

resinDEK[®]

Manufactured by:  **CORNERSTONE**
SPECIALTY WOOD PRODUCTS, LLC[®]



◆ **Performance Engineered Flooring for Cold Storage**

ResinDek® Flooring Withstands Frigid Temperatures of Cold Storage Facilities

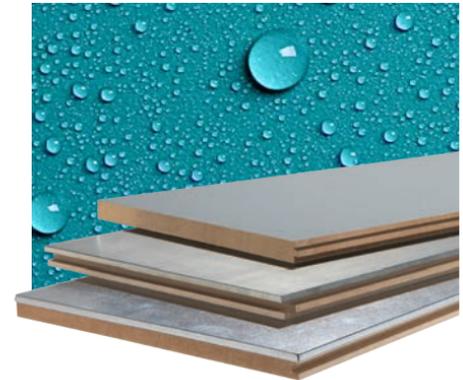
ResinDek® flooring panels, manufactured by Cornerstone Specialty Wood Products®, are the premier value engineered solution for industrial work platforms, pick modules, mezzanines and equipment storage. Since 1994, ResinDek flooring panels have been installed in cold storage facilities, distribution centers, warehouses, and manufacturing plants for major corporations worldwide. The intent of Cornerstone Specialty Wood Products then and now is “We don’t just make better mezzanine floors...We make mezzanine floors better”. We strive to provide solutions that improve the ergonomics in work environments, reduce environmental impacts, and bring significant value to the professionals in material handling and storage.

With this objective in mind the team at Cornerstone Specialty Wood Products is committed to:

- Better products with easier installation
- Application-specific flooring for all industries
- Excellent field support and product testing
- LEED® and FSC® certified products
- Material and labor savings for customers

When the temperature dips below 40 degrees Fahrenheit , ResinDek® moisture resistant flooring panels are an extremely effective choice in cooler and freezer environments.

ResinDek panels provide the strength you associate with a concrete floor, yet saves you tens of thousands of dollars, is easier to walk on than bar grate and will not delaminate like polydeck. Unlike concrete, ResinDek flooring panels allows the owner of the facility the flexibility to adapt to future changes or expansion within their building.



ResinDek® Performance Advantage - Innovation & Testing for Cold Storage

Cornerstone Specialty Wood Products' team never stops evaluating and testing new approaches for mezzanine floors. We believe in helping our customers solve problems through innovative designs and long-lasting durability.

In the image below, a refrigerated truck was used to test ResinDek® MAX in a freezer environment. The ResinDek MAX flooring panel was subjected to the equivalent of 10,000 pounds on a rolling pallet jack with the inside temperature of 0°F. The test proved very successful with over 100,000 cycles, which far exceeds our warranty of 8,000 pounds.



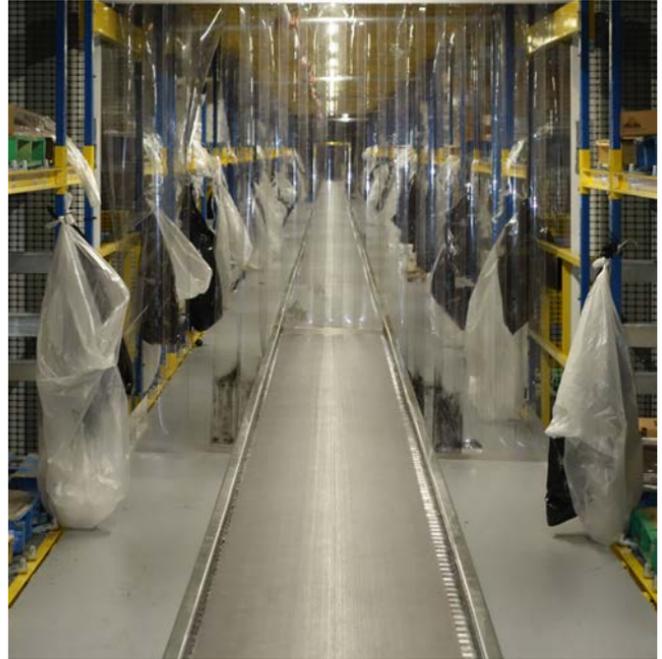
Value Engineered Flooring Panels Designed for Cold Storage Applications

ResinDek performance engineered wood flooring panels are manufactured with mostly recycled and recovered wood fibers, environmentally friendly resins with no added urea formaldehyde, and a wax emulsifier for moisture resistance. The ingredients are combined and compressed under extremely high pressure and temperature, resulting in a panel with superior physical properties. ***ResinDek panels are backed by comprehensive engineering services and a 10-year product warranty.***

ResinDek panels are custom manufactured and available in sizes up to 4' x 10' (1206 mm x 3048 mm) with tongue and groove configurations that promote effective panel to panel wheel load transfer. Our finishes are developed by our internal coating innovation lab and are engineered for the specific type of traffic that travels across the ResinDek floor.

