Floor coatings

Spanish assortment

Introduction

Floor coating is a protective and decorative layer applied to surfaces to enhance durability, appearance, and functionality. There are various types of floor coatings, each suited for different environments and purposes.

Safety

Use adequate personal safety equipment and follow sound procedures. Apply only in well-ventilated areas. Observe safety labels on packaging and paint containers and consult Hempel's Safety Data Sheets for the products to be applied.

Scope

Hempel offers a variety of floor coating products designed to meet different needs, including slip resistance, abrasion resistance, sanitizing properties, and compliance with CE marking standards.

This document details technical data on the above-mentioned characteristics for Hempel Spain flooring products.

Slip resistance

In Spain, the slip resistance of floor coatings is regulated by the Technical Building Code (CTE), specially under the CTE DB-SUA (Safety of Use and Accessibility) chapter SUA-1 "Protection from the risk of falling". This code outlines the requirements for slip resistance to ensure safety in various environments.
The slip resistance is classified based on the slip resistance coefficient R_s as follow:

Table 1. *Slip resistance classification for flooring*

Slip resistance Rs	Class
Rs ≤ 15	0
15 < Rs ≤ 35	1
35 < Rs ≤ 5	2
Rs > 45	3

The required class depends on the location and characteristics of the flooring:

Table 2. *Floor slip resistance class, according to intended use*

Areas	Conditions of the flooring	Class
Dry indoor	Surfaces with a gradient below 6%	1
	Surfaces with a gradient at or above 6% and stairways	2
Wet indoor	Surfaces with a gradient below 6%	2
	Surfaces with a gradient at or above 6% and stairways	3
Outdoor and swimming pools	Areas where users are likely to be barefoot	3

The slip resistance of floors is measured according to the UNE 41901:2017 EX standard "Surfaces for pedestrian transit. Determination of the slip resistance by pendulum friction method. Wet test."

Applications Instruction for non-skid Hempel flooring products

In the following table, the relationship between product and additive necessary to achieve the indicated slip resistance classification according to the Technical Building Code chapter SUA-1 “Safety of use and accessibility” following the UNE 41901:2017 is shown:

Table 3. *Relationship between product and additive to achieve the class.*

Quality	Class	Quantity & Additive	How to add the additive	Application
Hempadur Finish 45660	2	70 g/L Hempel’s Aditivo Antideslizante 69081	Add the additive to the paint container	Applying 2 finish coats of Hempadur Finish 45660 with Hempel’s Aditivo Antideslizante 69081
Hempadur Finish 45660	3	300-400 g/m2 Hempafloor Silica M 69050	Sprinkle over the applied and wet paint	By sprinkling Hempafloor Silica M 69050 on the wet application of Hempadur Finish 45660 between the first and second coat
Hempadur Finish HS 45860	3	300-400 g/m2 Hempafloor Silica M 69050	Sprinkle over the applied and wet paint	By sprinkling Hempafloor Silica M 69050 on the wet application of Hempadur Finish HS 45860 between the first and second coat
Hemudur Finish 48582	3	70 g/L Hempel’s Aditivo Antideslizante 69081	Add the additive to the paint container	Applying 2 finish coats of Hemudur Finish 48582 with Hempel’s Aditivo Antideslizante 69081
Hempathane FC 543E1	3	70 g/L Hempel’s Aditivo Antideslizante 69081	Add the additive to the paint container	Applying 2 finish coats of Hempathane FC 543E1 with Hempel’s Aditivo Antideslizante 69081

The details of how the anti-skid certificates have been obtained for each product are explained below:

- Hempadur Finish 45660
  The C2 classification has been obtained through a certified test in an external laboratory, applying the following system:
  - 1 coat of Hempadur Resin SF 35960
  - 2 coats of Hempadur Finish + Hempel’s Aditivo Antideslizante 69081

  The C3 classification has been obtained through a certified test in an external laboratory, applying the following system:
  - 1 coat of Hempadur Resin SF 35960
  - 1 coat of Hempadur Finish 45660
  - Sprinkling of Hempafloor Silica M 69050
  - 1 coat of Hempadur Finish 45660
- Hempadur Finish HS 45860
  The C3 classification has been obtained through a certified test in an external laboratory, applying the following system:
  - 1 coat of Hempadur Resin SF 35960
  - 1 coat of Hempadur Finish 45860
  - Sprinkling of Hempafloor Silica M 69050
  - 1 coat of Hempadur Finish 45860
- Hemudur Finish 48582
  The C3 classification has been obtained through a certified test in an external laboratory, applying the following system:
  - 1 coat of Hemudur Sealer 18460
  - 2 coats of Hemudur Finish 48582 + Hempel’s Aditivo Antideslizante 69081
- Hempathane FC 543E1
  The C3 classification has been obtained through a certified test in an external laboratory, applying the following system:
  - 1 coat of Hempadur Sealer PS 05970
  - 2 coats of Hempathane FC 543E1 + Hempel’s Aditivo Antideslizante 69081

Abrasion resistance

Abrasion resistance is a critical property for floor coatings, especially in environments with heavy foot traffic, machinery, or other sources of wear and tear.
Abrasion resistance refers to a coating’s ability to withstand mechanical wear and tear caused by friction, impact, or scraping. This property is essential for maintaining the durability and appearance of the floor over time.
Several factors contribute to the abrasion resistance of a floor coating:

- Hardness and Flexibility: A balance between hardness and flexibility is crucial. Hard coatings resist scratches and impacts, while flexibility helps absorb shocks without cracking.
- Elasticity: The ability of a coating to deform and return to its original shape without permanent damage.
- Cohesive and Tensile Strength: High cohesive strength prevents the coating from breaking apart under stress, while tensile strength helps it withstand stretching.
- Surface Roughness: Smoother surfaces generally offer better abrasion resistance.

