

**stravigym**  
by CDM Stravitec



**FITNESS & GYM**  
**ISOLATED FLOATING FLOORS**  
THE NEXT GENERATION

## Why CDM Stravitec?

CDM Stravitec has been engineering and installing fitness isolation solutions since the early 1970s. Our continuous investment in R&D and years of real-world experience have yielded a greater understanding of the driving forces behind structure-borne noise from fitness activities and how to isolate them effectively.

Today, gyms and sports facilities are more accessible than ever, often located next door or in the same buildings where we work and live. Without addressing noise and vibration from exercise activities (such as booming low frequency sound from weight impacts, thumping bass from aerobic class music, and the percussive noise from cardio and strength equipment) can negatively impact well-being and health.

From conception to completion, we at CDM Stravitec pride ourselves in being a full-service solution provider that designs, manufactures, and delivers market leading noise and vibration isolation products - making your world a quieter place.



# Stravigym

## Fitness & Gym Isolated Floating Floors

The need to access fitness as part of our daily routine has resulted in gyms and fitness studios being integrated into many multi-purpose residential and commercial buildings. Fitness activities generate a high level of structure-borne vibration and airborne noise, particularly at low frequencies, which are not covered by STC/IIC acoustic standards and building codes. Left unaddressed, it can be challenging to facilitate basic acoustic comfort in those mixed-use buildings, often resulting in disputes and legal issues.

Careful selection of the flooring system is crucial when designing fitness facilities to avoid noise issues with tenants or patrons. The finish flooring is an important component of the flooring system and should be selected based on the types of workout and impacts expected.

CDM Stravitec's Stravigym dry and lightweight floating floor solutions are specially designed to effectively and safely manage impact energy. These systems are an ideal solution for existing buildings, where the extra weight and height of a concrete floor is not feasible, and where rebound is to be limited for user safety.

While every fitness facility is different, there are typically different zones of activity, which generate different levels of noise and vibration. CDM Stravitec's Stravigym solutions are well suited for each of these different zones ensuring proper acoustical performance and stability for the athlete.