ResinDek® LD

ResinDek LD flooring is a tremendous value for warehouse mezzanine, pick modules and work platforms. It is extremely durable, aesthetically pleasing, and easy to maintain. ResinDek LD 3/4" thick panels have proven structural integrity that supports pallet jack rolling loads up to 2,000 lbs and AMRs rolling up 500 lbs. With no delamination and a 10-year warranty, ResinDek LD is an economical and durable alternative to polydeck, OSB, and plywood.



ResinDek® Flooring Solutions for Heavy Rolling Pallet Jacks, AGVs and AMRs

ResinDek® MD

ResinDek MD panels provide a showcase appearance with a flat, level flooring surface for heavy rolling pallet jack loads, AMRs and AGVs. Backed by a 10-year product warranty, ResinDek MD panels are 3/4" thick and can support pallet jack rolling loads up to 3,500 lbs and AGV/AMR rolling loads up to 3,000 lbs.

ResinDek® HD

ResinDek HD is a heavy-duty mezzanine floor panel used on elevated platforms. It is the densest of all the ResinDek mezzanine floor panels and is designed and engineered for heavy equipment, pallet jacks rolling loads up to 4,500 lbs and AGV/AMR rolling loads up to 4,000 lbs. At 3/4" thick, the ResinDek HD panel is the perfect flooring solution for material handling spaces and mobile robotic platforms.

ResinDek® MAX

ResinDek MAX is designed and engineered to support electric pallet jacks. At 1-1/2" thick, ResinDek MAX can withstand both the daily rigors of heavy electric pallet jacks rolling loads up to 8,000 lbs and AGV/AMR rolling loads up to 6,000 lbs. This maximum duty flooring panel provides long-lasting durability and is easy to maintain in the most extreme conditions.



ResinDek® Flooring Solutions for Heavy Rolling Pallet Jacks, AGVs and AMRs

ResinDek® Xspan® and ResinDek Xspan FR panels are 1-1/8" thick and have been extensively tested and approved by IBC Code Officials for use as a structural flooring system in certain applications where a metal corrugated substructure is not required. Structural supports must be reviewed and approved by Cornerstone Specialty Wood Products, LLC® and must be capable of supporting floor loads at specific intervals. For further details, call us and/or your local building code official.

ResinDek® Xspan®

ResinDek Xspan panels are capable of supporting the designed weight capacities per the load span table below. The underside of ResinDek Xspan is unfinished, but a high gloss white is available as an option when enhanced lighting is required.



ResinDek® Xspan® Flooring Panels

1-1/8" Thick Single Panel Solution - No Corrugated B-Deck Required

Beam Spacing	16"	24"	32"	40"	48"
Uniform Loads (lbs/ft ²)	375	225	125	75	50
Total Pallet Jack & Product Load (lbs)	3000	2,700	2,300	2,000	1,500
Total Robot & Product Load (lbs)	2500	2,000	1,500	N/A	N/A
Robot Contact Pressure (psi)	900	750	600	N/A	N/A

Please see table notes on page 3.

ResinDek® Xspan® FR

ResinDek Xspan FR is a fire-resistant structural mezzanine floor solution that does not require a metal corrugated substructure. It meets ASTM E-84 Class "A" flame spread less than 25, meets UK Class "O", as well as European standards B-Class (B_{FL}-s1 | B-s1,d0) for both top and bottom. ResinDek Xspan FR panels are capable of supporting the designed weight capacities per the load span table below. ResinDek Xspan FR comes standard with a white reflective underside.

ResinDek® Xspan® FR Flooring Panels

1-1/8" Thick Single Panel Solution - No Corrugated B-Deck Required

Beam Spacing	16"	24"	32"	40"	48"
Uniform Loads (lbs/ft ²)	375	225	125	75	50
Total Pallet Jack & Product Load (lbs)	3,000	2,700	2,300	2,000	1,500
Total Robot & Product Load (lbs)	2,500	2,000	1,500	N/A	N/A
Robot Contact Pressure (psi)	900	750	600	N/A	N/A

Please see table notes on page 3.



