

Kronospan APS Novopan Træindustri's Spaandex K- Gulv and Klimagulv – LEED





Documentation package for the
sustainability certification

LEED

LEED version 4.1

This report documents how Kronospan APS Novopan Træindustri's Spaandex K-Gulv and Klimagulv contribute to the sustainable building certification scheme, LEED v4.1 Building Design and Construction. On behalf of building material manufacturer Kronospan APS Novopan Træindustri, Rambøll has composed this report and assembled the documentation that LEED assessors need from Kronospan to achieve the LEED certification. This report comes with a ready-to-use "documentation-package" with documentation for each relevant LEED credit.

Mathilde Husted, Rambøll Denmark A/S // 12. July. 2022

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CONTENT IN THE DOCUMENTATION PACKAGE

This documentation package for Kronospan describes the potential contributions to the international sustainability certification LEED v4.1 Building Design and Construction. This documentation package is not a sustainability certification, or a LEED-certification of the products it contains. It is solely a collection of the necessary documentation and information, which is useful for documenting the materials in the LEED certification. This package provides contractors, architects, and engineers with the necessary knowledge, to use the product in a building project that is being certified through LEED.

This documentation package contains the products:

Spaandex K-Gulv EN316 P6 solid particleboards for floor construction

Spaandex Klimagulv EN316 P4/P6 particleboards with channels for floor heating systems

Kronospan Spaandex K-Gulv and Klimagulv is used as subfloor construction for different types of flooring. The products can both be used on joist constructions, or on top of solid decks as a floating floor. The particleboards give a solid and rigid surface to place the finished flooring on.

Kronospan APS Novopan Træindustri's particleboards consist mainly of recycled timber from building demolitions and public recycling centers. All new timber that is used in production comes from certified timber from sustainable forestry. The particleboards are part of a circular system, both using leftover timber from the timber production industry, as well as recycling old particleboards back into production.



Figure 1: Kronospan/Novopan "Climate floor" particleboards.

INTRODUCTION TO LEED

LEED is the world's rating system for the design, construction, and operation of high-performance green buildings. LEED was established in 1998 and is the American sustainability certification scheme for buildings. Various versions of LEED have pushed the global green building market forward progressively. LEED stands for:

Leadership in
Energy and
Environmental
Design



LEED is administered by the U.S. Green Building Council and in more than 135 countries there are LEED-certified buildings. You can find more info about LEED at <https://www.usgbc.org/leed>.

LEED v4.1 is the next generation standard for green building design, construction, operations, and performance. With regions and markets moving at different paces, the new update for the LEED certification improves the standards, encourage leadership and creates a more user friendly, accessible, and collaborative platform and certification system. LEED is a system that are stepping up with initiatives to reduce greenhouse gas emissions, expanding activities that impact human health and well-being.

LEED helps buildings to focus on efficiency and leadership to deliver the triple bottom line returns of people, planet and profit. Today's version of LEED v4.1 Building Design and construction, from October 2021, raises the bar on building standards based on the following 8 categories.



Integrative
Process



Location &
Transportation



Sustainable
Sites



Water
Efficiency



Energy &
Atmosphere



Materials &
Resources



Indoor
Environmental
Quality



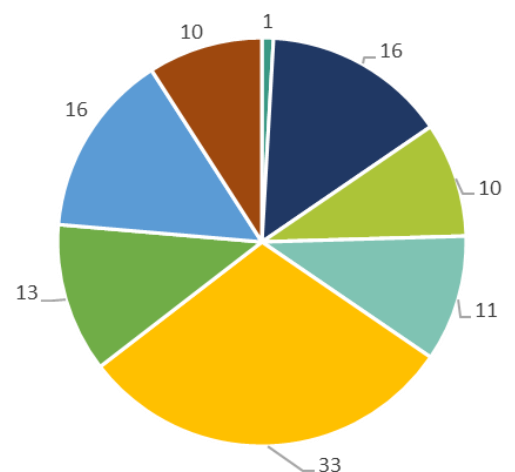
Innovation +
Regional Priority

Projects pursuing LEED certification can achieve various levels of certification. Depending on the green building strategies implemented across the eight assessment categories. Depending on the number of achieved points in each category, a certification can achieve four LEED rating levels: Certified (40-49 points), Silver (50-59 points), Gold (60-79 points) or Platinum (80+ points).

The LEED certification system can be used for 8 different building types. New construction, Core and Shell, School, Retail, Data Centers, Warehouses and Distribution Centers, Hospitality, and Healthcare. The number of points in the different credits vary according to the building type.

