

Targeted Overlay Pavement Solutions (TOPS)

Targeted overlays match treatments to high-priority, high-need locations.

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Open-Graded Friction Course

Open-graded friction course (OGFC) is a gap-graded asphalt mixture with a high percentage of coarse aggregates that are almost uniform in size resulting in a high percentage of air voids (usually 15 to 25 percent). OGFC is also known as permeable European mix, porous asphalt, plant mix seal, and popcorn mix. Because of its safety and environmental benefits, OGFC has been widely used in Europe (e.g., Netherlands, France, Germany), Asia (e.g., China, Japan, Korea), and the U.S.

OGFC has an open-graded aggregate skeleton with interconnecting voids that provide vertical drainage of rainfall to an impermeable underlying layer, and eventually to the pavement edge. The fast drainage of standing or flowing water from the pavement surface substantially reduces the likelihood of hydroplaning. OGFC is placed as the final riding surface to maintain frictional resistance in wet weather, reduce splash and spray and nighttime glare during wet conditions, enhance the visibility of pavement markings, and provide a smooth pavement.



Reduced splash and spray and improved visibility on OGFC section. Source: National Center for Asphalt Technology

Research conducted by several State highway agencies including Pennsylvania, Louisiana, Nevada, New York, Oregon, and Virginia, reported significantly higher skid resistance of OGFC in wet conditions compared to the conventional mixtures resulting in reduced wet weather vehicle crashes and accident rates. However, there is concern associated with the confidence in driving faster on OGFC surfaced pavements, which may result in a higher accident rate. From the environmental perspective, OGFC is effective in reducing the tire/pavement noise and improving the water runoff quality. Tire/pavement noise can be reduced by 3 to 6 dBA, which is equivalent to decreasing the traffic volume by 50 percent or constructing a noise wall.

A National Center for Asphalt Technology 2015 survey revealed 20 States, mostly located in areas with high rainfall intensity, use OGFC mixes. Although OGFC is effective to enhance pavement safety in rainy environments, it imposes challenges in zones where extensive snow plowing is used. More frequent frost and ice formation on OGFC makes it more susceptible to moisture damage and raveling, which results in shorter service life compared to conventional dense-graded mixtures. In addition, the material cost of OGFC is usually 20 to 40 percent higher than conventional mixes.

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[Visit our website](#) for more information on Targeted Overlay Pavement Solutions.

Asphalt Materials

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