### Main Benefits



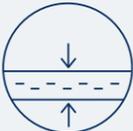
Easy installation



Quick to install



Lightweight



Limited extra height



Easy to dismantle and reinstall



Long-lasting



Noise reduction



Protection of substrate



Compatible with different gym activities



Compatible with different impact energies



Final floor options

# Stravigym

## Typical Floating Floor Construction

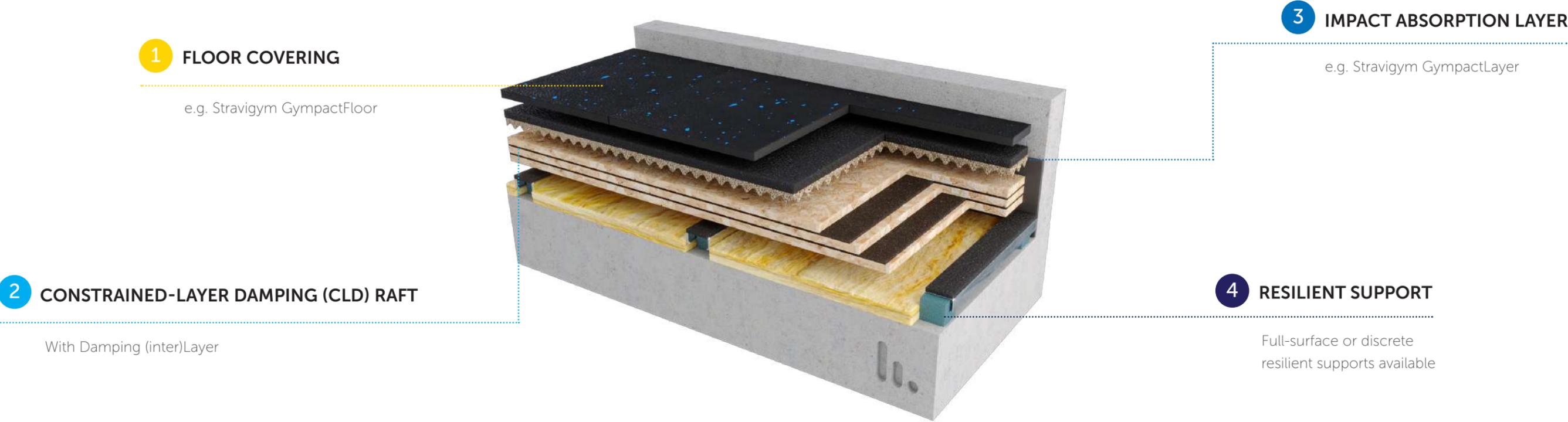
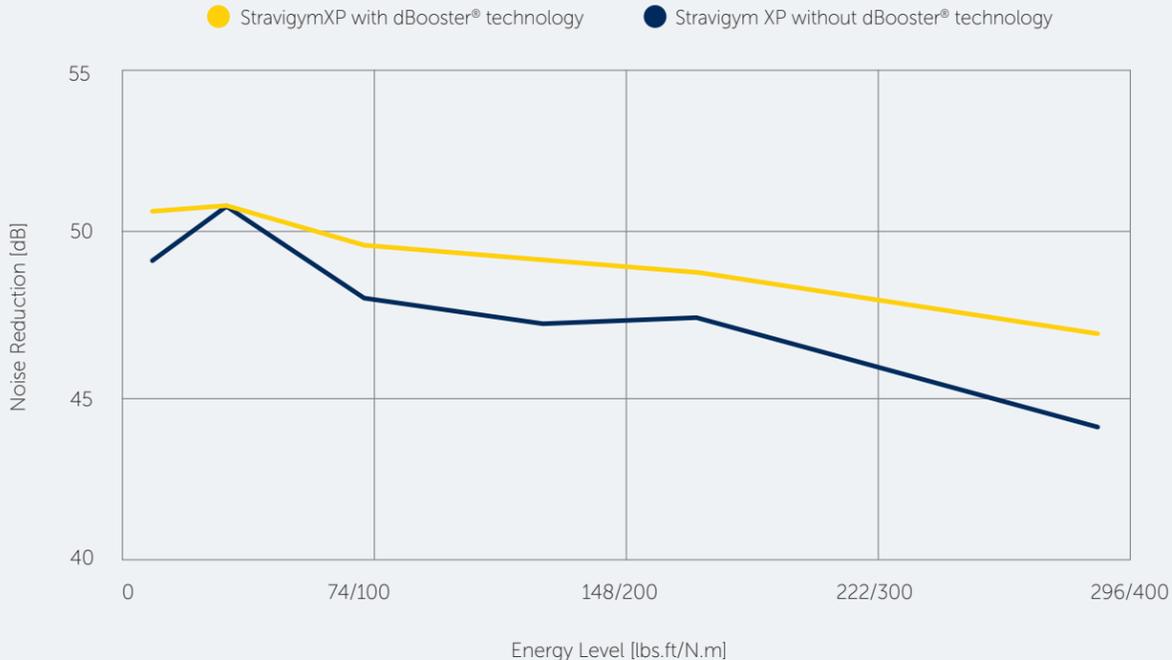
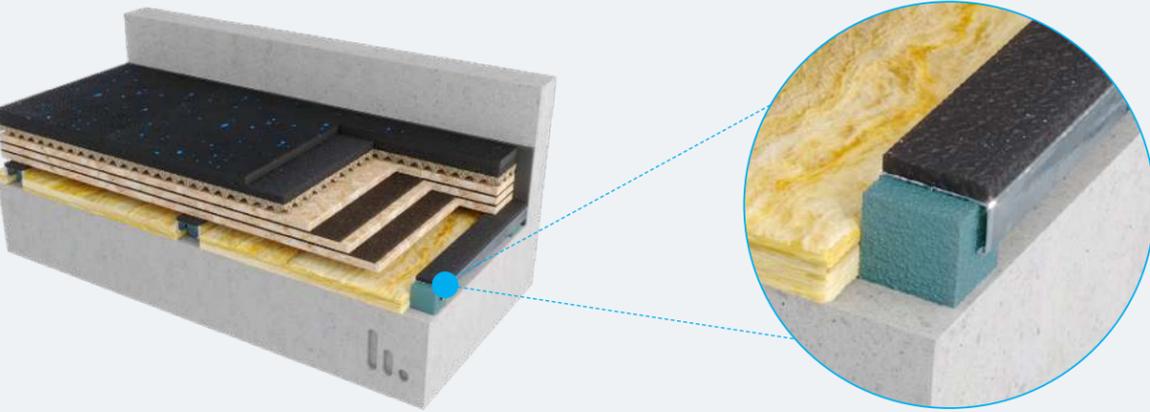


Fig. 1: Stravigym XP with GympactLayer-45 and GympactFloor-T

## The Next Generation: dBooster® Technology

Our patented dBooster® technology decouples the load distribution layer from the resilient supports with minimal contact area and provides additional damping.