Below, you will find a list of the LEED-credits and prerequisites for which Kronospan contributes positively. It is shown what credits the assessors can be given documentation that can be used in the certification of new construction.

Be aware that some credits require product- as well as project-specific data.



WEIGHTING OF CREDITS

Below the criteria of the LEED v4.1 certification scheme is presented. The relevant credits that Kronospan can provide documentation for are marked with the corresponding category color. For credits where Spaandex K-Gulv and Klimagulv have an impact, but documentation cannot be given, the colour of the category is faded.

Integrative process		1
Credit	Integrative Process	1
Location and Transportation		16
Credit	LEED for Neighborhood Development Location	16
Credit	Sensitive Land Protection	1
Credit	High Priority Site	2
Credit	Surrounding Density and Diverse Uses	5
Credit	Access to Quality Transit	5
Credit	Bicycle Facilities	1
Credit	Reduced Parking Footprint	1
Credit	Electric Vehicles	1
Sustainable Sites		10
Prereq	Construction Activity Pollution Prevention	Required
Credit	Site Assessment	1
Credit	Protect or Restore Habitat	2
Credit	Open Space	1
Credit	Rainwater Management	3
Credit	Heat Island Reduction	2
Credit	Light Pollution Reduction	1
Water Efficiency		11
Prereq	Outdoor Water Use Reduction	Required
Prereq	Indoor Water Use Reduction	Required
Prereq	Building-Level Water Metering	Required
Credit	Outdoor Water Use Reduction	2
Credit	Indoor Water Use Reduction	6
Credit	Cooling Tower Water Use	2
Credit	Water Metering	1
Energy and Atmosphere		33
Prereq	Fundamental Commissioning and Verification	Required
Prereq	Minimum Energy Performance	Required
Prereq	Building-Level Energy Metering	Required
Prereq	Fundamental Refrigerant Management	Required
Credit	Enhanced Commissioning	6
Credit	Optimize Energy Performance	18
Credit	Advanced Energy Metering	1
Credit	Grid Harmonization	2
Credit	Renewable Energy	5
Credit	Enhanced Refrigerant Management	1

Materials and Resources		13
Prereq	Storage and Collection of Recyclables	Required
Prereq	Construction and Demolition Waste Management Planning	Required
Credit	Building Life-Cycle Impact Reduction	5
Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
Credit	Building Product Disclosure and Optimization - Material Ingredients	2
Credit	Construction and Demolition Waste Management	2
Indoor Environmental Quality		16
Prereq	Minimum Indoor Air Quality Performance	Required
Prereq	Environmental Tobacco Smoke Control	Required
Credit	Enhanced Indoor Air Quality Strategies	2
Credit	Low-Emitting Materials	3
Credit	Construction Indoor Air Quality Management Plan	1
Credit	Indoor Air Quality Assessment	2
Credit	Thermal Comfort	1
Credit	Interior Lighting	2
Credit	Daylight	3
Credit	Quality Views	1
Credit	Acoustic Performance	1
Innovation		6
Credit	Innovation	5
Credit	LEED Accredited Professional	1
Regional Priority		4
Credit	Regional Priority: Specific Credit	1
Credit	Regional Priority: Specific Credit	1
Credit	Regional Priority: Specific Credit	1
Credit	Regional Priority: Specific Credit	1

LEED V4.1 BUILDING TYPOLOGIES

For this documentation packages there is a focus on the new constructions buildings which the list above illustrates with the different point.

The table presented above lists all LEED categories. Each category is divided into sub-categories with a description. Some of the sub-categories are prerequisite and other are based on points. The marked sub-categories indicate where Kronospan Spaandex K-Gulv and Klimagulv can have an influence. From the list it can be concluded that 16 points can be influenced with documentation from Kronospan. Furthermore, 3 points can be influenced, but documentation from Kronospan cannot be provided due to the nature of the credits.

The highlighted sub-categories do not show that Kronospan Spaandex K-Gulv and Klimagulv can solely secure the points (shown in Figure 1-2). But it describes where Kronospan Spaandex K-Gulv and Klimagulv can contribute positively to scoring points in connection with a building certification.

Figure 1 provides an insight into how large a share of the total LEED score Kronospan can have a positive impact on. Here it can be seen that it is especially within the category of Materials and Resources and Indoor Environmental Quality that Kronospan Spaandex K-Gulv and Klimagulv will have the greatest influence on.

