

Chemical Emissions from resin flooring systems containing polyester & styrene based carriers.

Volatile Organic Compounds from resin flooring systems containing polyester & styrene based carriers.

Concerns are occasionally raised on the emissions from polyester based flooring systems that contain styrene, allnex brand named Sureshield, Terrazzite or Surechem.

These products are market leaders in heavy duty protective flooring for the food, manufacturing and chemical industries where they have very high in-service performance characteristics.

The main area of concern is the styrene odour the smell is very noticeable to the human nose.

Remark:

allnex polyester and vinyl ester wall and floor protective systems are safe for use in populated areas.

There are no recorded instances of health problems associated with styrene use even in industries where the use and contact is continuous. e.g. the boatbuilding and bathroom ware industries.

The results below show two examples of test data on styrene monitoring carried out on allnex low styrene emission flooring systems during and following application.

Example 1:

A Terrazzite floor was being installed at a city mall.

Styrene levels were monitored using a pump and styrene test tube over an 8 hour period on two members of the floor-laying team, the floor layer and the mixer / barrow hand.

Ref. BMcA 090798	Time (mins)	Air Volume (L)	Styrene air concentration ppm
Tube 1 Floor Installer	480	34.75	9.4 ppm
Tube 2 Barrow hand	492	32.55	25.68 ppm

Example 2:

Airborne styrene emission tests were performed on a Sureshield site during and following installation:

(ref: BMcA 140900)

Test	Procedure	Styrene ppm
1	Measurement was carried out for 4 hours during laying. Test device was 5m from work site. Site air extraction running.	4.83
2	Test was started 1 hour after laying had finished and continued for an hour. Test device was 5m from work site. No air extraction.	1.28
3	Test was started 3 hours after laying and continued for an hour. Test device was 5m from work site. No air extraction.	0.64

Result analysis:

1. Emission levels are well within OSH and internationally accepted standards of 50 ppm (Time weighted average 8 hours) or 100ppm (short term exposure limit).
2. The exposure readings relate to contractors handling the materials during the brief work exposure. Levels would be considerably lower for others not associated directly with the work.
3. Slight odour occurs only during the Sureshield mixing and installation process. Odour ceases once the resin has gelled.
4. Food materials containing fats may retain the Styrene odour and should be removed from the area during installation only.

Note:

Should styrene odour be a problem, allnex offer alternate flooring systems:

Supascreed Epoxy, Surecote 500AR, and Nuthane Polyurethane

Volatile Organic Compounds (VOC's) & Resin Flooring - Reactive Solidification – not drying/evaporation

Sureshield and Terrazite systems often create confusion when VOC levels are listed. our MSDS sheets for these products list styrene at 30-50%, i.e. 300-500 g/L VOC.

However the resin system, styrene and the catalyst activate when mixed and polymerize; almost in full. i.e. the styrene turns into Poly Styrene which is a solid and is not emitted (i.e. not volatile).

The volatile component (VOC) of the polyester system is less than 5% (5g/L).

Even then this emission occurs only during the liquid phase of the system (prior to solidifying).

Furthermore, the resin system is mixed with marble aggregates in the resin : marble ratio of 1:4, 1:6 which dramatically reduces the styrene level.

Terrazite in particular is an environmentally friendly product due to the use of natural marble aggregates, when cured, the floor is a "marble floor" with less than 20% of the floor being synthetic.

This compares most favourably with many other flooring materials.

Because of this we believe Terrazite and Sureshield systems are compliant with Green Seal Standards.

allnex Sureshield and Terrazite resin systems should not and cannot be compared with a standard solvent based paint. A paint with 15% VOC; (150g/L), will emit 150g/L of solvent to the atmosphere as it dries, unlike the Sureshield or Terrazite all the solvent evaporates; none is reacted or retained.

For further advice or information do not hesitate to contact the allnex technical team.

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