

JOINT MEDIA RELEASE

New Technical Reference to Minimise Emissions from Indoor Paints and Coatings, Ensure Indoor Air Quality

TR 121 sets limits on emissions from indoor air pollutants like formaldehyde, restricts heavy metal content

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1. The Singapore Standards Council (SSC), supported by Enterprise Singapore (EnterpriseSG), together with the Standards Development Organisation @ Singapore Chemical Industry Council (SDO@SCIC), have launched a **new Technical Reference (TR) 121 on Specification for Interior Floor Coatings**. The standard specifies the performance requirements for interior floor coatings, with an emphasis on minimising harmful emissions such as formaldehyde and volatile organic compounds (VOCs) arising from paints and coatings, that can pose health and environmental risks. More detailed information on TR 121 can be found in Annex A.
2. Amid growing concerns on how indoor air pollutants and harmful substances in paints can affect the health and well-being of building occupants, the paint and coatings industry has been increasingly shifting towards eco-friendly alternatives with less emissions. There have also been strengthened efforts to maintain good indoor air quality through guidelines such as the Singapore Standard (SS) 554 Code of Practice for indoor air quality for air-conditioned buildings, as well as upcoming regulations by National Environment Agency (NEA) to phase out all interior paint products containing formaldehyde. TR 121 was developed in alignment with these existing guidelines and regulations to support the industry in moving towards sustainable and low emission paints and enhancing the overall quality of indoor air.
3. **Mr Lem Yang Lim, Senior Director (Sustainability Certification) of Singapore Green Building Council (SGBC), said** “Good indoor air quality is a cornerstone of green buildings. Singapore Green Building Council (SGBC) has been a long-time

advocate of low-VOC and formaldehyde-free building materials, through key programmes such as the Singapore Green Building Product (SGBP) certification scheme and more recently, the Alliance for Action on Sustainable Spaces. Our efforts have led to the national decision to ban formaldehyde in interior paints from 2026 onwards. TR 121 will play a vital role in raising the bar for indoor air quality and will set clear standards for VOC and formaldehyde emission limits in floor coating products.”

4. **Ms Pamela Phua, President of Singapore Paint Industry Association (SPIA), said** “The new standard underscores the vital importance of low VOC and low emission coatings in improving indoor air quality and reducing environmental impact. By setting clear guidelines for safer, more sustainable materials, it encourages the paint industry to transit towards eco-friendly formulations that minimize harmful chemicals. This shift not only aligns with increasing consumer and regulatory demands for greener products but also promotes long-term environmental stewardship. As more industries embrace water-based and low-emission technologies, it paves the way for innovation and sustainable growth in the paint and coatings sector.”
5. The newly launched TR was developed by the Working Group (WG) on Interior Floor Coatings, comprising representatives from major paint manufacturers, raw materials suppliers, test laboratories and industry associations. It advised on the performance requirements for the service and durability of interior floor coatings, with a focus on eco-friendly coatings by including limits on volatile organic compound (VOC) content, total volatile organic compound (TVOC) and formaldehyde emissions. It also set restrictions on heavy metals and specific hazardous substances that may be present in coating formulations.
6. The TR 121 is available for purchase on the [Singapore Standards e-Shop](#).

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About Singapore Standards Council

The Singapore Standards Council (SSC) facilitates the development, promotion and review of Standards and Technical References in Singapore. This work is done through partnerships with the industry, academia and government organisations, under the national standardisation programme overseen by Enterprise Singapore.

Visit www.enterprisesg.gov.sg/standards for more information.

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About Standards Development Organisation @ Singapore Chemical Industry Council

Enterprise Singapore, the National Standards Body (NSB) in charge of the National Standardisation Programme, has appointed SCIC to manage the Chemical Standards Committee (CSC) since 2011. With effect from 1 Apr 2020, SDO@SCIC also manages the Environment and Resources Standards Committee (ERSC) which focuses on spearheading the development and adoption of standards to address sustainable development.

Visit www.scic.sg/sdoscic/ for more information.

Fact Sheet on TR 121 : 2024 Specification for interior floor coatings

What is TR 121 : 2024 Specification for interior floor coatings and what does it cover?

TR 121:2024 is a Technical Reference (TR) that specifies the requirements for interior floor coatings, with a strong emphasis on minimising emissions arising from coatings applied to the interiors of buildings. It provides the minimum performance requirements for service, durability and also lowering of emissions of volatile chemical substances which affect the indoor air quality and thus the general well-being of building occupants.

The content of the standard includes:

- Key performance parameters such as adhesion, abrasion resistance and chemical resistance.
- Requirements for eco-friendly floor coatings such as limits for volatile organic compound (VOC) content, total volatile organic compound (TVOC) and formaldehyde emissions, and restrictions on heavy metals, and specific hazardous substances that may be used or found in coating formulations.
- Categorised requirements for different types of floor coatings, specifically water-borne and solvent-free coatings, for different applications, residential and industrial.
- Detailed test methodology for the measurement and analysis of TVOC and formaldehyde emissions.

Scope of TR 121

This Technical Reference primarily focuses on conventional epoxy, acrylic, and polyurethane floor coatings that are water-borne or solvent-free. Limited reference is made to other specialised floor coatings. Solvent-based coatings are excluded due to their significant contribution to VOCs and emissions. Cement-based screeds used in many flooring systems are also outside the scope of this TR. This standard does not comprehensively cover the vast and evolving range of floor coating systems.

Background on TR 121

The paint and coatings industry has been increasingly shifting towards eco-friendly alternatives, due to growing concerns over potentially harmful substances used in paint formulations, which pose health and environmental risks. This is even more so in the indoor environment where people spend most of their time, highlighting the importance of maintaining healthy indoor air quality. Despite the availability of floor coatings in the local market, there has been a lack of product specifications and standards for such products.

In addition, many developed countries have established emission limits for building materials in their national standards. Harmful substances such as formaldehyde could be used in the formulation of floor coatings and can be emitted during and after the application process and even for a period of time after the coating has dried.

To address these issues, TR 121 was developed to establish in-can emission requirements, aimed at reducing the use of solvents and other harmful chemicals in floor coatings intended for indoor environments.

Who would use TR 121?

Potential users of the standard include paint manufacturers, test laboratories, contractors, architects, consultants, facilities/property managers and relevant government agencies.

What are the benefits of adopting TR 121?

The TR is a voluntary standard that provides users a coating system that meets performance requirements while minimising emissions that could negatively impact general well-being. When key stakeholders adopt the proposed standards for residential or industrial use, they align with the emission limits set out not only in local guidelines but also internationally.

Currently, low-emission floor coatings are generally more expensive compared to cheaper alternatives like solvent-based floor coatings. TR 121 encourages industry support for transitioning to low emission floor coatings. Adoption of the standard is expected to increase demand for such coatings, which may help normalize their prices over time.

Who developed TR 121?

The Working Group (WG) on Interior Floor Coatings consists of expert members from major paint manufacturers, raw materials suppliers, test laboratories, Singapore Paint Industry Association (SPIA), Singapore Institute of Architects (SIA), Society of Interior Designers Singapore (SIDS), Singapore Environment Council (SEC), Singapore Green Building Council (SGBC), and National Environment Agency (NEA).

The WG is appointed by the Technical Committee (TC) for Surface Coatings under the Singapore Standardisation Programme administered by Enterprise Singapore (EnterpriseSG) and is supported by the Standards Development Organisation at Singapore Chemical Industry Council (SDO@SCIC).

Purchase of TR 121

The standard is available for purchase from the Singapore Standards e-Shop at www.singaporestandardseshop.sg