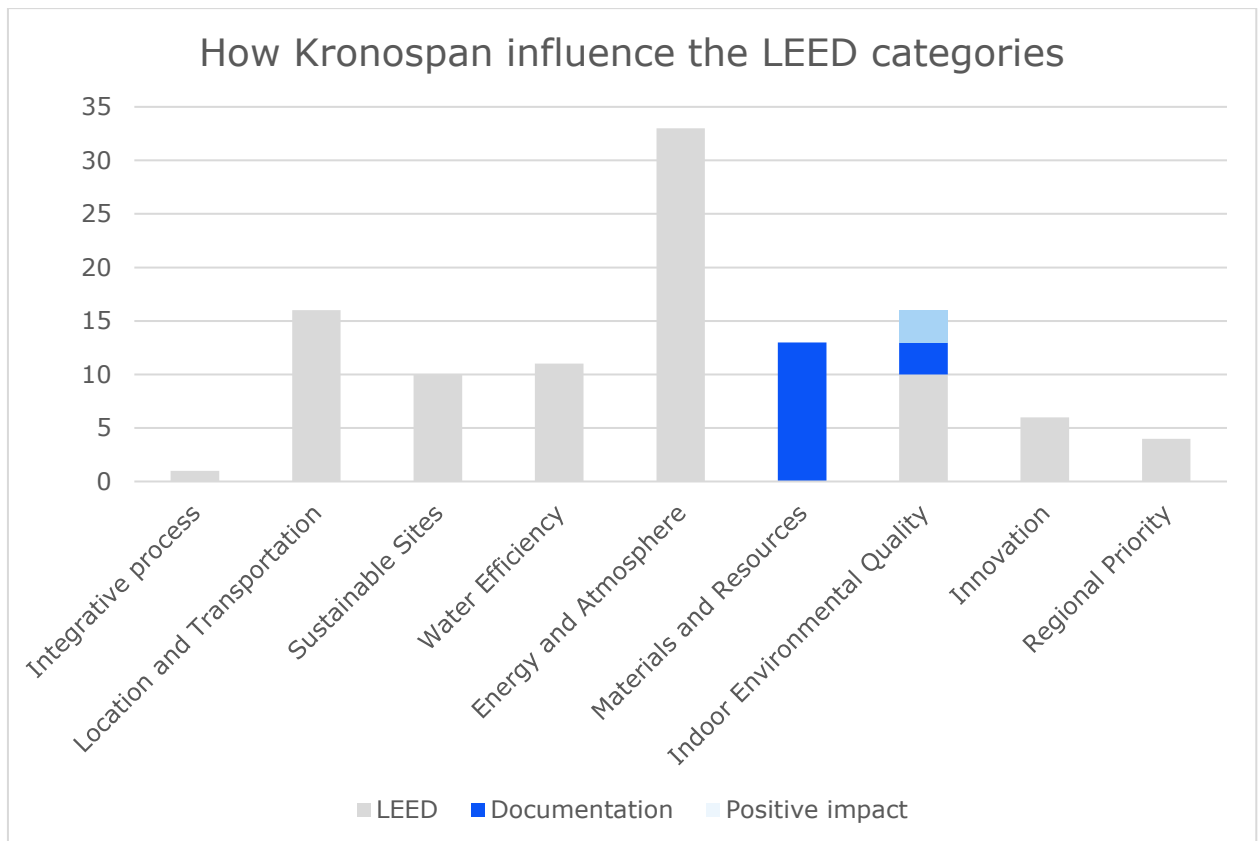


Figure 1: Kronospans possible impact in the LEED certification.