Tests show that isolation efficiency improves for all discrete resilient support Stravigym systems and the acoustical performance is then less dependent on the impact energy level.

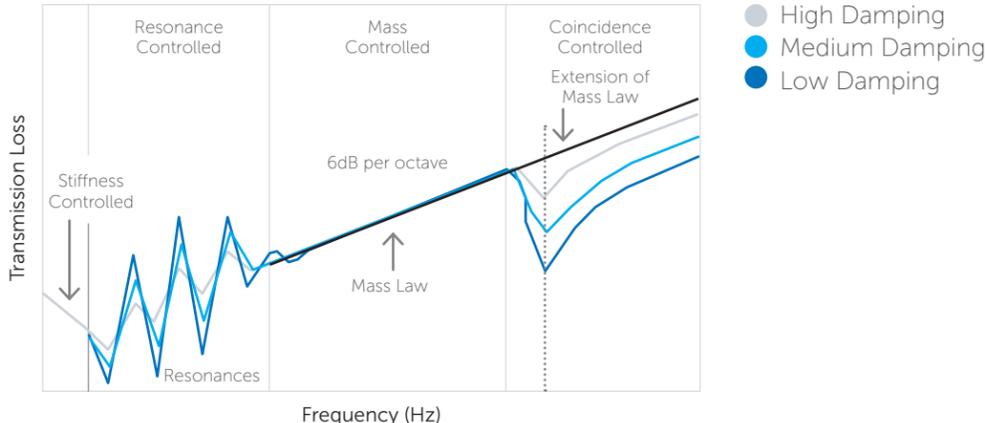


# Stravigym CLD Technology

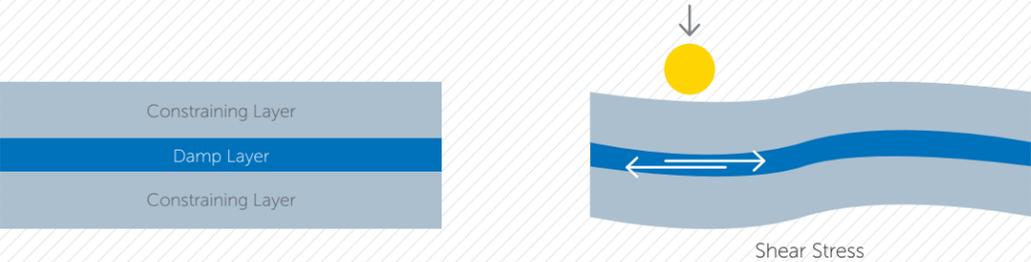
Loads (including impacts) are distributed to the supporting structural floor via rigid lightweight panels that must be ductile with sufficient bending strength. To reduce noise radiation under impact loads, it is best to combine panels with minimum radiation efficiency.

Panels with best ductility/strength ratio are wood-based panels, such as OSB and plywood panels. These panels have low damping and show dips in the coincidence and resonance-controlled regions of transmission loss.

## Damping Effects on Transmission Loss Resonance & Coincidence-Controlled Regions



## CLD Mechanism on Converting Impact Energy into Heat by Shear Stress



The dips in the resonance and coincidence-controlled region are mitigated by well-known CLD (constrained layer damping) techniques with highly damping, viscoelastic acoustic membranes – Damping Layer.

