



kradal™

SMART FOAM

IMPACT ABSORBING FLOOR

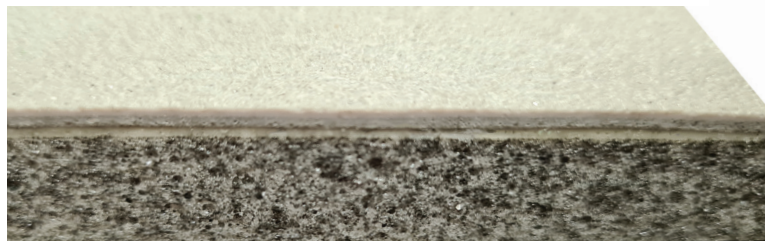
Product Overview

Kradal™ Smart Foam Underlay is a bespoke closed-cell flexible polyurethane foam, specifically designed to minimise injuries from falls in the elderly. The chemical formulation was designed to meet the specific requirements of elderly care facilities and the homes of elderly people – firm to walk on yet impact absorbent.

Kradal™ Smart Foam Underlay also provides fire resistance, sound insulation, and anti-bacterial/fungal protection. It is manufactured with 10% renewable content and is 100% recyclable.

Code: R112 Kradal™ Smart Foam Underlay

Grade: Impact absorbing – Elderly care



Typical values for Kradal™ Smart Foam Underlay

Specification per Panel	
Width	1000 mm +/- 2 mm
Length	1000 mm +/- 2 mm
Thickness	10.4 mm +/- 0.4 mm
Density	350 kg/m ³ +/- 20 kg/m ³

Impact Testing

Testing was completed by Acousto-Scan of South Hurstville, NSW.
The testing was carried out in accordance with Acousto-Scan's Work Instruction L4_09_30.
Report Number 6684.

Method

The AAA device was set up on the test surface so that the weight falls vertically on the surface. The weight was set at (55 ± 0.25) mm above the test surface. The falling weight, including spring, base plate and acceleration sensing device was $20\text{kg} \pm 0.1\text{kg}$ (given by the mass calibration)
The weight was allowed to free-fall onto Kradal™ Smart Foam Underlay, with 2mm of vinyl glued to the upper surface.

Results	
Force Reduction of surface	46%
Vertical Deformation for the surface	4.2 mm
Energy Restitution of the surface	42.41%

Acoustic Testing

Koikas Acoustics tested Kradal™ Smart Foam Underlay with a 2mm vinyl glued to the upper surface.

All measurements were carried out as per the guidelines and procedures outlined in:
AS/NZS ISO 140.7:2006 Field measurements of impact sound insulation of floors

The rating was determined per AS ISO 717.2-2004 Rating of sound insulations in buildings and of building elements.

The results of the impact noise tests are summarised in the below.

Impact noise insulation performance summary for tested ceiling/floor Systems			
System Tested ¹	L _n Tw ³	FIIC ^{4,5}	AAAC ⁶
Test00: Bare concrete floor (ECSF only) - for comparison purposes only	60	44	2
Test01: 12 mm composite vinyl flooring	42	64	5

Kradal™ Smart Foam Underlay achieves AAAC star rating of 5 for acoustic performance.

Anti-Fungal Testing

Test Method - AATCC 30 Test.

This test method was used to determine the susceptibility of Kradal™ Smart Foam Underlay to rot and mildew (mould and fungal growth) and to evaluate the efficacy of the included fungicide.

Result: Pass

Fire Testing

SYCHTA LABORATORIUM Sp. J. tested Kradal™ Smart Foam Underlay (without vinyl).

It was tested according to

EN ISO 9239-1:2010. Reaction to fire tests for floor coverings – Part 1. Determination of the burning behaviour using radiant heat source.

EN ISO 11925-2:2020 - Reaction to fire tests – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test

EN-ISO 5659-2:2017. Plastic – Smoke generation – Part 2: Determination of optical density by a single – chamber test.

EN 17084:2018. Railway applications – Fire protection of railway vehicles – Toxicity test of materials and components

Kradal™ Smart Foam Underlay is Approved for Sleeping occupancy/non-Sleeping occupancy in both Sprinkler and Non-Sprinkler protected premises.