Gray Diamond Seal® Finish

Gray Diamond Seal is the standard by which all other coatings in the industrial floor industry are measured.

The Gray Diamond Seal® finish offers several benefits, including:

- Provides excellent wear, slip resistance & exceptional resistance to common stains
- Easy to clean & maintain, and will provide a showcase appearance year after year
- The formulation incorporates standard antistatic protection to minimize the build-up of electrical charges as personnel and wheeled loads travel over it

Gray Diamond Seal® ESD Finish

Gray Diamond Seal ESD finish is ideal for applications requiring an electrostatic dissipative (ESD) finish.

The Gray Diamond Seal® ESD finish offers several benefits, including:

- An outstanding static control solution for electrically sensitive devices such as laptops, bar-code scanners, servo-drive motors, and pick-to-light systems that are common in distribution centers
- Eliminates downtime of expensive electronic devices caused by electrostatic discharges, and also prevents uncomfortable static shocks to employees
- ResinDek panels coated with the Gray Diamond Seal ESD finish comply with ANSI ESD Association specifications



MetaGard® GVT Finish

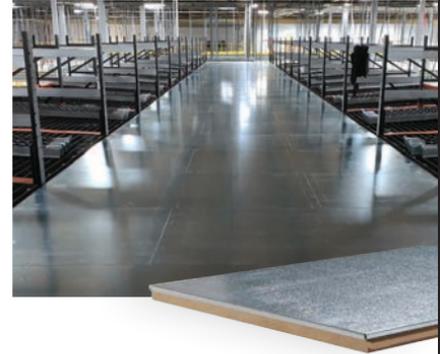
MetaGard GVT is ideal for drop zones, pallet flow and case flow modules, and where aggressive dragging or pulling of non-wheeled loads occurs.

The MetaGard® GVT finish offers several benefits, including:

- A steel surface that encapsulates the top and sides of the ResinDek panel
- The steel is fused to the ResinDek panel with a proprietary bonding agent creating a floor that will not delaminate, has superior physical properties, is level for rolling loads, and has no sharp edges that could cut or snap objects passing over it
- Engineered to ensure a smooth panel-to-panel transition, ResinDek with MetaGard GVT panels can be used alongside other ResinDek panels without a steel surface, creating a more cost-effective solution as it enables placement of MetaGard GVT flooring in the areas of maximum wear

Unfinished (UF)

ResinDek UF provides a skid resistant surface and installs easily over corrugated metal B Deck with our recommended top side screw fastening systems. The uncoated ResinDek UF, moisture resistant flooring panel is priced competitively and will never delaminate. Also, unlike plywood, OSB or other engineered wood products, ResinDek UF has a 10-year product warranty.



ResinDek® Finishes for AGVs and AMRs

The floor finish plays a crucial role in how well AMRs and AGVs perform, and different robots have different requirements. Coefficient of friction and surface roughness can impact the robot's acceleration, stopping accuracy, and turning. Gloss and light reflectivity, as well as wear can all effect the ability to run at optimal levels. That is why we offer three different finishes for robotic traffic: TriGard ESD, TriGard ESD Ultra and MetaGard SST. Specifying ResinDek flooring with TriGard ESD, TriGard ESD Ultra, or MetaGard SST finishes ensures that the robots perform optimally, deliver higher throughput, and better accuracy

TriGard® ESD Finish

The perfect flooring finish for AMRs that use lidar navigation system or a variable path.

The TriGard® ESD finish offers several benefits, including:

- Engineered to withstand high-frequency robotic traffic
- Optimal coefficient of friction, allowing robot to run at it's peak performance
- Ideal degree of light reflectivity that does not impair a vehicle's laser-based navigation sensors

TriGard® ESD Ultra Finish

TriGard ESD Ultra is ideal for high-traffic robotic applications characterized by highly repetitive movement patterns, defined travel paths or some type of fiducial.

The TriGard® ESD Ultra finish offers several benefits, including:

- Provides greater wear than the TriGard ESD coating
- Optimal coefficient of friction, allowing robot wheels to travel fluidly, with precision
- Coating can be modified for surface roughness and light reflectivity



MetaGard® SST Finish

ResinDek with MetaGard SST is engineered for the extreme wear of AGVs and has been proven to withstand more than 2 million annual pivoting passes generated when AGVs change direction. In testing, ResinDek® with MetaGard SST has been shown to be 5x more abrasion resistant than concrete in heavily trafficked areas where dirt and debris are not routinely removed. ResinDek with MetaGard SST flooring panels combine the structural integrity of a ResinDek panel along with the strength and durability of a steel wearing surface.