Figure 2: How Kronospan influence the LEED categories

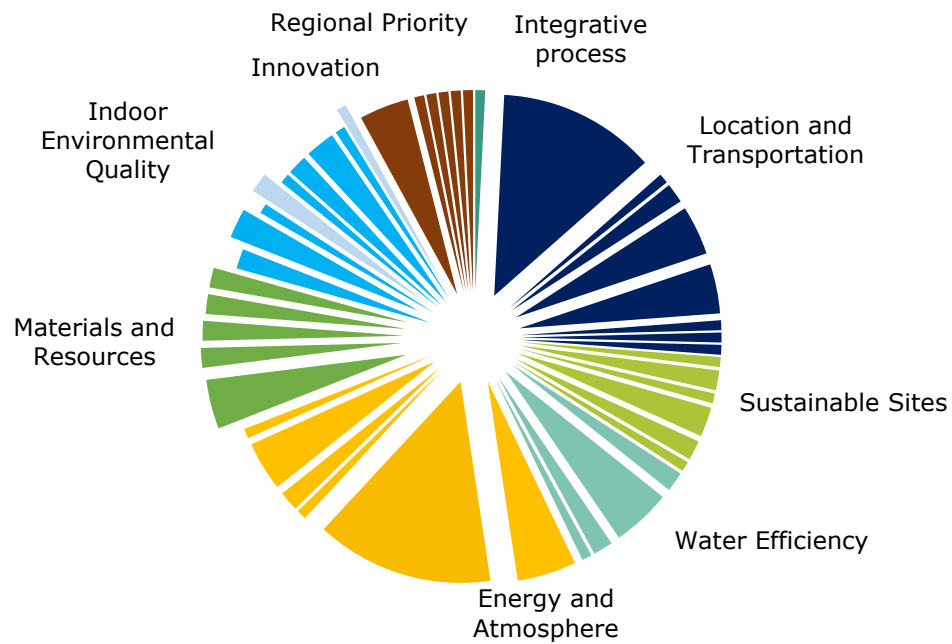










Figure 2: Kronospans possible impact in the LEED certification.

Figure 2 provide an insight into how large an impact Kronospans product have on the individual credits for preconditions and optimizations, respectively, as well as how much weight they have in the overall points.

OVERVIEW OF CREDITS AND DOCUMENTATION

CREDITS AND PREREQUISITES		DOCUMENTATION
Materials and Resources 	Construction and Demolition Waste Management Planning	Installation instructions - Link Delivery instructions with disposal description - Link Circular material flow - Link
Materials and Resources 	Building Life-Cycle impact Reduction	Environmental Product Declaration - Link
Materials and Resources 	Building Product Disclosure and Optimization - Environmental Product Declarations	Environmental Product Declaration - Link
Materials and Resources 	Building Product Disclosure and Optimization - Sourcing of raw materials	PEFC- og FSC-certifikater: Link Circular material flow - Link
Materials and Resources 	Building Product Disclosure and Optimization - Material Ingredients	EC Declaration
Materials and Resources 	Construction and Demolition Waste Management	Installation instructions - Link Delivery instructions with disposal description - Link Circular material flow - Link
Indoor Environment 	Low-emitting materials	Test Report
Indoor Environment 	Indoor Air Quality Assessment	No documentation
Indoor Environment 	Acoustic performance	No documentation



LEED – MATERIALS AND RESOURCES

Construction and Demolition Waste Management Planning

Background

The intention with this prerequisite is to reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.

Points

Prerequisite

Guide

By developing and implementing a construction and demolition waste management plan, it is possible to set waste diversion goals for the project. This way it is possible to determine what will happen with major waste fractions, at the end of the building's lifetime. This also includes describing how each waste fraction is handled, whether it will be separated or comingled, and how it will be recycled or reused.

Kronospan Spaandex K-Gulv and Klimagulv are recyclable, with Kronospan being able to take back the products after the building's demolition, to recycle it into production of new Particleboards. This creates a circular material stream

The Spaandex K-Gulv and Klimagulv are installed with glue and can therefore not be direct reused again if the installation instructions are to be followed.



Documentation

For the documentation in this category Kronospan provides the following documentation

Installation instructions - [Link](#)

Delivery instructions with disposal description - [Link](#)

Circular material flow - [Link](#)



LEED – MATERIALS AND RESOURCES

Building lifecycle impact reduction

Background

The intention with this credit is to encourage the design and construction of buildings with low environmental impact, when considering the entire lifecycle of the building.

Points

Core and Shell (2-6)

All other (2-5)

Guide

Demonstrate reduced environmental impacts during initial project decision-making by reusing existing building resources or demonstrating a reduction in materials use through life-cycle assessment. A Life Cycle Assessment (LCA) is completed for the building components with the purpose of reducing the life cycle impact of the project.

Kronospan can deliver accurate environmental data for Spaandex K-Gulv and Klimagulv, because there is an Environmental Product Declaration (EPD) for both products. The EPD conforms to EN15804 and ISO 14044, as well as being third party verified according to ISO 14025.

Documentation

For the documentation in this category Kronospan provides the following documentation

Environmental Product Declaration - [Link](#)



LEED – MATERIALS AND RESOURCES

Building Product Disclosure and Optimization – Environmental Product Declarations

Background

The purpose with this credit is to encourage the use of products and materials where an Environmental Product Declaration exists. This provides better and more accurate assessments of the environmental impact of the building.

Points

All (1-2)

Guide

Kronospan has for Spaandex K-Gulv and Klimagulv made an Environmental Product Declaration (EPD) for both products. The EPD conforms to EN15804 and ISO 14044 as well as being third party verified according to ISO 14025.

