining skid resistance, and road construction practices for obtaining skid resistance surfaces:

Factors Determining Skid Resistance:

1. Road Surface Texture: The texture of the road surface, particularly the presence of microtexture and macrotexture, plays a significant role in skid resistance. Microtexture refers to the small-scale irregularities on the road surface, while macrotexture refers to the larger-scale features. Both types of texture provide frictional resistance between the tires and the road, enhancing skid resistance.

2. Pavement Material: The type of material used in road construction affects skid resistance. Asphalt surfaces typically have higher skid resistance than concrete surfaces due to their texture and composition. The selection of aggregate types, grading, and surface treatment methods can also impact skid resistance.

3. Surface Water and Contamination: The presence of water, ice, oil, or other contaminants on the road surface significantly reduces skid resistance. These substances create a lubricating effect between the tires and the road, reducing traction and increasing the likelihood of skidding.

4. Tire Characteristics: The design, condition, and quality of the vehicle's tires influence skid resistance. Tires with worn-out treads or inadequate tread depth have reduced grip, resulting in lower skid resistance.

Road Construction Practices for Obtaining Skid Resistance Surfaces:

1. Surface Texture Design: Road surfaces can be designed to provide adequate texture for skid resistance. Techniques such as open-graded asphalt, stone mastic asphalt, or specialized surface treatments can be used to enhance macrotexture and microtexture, promoting better friction between the tires and the road.

2. Regular Maintenance: Regular and timely maintenance practices, such as cleaning road surfaces, repairing potholes, and addressing surface irregularities, are essential for maintaining skid resistance. Removal of debris, oil spills, and other contaminants helps ensure a clean road surface with optimal friction.

3. Surface Treatment: Applying specific surface treatments can improve skid resistance. Techniques like chip sealing, high-friction surface treatments, and the use of skid-resistant aggregates can enhance the texture and grip of the road surface.

4. Consideration of Environmental Factors: Road construction practices should consider environmental factors such as drainage design and the use of materials that can withstand weather conditions. Adequate drainage helps prevent water accumulation on the road surface, reducing the risk of hydroplaning and improving skid resistance.

5. Quality Control: Strict adherence to quality control measures during road construction is crucial for achieving desired skid resistance. This includes proper selection and placement of materials, meticulous surface preparation, and regular testing of the finished surface to ensure it meets the desired skid resistance standards.

By incorporating these practices and considering the factors that influence skid resistance, road construction can result in surfaces that provide sufficient friction between the tires and the road, promoting safe and controlled vehicle movement while minimizing the risk of skidding accidents.