The MetaGard® SST finish offers several benefits, including:

- Fused to the ResinDek panel with a proprietary bonding agent and features an edge that encapsulates the perimeter of the panel, creating a floor that will not delaminate
- Has superior physical properties
- Level for rolling loads
- Has no sharp edges that could cut or snag objects passing over it.

A Hybrid Flooring Solution

TriGard® ESD Ultra and MetaGard® SST

We recommend using a combination of ResinDek with MetaGard in the higher traffic, debris-laden areas and ResinDek with TriGard ESD Ultra in the cleaner, lower traffic regions, maximizing the performance of the platform while decreasing the overall cost.



Biomechanical Analysis of Walking on ResinDek® Flooring vs. Bar Grate and Concrete

Ohio State University Institute for Ergonomics completed a research study to determine if there were quantifiable differences in objective biomechanical measures that could be used to characterize different walking surfaces used in warehouse and distribution centers.

Testing Parameters

- 16 volunteers fitted with pedometers at two different facilities, ordinary work routine
- Wore their usual work shoes during the collection process (athletic shoes and work boots primarily)
- Pedometers collected at the end of an 8-hour shift
- Using an average of 30" per pace, employees averaged 21k steps = 10 miles per day!
- Measure acceleration of the tibia as participants walk on concrete, bar grate and ResinDek
- Statistically analyze and compare the tibial acceleration data



Research Results Summary

- Significantly less tibial shock with ResinDek at work rate walking speed (15% faster than an avg. walking pace)
- Concrete increased the tibial shock by 7.8%
- Bar Grate increased the tibial shock by 10.6%
- Working on concrete is equal to adding 12 lbs. to your body compared to ResinDek
- Working on bar grate is equal to adding 18 lbs. to your body compared to ResinDek



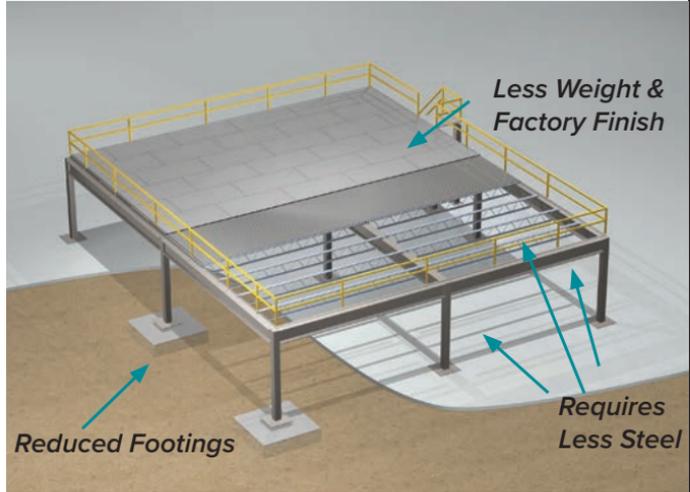
Advantages of Using ResinDek® Flooring vs. Concrete

A Low Maintenance, Flat, Level Surface

- ResinDek floors provide a consistent finish in floor flatness, levelness and surface roughness. Worn or uneven surfaces can disrupt the functioning of the vehicle's laser-based navigation sensors, slowing down its rate of travel. ResinDek panels ensure a level flooring surface with just the right amount of surface roughness to avoid the impairment of a robot's navigation or slow its movement.
- ResinDek panels do not produce dust, require sealing or crack like concrete. Unlike concrete, ResinDek does not require large expansion joints. In addition, individual panels can be removed without having to refinish an entire floor.

Cost Savings and Speed of Construction

- ResinDek panels are 85-90% lighter than concrete, allowing for less steel in the support structure and reduced footings
- Platforms using ResinDek can be designed with an allowable deflection limit of $L/240$, whereas concrete's allowable deflection is limited to $L/360$; this reduces the amount of steel required in the support structure
- An independent study found that ResinDek flooring is significantly more cost effective than concrete
- Since ResinDek is supplied with a factory finish, and concrete needs time to cure, ResinDek can be installed faster



Success Story: Large Grocery Store Chain Increases Space While Saving Time & Money

