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Manhole Covers

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What are manhole covers?

Manhole covers (sometimes known as inspection covers) are the metal covers that are used to cover over large or small holes created in the road surface to gain access to the equipment underneath.

Why are they dangerous?

Single track vehicles such as motorcycles have a very small contact patch with the road surface, therefore the availability of grip from the road surface is critical to remaining stable and upright. A consistent (preferably high) level of grip is required to be able to predict the correct method of negotiating a corner. Manhole covers, amongst many other obstacles, usually have low levels of grip (especially when wet) compared to the surrounding carriageway. This problem is often compounded by the placement of covers where a motorcycle would expect to travel.

Why do they use slippery covers?

The most common type of cover used on the road is ductile iron. When these covers are manufactured, they may have grip levels comparable to surfaces you often find at junctions (a grip coefficient of 0.8). However, after a short period of time (possibly as little as a month of normal wear), these covers can give a grip of around 0.5, which is still more than adequate for use on a flat, straight piece of road with no junctions. After 12 months, however, the grip has deteriorated to 0.3, far below the minimum expected from the surrounding road surface. The covers are not designed to maintain grip.

Do non-slip covers exist?

Keith Grant, Chief Scientific Officer of Devon County Council, has been actively pursuing this idea for several years. He has identified some manufacturers who are able to produce covers that not only give good levels of initial grip, but also give excellent grip 'in service'. One example is 'Fibrelite', manufactured by Structural Science. This particular cover gives excellent grip (a coefficient of over 0.5) over 20 years.

It is also interesting to note that such covers can be found in many petrol stations and 'non-slip' flooring for use in work places has been in production for years.

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Why aren't non-slip covers in use?

The European standard that manhole covers are manufactured to, EN 124, doesn't specify minimum grip levels. The covers are designed for strength and longevity and grip would not seem to have been fully considered as an issue. The standards committee felt that raised markings and patterns would be adequate and did not consider wear to be a factor. Consequently, manufacturers have produced strong covers that last for many years, but may wear to low levels of grip rapidly. There is no legal obligation to produce covers that give good grip.

Why don't they change the standard?

The European Standards committee that writes the standard is dominated by manhole cover manufacturers. These manufactures are resistant to more stringent testing such as higher skid resistance 'in service'.

Who is responsible for using slippery covers?

Despite local authorities and the other highways agencies being responsible for the road, it is utilities companies who put in the vast majority (over 90%) of manhole covers. Local authorities have the power to specify particular properties in replacement covers used by utilities companies (as Devon County Council have done); however, they must still normally conform to EN 124 otherwise an authority could be liable in the event of an accident. Fortunately, it would seem possible to manufacture a cover that conforms to the standard and still gives good levels of grip.

What can we do?

Influencing a change in the standard would be the most beneficial way to ensure widespread implementation of non-slip manhole covers, making it mandatory for all covers to have certain 'in-service' levels of grip. It may be possible to achieve a tougher separate standard for the UK; however there may be legal objections as it could create a barrier to free trade. Nevertheless, this avenue is actively being pursued by the interested parties. However, failing that, it is still possible to encourage utilities companies and local authorities to put in covers that conform to the current EN 124 and also give good levels of long term grip as they have the immediate responsibility for safety.

Further Reading

Structural Science http://www.structuralscience.net/products_gen3.htm
SafeTread workplace flooring http://www.suigeneris.co.uk/safetread-products/
Institute of Highway Incorporate Engineers Guidelines for Motorcycling
http://www.ihie.org.uk/index3.asp?cat=6&d=2&pageid=937298
Ruavista article on historic covers http://www.ruavista.com/manholeeng.htm

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