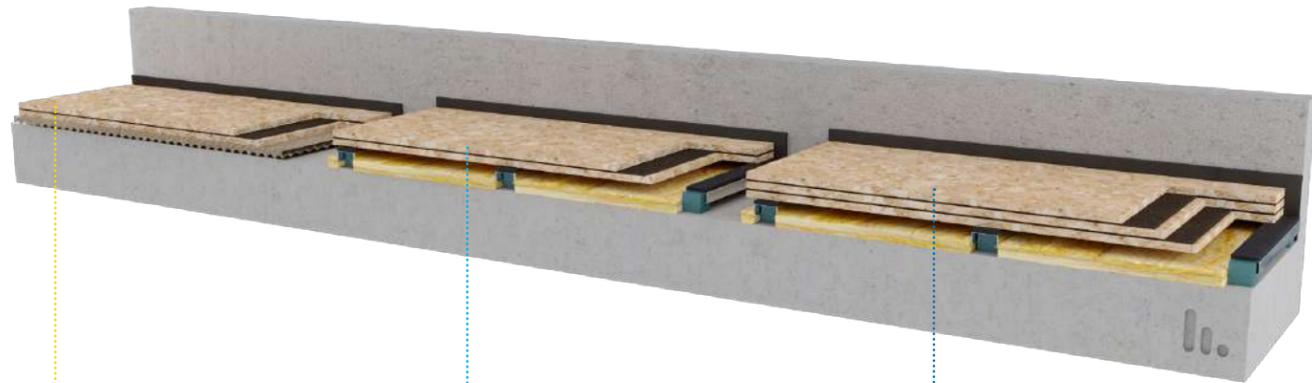
The combination of wood-based panels with CLD membranes offers the best mix of bending strength with high ductility, high damping, and low radiation efficiency. Impact on the panels results in shear stress in the damping layer that controls the panel displacement and converts the mechanical energy (vibration) into the heat.

# Stravigym Load Distribution & Resilient Support

The Stravigym range offers lightweight floating floors with different combinations of load distribution layers and resilient supports.

Through different combinations of wood-based boards and high damping viscoelastic acoustic membranes, different levels of isolation of noise and vibration radiation from impacts as well as different levels of structural resistance can be achieved.

Stravigym systems are available with either full-surface or discrete resilient supports. Achieving a natural frequency as low as 8 Hz, discrete resilient supports offer better noise reduction at low frequencies as well as reduced contact area to the building structure. Full-surface resilient mats allow for a lower build-up height.



- 1 Stravigym SP (Standard Performance) features a full-surface mat support.
- 2 Stravigym HP (High Performance) features discrete supports with two layers of plywood and one Damping Layer.
- 3 Stravigym XP (Extra-High Performance) features discrete supports with three layers of plywood and two Damping Layers.

# Stravigym

## Floor Covering & Impact Absorption Layers

Traditionally, gym flooring has been primarily aesthetic in purpose. It is now recognized that the flooring, when combined with the right impact absorption materials, plays an important role in mitigating structure-borne noise. Soft floor coverings work together with impact absorption underlayments to extend the time of contact/impact and, therefore, reduce the peak impact force and the noise generated.

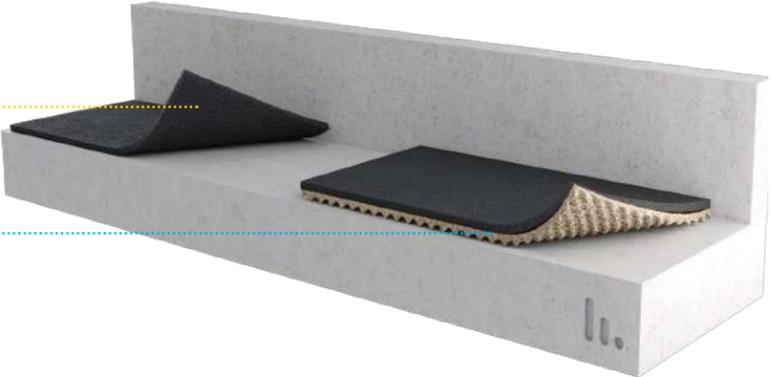
All Stravigym systems can be configured with various impact absorption layers (Stravigym GympactLayer) and floor coverings (Stravigym GympactFloor or "by others").

Stravigym GympactFloor is a rubber flooring product available as roll (R), tile (T) or interlocking tile (P).