Documentation

For the documentation in this category Kronospan provides the following documentation

Environmental Product Declaration - [Link](#)



LEED – MATERIALS AND RESOURCES

Building Product Disclosure and Optimization – Sourcing of raw materials

Background

The purpose of this credit is to encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

Points

All (1-2)

Guide

Kronospan has for Spaandex K-Gulv and Klimagulv is made of particleboards at Novopan Træindustri's factory in Pindstrup, Denmark. All particleboards produced at this site are PEFC-certified and FSC-Mix-Certified products. All timber used for production that does not come from certified forestry, comes from postconsumer recycled materials.

For the intents of this credit, FSC-certification and postconsumer recycled materials are valued at the same rate. Both Spaandex K-Gulv and Klimagulv therefore count towards this credit.

Documentation

For the documentation in this category Kronospan provides the following documentation

FSC-Mix-certification: [Link](#)
Circular material flow - [Link](#)



LEED – MATERIALS AND RESOURCES

Building Product Disclosure and Optimization – Material Ingredients

Background

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

Points

All (1-2)

Guide

Within the scope of Europa, LEED allows the usage of the REACH-scheme, to prove that materials contain no harmful substances. The requirement is for the material Safety data sheet, to state that the product contains no harmful substances on the "Authorization list" and "Candidate list" according to REACH.

Documentation

For the documentation in this category Kronospan provides the following documentation

EC Declaration



LEED – MATERIALS AND RESOURCES

Construction and Demolition Waste Management

Background

The intention with this credits is to focus on reducing construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing and recycling materials.

Points

All (1-2)

Guide

Kronospan Spaandex K-Gulv and Klimagulv are recyclable, with Kronospan being able to take back the products after the building's demolition, to recycle it into production of new Particleboards. This creates a circular material stream, because waste materials from construction activities, can be put into recycling and transported directly back to the manufacturing plant, to produce new particleboards.

Documentation

For the documentation in this category Kronospan provides the following documentation

Installation instructions - [Link](#)

Delivery instructions with disposal description - [Link](#)

Circular material flow - [Link](#)



LEED – INDOOR ENVIRONMENTAL QUALITY

Low-Emitting Materials

Background

The intent of the credit is to reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

Points

3

Guide

The credit rewards points based on how many product categories meet the criteria for low-emitting materials. Kronospan K-Gulv and Klimagulv apply to the product category "Flooring". Here the criteria require at least 90% of the flooring materials by cost or surface area, to meet the standards for low-emitting materials.

Kronospan K-Gulv and Klimagulv qualify as a material that must be evaluated for its VOC emissions and content. The products must display that they contain less than 0.05 PPM of Formaldehyde, as tested following either EN-717-1:2004, following ISO 16000-3: 2010, ISO 16000-6:2011, ISO 16000-9: 2006, ISO 16000-11:2006, or following CEN/TS 16516: 2013 either in conjunction with AgBB or with Belgian or French legislation on VOC emission class labeling. This equates to meeting CARB ATCM standards for Ultra-Low-emitting formaldehyde resins (ULEF).

Test report from Danish technological institute have analyzed the product for TVOC and formaldehyde, this result can be sent if needed.

Documentation

For the documentation in this category Kronospan provides the following documentation

Test report can be sent if needed.



LEED – INDOOR ENVIRONMENTAL QUALITY

Indoor Air Quality Assessment

Background

The intent of the credit is to establish better indoor air quality in the building after construction and during occupancy of the building. This is ensured by testing the air quality after the building is finished.

Points

All (1-2)

Guide

An air test will be taken in the full installed and finish building to establish a better indoor air quality in the building after construction and during occupancy. By choosing materials with a low impact on the indoor air quality Kronospan have a positive impact on the indoor air quality.

The documentation for the credit is an indoor air quality test that can be created based on different requirements and method. Therefore, Kronospan cannot provide documentation for this credit.

Documentation

For the documentation in this category Kronospan provides the following documentation

No documentation



LEED – INDOOR ENVIRONMENTAL QUALITY

Acoustic Performance

Background

The intent of the credit is to provide buildings that promote occupants' well-being, productivity, and communications through effective acoustic design.

Points

Healthcare (1-2)

New Construction, Schools, Data centers, Hospitality, and Warehouses & Distributions Centers (1)

Guide

For this criterion an acoustic calculation must be created as the documentation.

Kronospan does not directly influence the credit, as the products Spaandex K-Gulv and Klimagulv are not acoustical products. However, the subfloor constructions have a direct effect on the composite sound transmissions. Therefore, it is mentioned as Kronospan having an influence on it, because the choice will affect the acoustical performance of the building. Whether this influence is positive, depends on project specific conditions and material choices.

Documentation

For the documentation in this category Kronospan provides the following documentation

No documentation