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Italgrip System

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ITALGRIP SYSTEM

THE NEED

The ever increasing number of registered vehicles has resulted in, up until the present time, a parallel increase in the number of road accidents. One of the reasons for this is that the quality of the road surface has not adequately kept pace with the increased volume of traffic. It has long been recognized that there exists a direct link between the condition of the road surface and the level of road safety. However, more recent accidents studies have given rise to high level investigations onto a particular aspect of roads surface condition - that of texture and it's bearing on skid resistance. Italgrip System being applied on highway. The truck on the right is spraying epoxy adhesive while the one on the left follows and spreads the synthetic aggregate. It has been shown that a road surface must offer sufficient friction between itself and the tires of a vehicle, (especially in wet conditions), to allow the vehicle, travelling at a given speed, to safely carry out the maneuvers demanded by the driver, and/or the road lay out. Scrim measurements have confirmed the direct relationship between wet skidding accident and surface skid resistant properties.

FIGURE 1 ITALGRIP SYSTEM BEING APPLIED ON HIGHWAY.

THE TECHNOLOGY

The Italgrip System increases skid resistance, reduces hydroplaning risk, reduces noise, and reduces salt consumption and can be applied to asphalt, concrete, or steel surfaces. It has been applied to several roadways in Europe, particularly road sections exhibiting problem areas. The Italgrip System improves road surface safety and performance by using an epoxy adhesive to bind a synthetic aggregate to the road surface. The aggregate, manufactured from steel slag, and the epoxy have been optimized over years

of research and use. The system adheres a synthetic aggregate to the road surface using an epoxy adhesive. The specially formulated flexible compound is applied in accurately metered quantities onto the pavement. The chemically curing binder, with its excellent chip retention properties, can be so accurately controlled that it accepts surface deformations without contractional cracking problems on curing. Before the freshly applied binder has begun to cure it is covered with an excess of MC-1 extremely high polish resistant synthetic aggregate. The resulting surface exhibits the following properties which positively influence the skid resistance: 1.Good microtexture and 2.Good macrotexture. The macrotexture is guaranteed by the choice of aggregate grading 1.0-4.0mm, and the microtexture by the type of aggregate used e.g. a hard, synthetic stone with high P.S.V. and high porosity.

FIGURE 2 THE BRITISH FRICTION PENDULUM TEST BEING PERFORMED ON A NEW ITALGRIP INSTALLATION

THE BENEFITS

- **Durability:** Research forecasts predict that the initial BPN values will stabilize, at the end of service life, at a level equal to an open grade bituminous surface, when new.
- **Economy:** Very cost effective. Approximately half the cost competitive systems in use.
- **Minimal traffic delays:** The specially formulated binder ensures continuous application. Time for reopening of the road to normal traffic is reduced to a minimum.
- **Output capacity:** Designed to achieve up to 25.000 m² per day i.e. 3,3 km of a two lane motorway can be treated per day. This means fewer man hours (lower application costs).
- **Reduced hydroplaning risks:** Allows an excellent surface drainage due to its good macro-texture which guarantees water outflow between the top and the depth of texture.
- **Reduced braking distance:** Reduce about 40% braking distance as a direct result of excellent anti-skid properties. Furthermore a vehicle braking in a turn keep road direction without locking wheels.

- Minimal layer thickness: Designed to be applied at a thickness of 2,5 mm thus requiring no adjustment to street furniture nor does it have any negative effect on the surface water drainage.
- Reduced usage of salt in winter: Surface treated with Italgrip System do not readily suffer from tire adhesion problems caused by frost and black ice conditions. This in turn obviates the need for excessive salting of bridges and other areas prone to these problems.
- Noise reduction: When treated with the Italgrip System an apparent noise reduction effect is achieved by an advantageous shift of frequency, brought about by the fine structure of the aggregate used. Measurements made on surface treated with Italgrip System demonstrate a considerable noise reduction effect through favorable shifting of the frequency. Result: Noise reduction using concrete surface of 3,0/4,0 db (A) (test certificate available)
- Loose chipping: By choosing an aggregate grading of 1.0 -4.0 mm problems commonly associated with "loose chipping" are avoided.
- Chemical resistance: Immune to salt and can withstand limited exposure to fuels i.e. petrol and kerosene.
- Low weight: Brings only an additional 4 kg/m² loading thus making it ideal for treatment of bridge decks.
- Wide application possibilities: Can be used to treat concrete surface in addition to bitumen based pavements.

STATUS

The Italgrip System has been used in over 40 applications in Italy, primarily to increase skid resistance for highway surfaces with low friction. Highway Innovative Technology Evaluation Center (HITEC) performs independent product evaluations of new and innovative products for which widely accepted codes and specifications do not apply. Overall, the product appeared to maintain its texture and uniformity after exposure to several years of high volume, high speed, and high truck volume traffic, as well as salt and snowplows. Even the oldest application, installed in 1991, did not show cracking or raveling of the Italgrip System. Each application showed that the aggregate maintains its integrity after years of exposure and does not polish.

BARRIERS

The product must be placed at temperatures above 50 degrees F, with the most efficient temperature being above 70 degrees F. Other than that, the only current barrier is the inability to meet the needs of all potential new customers due to there being only one truck to apply the adhesive.

POINTS OF CONTACT

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REVIEWERS

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