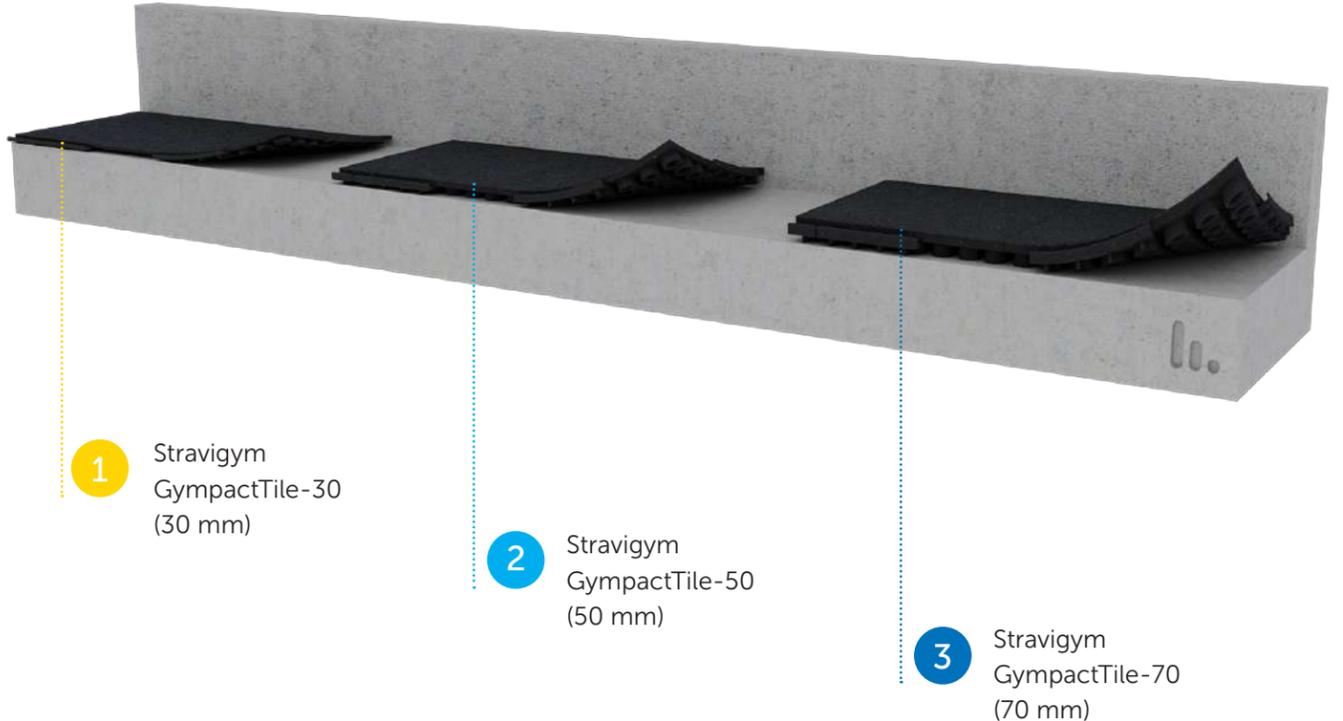
Stravigym GympactLayer are engineered impact absorption layers and can be combined with most fitness and gym floor coverings. They can also be combined with Stravigym GympactFloor products.

- 1 Stravigym GympactLayer-20 (20 mm)
- 2 Stravigym GympactLayer-45 (45 mm)



The Stravigym range offers a variety of tiles that can be used as a stand-alone solution or be combined with Stravigym floating floor systems – Stravigym GympactTile.

When used without a Stravigym subfloor system, Stravigym Gympact-Tile provides a basic level of acoustic performance and also serves as finish floor covering.



# Acoustic Design Gym Areas



Gym Areas / Gym Activities	Stravigym GympactTile	Stravigym SP GympactLayer-20	Stravigym HP GympactLayer-20	Stravigym HP GympactLayer-45	Stravigym XP GympactLayer-45
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Stretch Zone	●●	●●●	●●	●	●
Group Classroom, Spinning Studio	●●	●●	●●●	●	●
Cardio Zone	●	●●	●●●	●	●
Strength Zone	●	●	●●●	●	●
Functional Zone	●	●	●●●	●●	●●
Free Weight Zone	<b>Residential Gyms</b> (impact energy <445 lbs.ft (600 N.m))				
	●	●	●	●●●	●●
	<b>Commercial Gyms</b> (impact energy <740 lbs.ft (1000 N.m))				
	●	●	●	●●	●●●

Most suitable Stravigym solution for the following areas:

**1**

Stravigym GympactTile

**2**

Stravigym SP Floor Covering (by others)

**3**

Stravigym HP GympactLayer-20 GympactFloor-R

**4**

Stravigym HP GympactLayer-45 GympactFloor-T

**5**

Stravigym XP GympactLayer-45 GympactFloor-T



## Stravigym XP

Stravigym XP with dBooster® technology is designed as an “Extreme Performance” discrete isolator floating floor system specifically intended for use in free-weight areas. The system offers superior structural resistance and acoustical performance and can withstand and absorb the energy from very high impacts. Stravigym XP is engineered to reduce noise, damp vibration, and to minimize rebound to reduce the risk of injuries from bouncing weights.