Abrasion resistance is typically tested using methods like the Taber Abrasion Test according to ASTM-D-4060 and ISO 7784-2, where a coated sample is subjected to rotating abrasive wheels to measure wear over time.

Abrasion resistance results based on internal tests at Hempel

Hempel, following ASTM-D-4060 standard, has carried out internal tests for the following flooring products, obtaining the results shown in the table.

Table 4. *Abrasion resistance results*

Quality	Result (Applied weight: 1000g)
Hempadur L20 35820	< 170 mg/1000 cycles Abrasive wheels: CS-10
Hempadur L30 35830	< 90 mg/1000 cycles Abrasive wheels: CS-10
Hempadur Finish 45660	< 70 mg/1000 cycles Abrasive wheels: CS-10
Hempadur Finish HS 45860	< 80 mg/1000 cycles Abrasive wheels: CS-10
Hemudur Finish 48582	< 90 mg/1000 cycles Abrasive wheels: CS-10
Hempadur Finish ESD 507E0	15 mg/1000 cycles Abrasive wheels: CS-10
	24 mg/1000 cycles Abrasive wheels: CS-17
Hempathane FC 543E1	< 60 mg/1000 cycles Abrasive wheels: CS-10

Sanitizing-Resistant paint

Sanitizing products for floor coatings are essential in maintaining hygiene, especially in environments like hospitals, food processing plants, and laboratories.

Paint that resists sanitizing products is a paint that it is specially formulated to withstand frequent cleaning and exposure to harsh sanitizing agents based on Didecylmethylammonium Chloride, Sodium Hypochlorite (bleach), Sodium Dichloroisocyanurate, Ethanol or Hydrogen Peroxide.
Hempel has tested a *Hemudur Finish 48582* product according to the ISO 4628-2 standard, verifying that the final state of the film is not altered by blistering, loss of adhesion, hardness and other surface defects.

CE Marking Standard

CE Marking is a certification mark that indicates a product has been assessed by the manufacturer and meets EU safety, health, and environmental protection requirements. It is mandatory for many products sold within the European Economic Area (EEA), ensuring they comply with EU legislation.
CE Marking it applies to a wide range of products between of that Floor coatings.
Floor coatings fall under the Construction Products Regulation (CPR) (EU No 305/2011), which requires CE marking for construction products.
Depending on the final use of the product, to obtain the CE Marking, the UNE-EN 13813 standard “Screed material and floor screeds. Screed material. Properties and requirements” or the UNE-EN 1504-2 standard “Products and systems for the protection and repair of concrete structures. Definitions, requirements, quality control and evaluation of conformity Surface protection systems for concrete”.

Hempel flooring qualities that comply with the CE Marking

Below is a table with the qualities of the range of flooring products that comply with the CE marking according to the applicable standard and the results of the tests carried out.

Table 5. *CE Marking qualities*

Quality	Norm	Results
Hempadur L30 35830	UNE-EN 13813	Abrasion resistance "BCA": AR0.5 Tensile strength (Bond): B2 Impact resistance: IR4 Surface hardness: SH 50
Hempadur Resin SF 35960	UNE-EN 13813	Abrasion resistance "BCA": AR0.5 Tensile strength (Bond): B2 Impact resistance: IR4 Surface hardness: SH 30
Hempadur Finish 45660	UNE-EN 1504-2	CO2 permeability: SD>50 m Water vapor permeability: Class I Liquid water permeability: w<0.1 Kg/m2·h0.5 Adhesion by direct traction: ≥ 2.0 (1.5)[b] N/mm2 Abrasion resistance: Δm < 3000 mg Impact resistance: Class I Resistance to strong chemical attacks (fuel, bleach, salt 20%, motor oil, H2SO4 at 20%, NaOH at 20%): ΔHardness < 50% to Class I (3 days) and Class II (28 days)
Hempadur Finish HS 45860	UNE-EN 1504-2	CO2 permeability: SD>50 m Water vapor permeability: Class II Liquid water permeability: w<0.1 Kg/m2·h0.5 Adhesion by direct traction: ≥ 2.0 (1.5)[b] N/mm2 Abrasion resistance: Δm < 3000 mg Impact resistance: Class I Resistance to strong chemical attacks (fuel, bleach, salt 20%, motor oil, H2SO4 at 20%, NaOH at 20%): ΔHardness < 50% to Class I (3 days) and Class II (28 days)
Hemudur Finish 48582	UNE-EN 1504-2	CO2 permeability: SD>50 m Water vapor permeability: Class II 5m ≤ SD ≤ 50m Liquid water permeability: w<0.1 Kg/m2·h0.5 Adhesion by direct traction: ≥ 2.0 (1.5)[b] N/mm2 Abrasion resistance: Δm < 3000 mg Impact resistance: Class I ≥ 4 Nm Resistance to strong chemical attacks (fuel, bleach, salt 20%, motor oil, H2SO4 at 20%, NaOH at 20%): ΔHardness < 50% to Class I (3 days) and Class II (28 days)
Hempathane FC 543E1	UNE-EN 1504-2	CO2 permeability: SD>50 m Water vapor permeability: Class I SD < 5m Liquid water permeability: w<0.1 Kg/m2·h0.5 Adhesion by direct traction: ≥ 1.0 (1.5)[b] N/mm2 Abrasion resistance: Δm < 3000 mg Impact resistance: Class I ≥ 4 Nm Resistance to strong chemical attacks (fuel, bleach, salt 20%, motor oil, H2SO4 at 20%, NaOH at 20%): ΔHardness < 50% to Class I (3 days) and Class II (28 days)