A German-based chain of discount supermarkets has worldwide operations with more than 9,000 stores in different parts of Europe, including 580 retail stores in the UK. To properly service these stores, high efficiency warehouse distribution centers are required within a short distance. Due to rapid growth an elevated platform had to be constructed within their existing chiller portion of the warehouse. Speed, economy, and a warrantable solution was high on their list. Additionally, the mezzanine had to store large heavy pallets of dairy products that had to be moved with an electric pallet truck. The combined live and dead load of 7,275 lbs narrowed the decking choices to three:

- Concrete (expensive and impractical with the temperatures at 37° F. and working around existing structures)
- 1.5" Chipboard with a steel overlay was less expensive, but did not come with a warranty
- ResinDek® Max

ResinDek® MAX was chosen because of its economical solution and its exclusive warranty. *"Our biggest initial concern was timing",* said the Procurement Manager. *"We had our pre-construction meeting in late August, and needed to have the structure operational by early December. There were 7 different trades that had to work around our existing operations in a tight space. Cornerstone Specialty Wood Products, LLC® came to the initial meeting, and found a way to get the project delivered on time."*



"Cornerstone Specialty Wood Products, LLC® provided excellent installation support for this mezzanine. They were able to deliver the ResinDek® MAX and B Deck all the way from the United States to our job site in Lutterworth within 6 weeks after the order was placed. When we were ready for assembly, Cornerstone Specialty Wood Products, LLC® provided on-site support for 2-1/2 days. During the time of order processing, they ran a simulated load test to verify that our installation could be warranted for the exact beam spacing, load and beam type that we were planning to use. After the completion of the project, Cornerstone Specialty Wood Products, LLC® sent two representatives to meet with us and the end user to assist with minor repairs and to provide advice regarding cleaning and maintenance of the ResinDek MAX. The service and support that we received on this project were exceptional."



Success Story: Cold Storage DC Freezes Out High Costs by Using ResinDek® Xspan®

In 2003, a Food Service Company with 24 distribution centers across North America was looking for an alternative flooring solution on their elevated work platforms for their cold storage facilities. They had used concrete, bar grate and polydeck in the past, but for various reasons they were not satisfied. They decided to try ResinDek® flooring panels. They were so impressed with the strength and durability of ResinDek panels that they installed over 375,000 sqft of ResinDek Xspan in three of their distributions centers (Kenosha, WI, Douglasville, GA, and Imperial PA).

“We have been pleasantly surprised at the durability of the ResinDek panels”, said Warehouse Director at the Imperial Facility. *“In the past we have used concrete, bar grate, and polydeck. Our space is subjected to temperatures ranging from 55°F. to -20°F., and we do not “baby” our floors. Each flooring type has its advantages and disadvantages, but ResinDek panels are a solid choice for us. They are less expensive than concrete, and easier to walk and transport our products on than bar grate. We are moving 6,000 cases per day from this facility, so our floors see a lot of traffic”.*

ResinDek flooring panels, manufactured by Cornerstone Specialty Wood Products, LLC®, are the value engineered elevated flooring solution for cold storage environments. ResinDek panels provide the strength you associate with a concrete floor, yet saves you tens of thousands of dollars, is easier to walk on than bar grate and will not delaminate like polydeck. But don't take our word for it: read what the Warehouse Director at the Imperial Facility had to say about ResinDek flooring.



Certifications



SCS Certifications, LEED® and FSC®

ResinDek panels are certified to have No Added Formaldehyde and conform to SCS Recycled Content Standard V7-0. ResinDek panels can contribute towards earning points for LEED® qualified buildings and are available with FSC® Certification. FSC® License Code FSC-C124474.



Uniform Evaluation Service Report

IAPMO's Uniform Evaluation Service (UES) has issued a Uniform Evaluation Service Report verifying that ResinDek engineered flooring panels manufactured by Cornerstone Specialty Wood Products, LLC® are in compliance with International Building Code (IBC), International Residential Code (IRC) and UL Fire-Resistance ratings. Furthermore, ResinDek has been approved for use in Types I-V construction and as part of a fire-resistance rated assembly. United States ER Number 467. Canada ER Number UEL 5027.



UL Classification and Flame Spread Index

ResinDek® flooring system can be UL Classified for up to a 2 hour fire rated assembly under UL Design No. L701 and UL File No. R39265. When tested in accordance with ASTM E84, ResinDek panels plus the corrugated metal deck assembly meet Class A criteria for an interior finish. ResinDek Xspan FR is a fire resistant panel and meets ASTM E-84 Class "A" flame spread less than 25, meets UK Class "0", and meets European standards B-Class (B_{FL}-s1 | B-s1,d0) for both top & bottom.



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