The tested product fulfils the requirements for Bfl-s1 class according to EN 13501-1:2018.

Test Method	Parameter/Unit	Measured Value	Critical Value	Classification
EN ISO 9239-1	CHF, kW · m ⁻²	8.7	≥8.0	B_{fl}
	Sc, % · min	14	≤750	s1
EN ISO 11925-2 Exposure time 15 s	Fs > 150mm in 20s,	≤150	≤150	-

Conventional Index of Toxicity According EN 45545-2

Name of measured quantity	Unit	1	2	3	Average	Standard deviation
Conventional index of toxicity CIT _G at 4 min	-	0.01	0.01	0.01	0.01	0.00
Conventional index of toxicity CIT _G at 8 min	-	0.02	0.02	0.02	0.02	0.00

Physical Testing

The Australian Wool Testing Authority tested Kradal™ Smart Foam Underlay (without vinyl).

AS 2001.2.3.1-2001 Breaking Force and Elongation of Textile Fabrics		
	Length	Width
Mean Breaking Force	100 N/50 mm	100 N/50mm
Mean Elongation at 40N	7.0%	7.0%

AS /NZS 2111.14-1996 Thickness Loss on Static Loading - Long Term	
Mean Initial Thickness	10.3 mm
Thickness loss after 24 hrs recovery	0.1mm
Mean Percentage loss after 24 hours recovery	0.8%

AS/NZS 2111.2-1996 Thickness Loss on Dynamic Loading	
Mean Initial Thickness	10.3 mm
Thickness Loss after 50 impacts	0.0 mm
Thickness Loss after 100 impacts	0.0 mm
Thickness Loss after 200 impacts	0.0 mm
Thickness Loss after 1000 impacts	0.0 mm

Physical Testing using 2mm vinyl

Three types of vinyl sheet were tested, covering all uses within an aged care facility – general, hospital and bathroom.

Test Method	Test Conditions	Unit	Average of Results
Amount of residual dent	Method A 4.5 mm D, Steel Bar, load 356 N for 10 minutes	mm	0 (not measurable)
Amount of residual dent	Method B 19mm D, Hemisphere, load 222 N for 5 minutes	mm	0.07
Amount of residual dent after 1 hour recovery	4 x 25mm legs, load 80 kg for 168 hours with 1 hour recovery	mm	0.34
Amount of residual dent after 7 days recovery	4 x 25mm legs, load 80 kg for 168 hours with 7 days recovery	mm	0.18
Dynamic Load Test	Load 250 N, using polyamide castors, 46mm D, width 20mm	Observation	No abnormality after 8 hours
Dynamic Load Test	Load 400 N, using polyamide castors, 46mm D, width 20mm	Observation	No abnormality after 8 hours

Summary - This product is considered to be suitable for facilities where falls are a concern, such as facilities for the elderly, hospitals and schools.

Durability Testing

At Classic Coachworks laboratory, a 100-kg trolley with 4x 75 mm diameter hard rubber wheels was automatically rolled back and forth for 20,000 cycles along the same path over welded vinyl joints, which was glued onto Kradal™ Smart Foam Underlay.

This is equivalent to moving an average 300-kg hospital bed five times per day for 11 years, without considering the Kradal™ Smart Foam Underlay restorative abilities.

Various vinyl flooring joints, welded in accordance with manufacturer's instructions, did not fail.

Applications

Kradal™ Smart Foam Underlay is recommended for use with a vinyl or linoleum sheet, with a nominal thickness of 2mm, in all area of elderly care facilities, including wet areas. It is also suitable for all areas of elderly person's homes. The sub floor should be prepared appropriately and suitable adhesives should be used. Sufficiently experienced installers should complete the joints.

Disclaimer

All Kradal™ Smart Foam Underlay used in testing was typical of product produced. The information provided is given as an example of the performance on Kradal™ Smart Foam Underlay only. These results are not to be read as a guarantee for any specific application. We do not guarantee the top surface material, joints, and adhesives. Manufacturer's specifications of these products should be consulted before installation. All applications of Kradal™ Smart Foam Underlay are subject to our standard Terms and Conditions of Sale.