

ELASTIC GROUT FOR INSTALLATION OF TRACKWORK:

1) **Purpose of a Grout:**

- a) A grout is used as a leveling compound to enable the installation contractor to achieve accurate elevation at the rail head. There are tolerances in the leveling of the sub-strata and there are tolerances in the height of the rail itself. A pourable or injectable grout between the base plates and the concrete deck will take out the discontinuities. One major advantage of using a grout is that the second pour of concrete does not have to be done to very high tolerances.
- b) Grouts prevent point loading by giving a continuous support to the base plate. This improves the life of the trackwork and helps to reduce corrugations.
- c) For in-street use the rails are set in troughs and the Icosit poured under the rails and up to street level, there will be no longitudinal movement of the rails.

2) **Requirements of elasticity in the track structure:**

- a) Elasticity in the track structure gives a more comfortable ride for the passengers.
- b) Airborne noise will be reduced.
- c) Structure borne vibrations are reduced. In underground railway systems vibrations can be transmitted through sound bridges and can re-appear in buildings quite a long way away from the railway, manifesting themselves as noise when they excite a part of a building with the same mass. Structure borne vibrations are the main cause of objections raised in urban areas.
- d) By including elasticity in the track structure, it is generally agreed that the trackwork and the vehicles will suffer less wear.

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3) **Icosit KC340 Elastomeric Grout:**

- a) KC340 combines the advantages of a grout with the advantages of an elastic track material.
- b) KC340 bonds very strongly to both steel and concrete, it is moisture tolerant. The advantages are:
 - i) The bond ensures a continuous full support of the plates even during the uplift cycle of the passage of a wheel.
 - ii) The bond strengthens the track structure thus adding an additional safety feature in the event of bolt shear.
 - iii) The strong bond allows a reduction in the number of anchor bolts used in the system.
- c) In all cases where KC340 grout has been used since the first installation in 1970, there has been no measurable reduction in any of the characteristics. In Calgary we installed a crossover on concrete slab in 1981 using Icosit KC340 and the grout is still performing perfectly.
- d) Electrical insulation of a modern transit system is essential to contain the currents thus increasing the efficiency of the system and to prevent stray currents causing corrosion in surrounding structures. KC340 was chosen for the Hong Kong Tuen Mun System primarily because of its high electrical resistivity.
- e) The fire hazard is reduced because of the small exposed area around the edge of the plates. The bond to the plates and the concrete seals the top and bottom of the pad preventing flammable material reaching the main surfaces. The toxicity of the fumes from polyurethanes is low compared to those from wood.
- f) Ease of installation of track using Icosit KC340 means a reduction in the installation costs for the installation contractor.

4) **Summary:**

Icosit KC340 elastomeric grout has been marketed in North America since 1981 and is already accepted as a standard in the Vancouver Skytrain, Detroit D.P.M., Calgary LRT, Toronto TTC, Edmonton LRT, Long Beach LRT Line, Dallas DART, MARTA, Portland, Monterey Mexico, Memphis, Tampa and many others.

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The material is used extensively throughout Europe – especially in West Germany where it is manufactured but it is also now specified for the Milan Metro, Grenoble in France, various Scandinavian systems, Switzerland, Austria and is being introduced into the United Kingdom.

KC340 is the only elastomeric load bearing grout that will change its volume under compression.