We recommend combining Stravigym XP with either:

- Stravigym GympactLayer-45 + Stravigym GympactFloor (or other flooring choice)
- Stravigym GympactTile

84

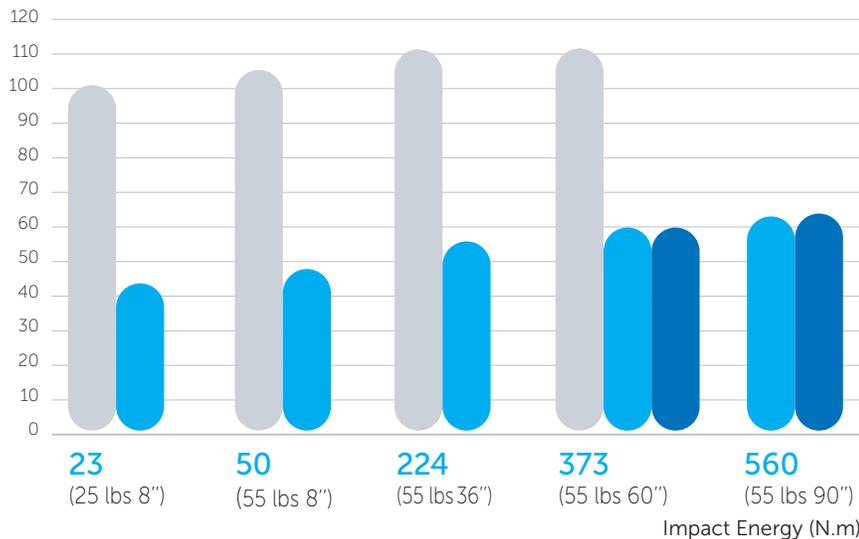
### IIC\* (ASTM E492)

Stravigym XP with Stravigym GympactLayer-45 and dBooster® technology

\* Over 8" (200 mm) concrete slab and with 3/8" (9.5 mm) Stravigym GympactFloor.

### Drop Weight Tests Overall Noise Level

$L_{A,F,MAX}$  (dBA ref 20 $\mu$ Pa)

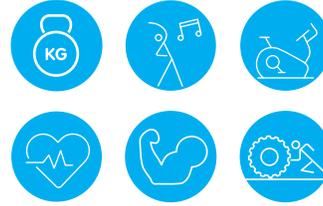
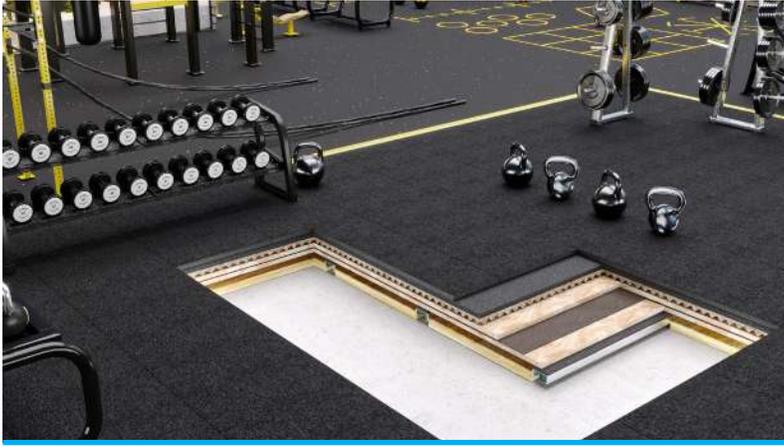


- Bare Slab (8" / 200 mm)
- Stravigym XP with dBooster® and GympactLayer-45
- Stravigym XP with dBooster® and GympactTile-50

- Build-up height  $\pm$  6-5/8" (170 mm) - excluding floor covering.
- Suitable for commercial gyms (impact energy from 148 to 740 lbf-ft (200 to 1000 N.m)).



! Stravigym GympactTile can be used as impact absorption layer in a Stravigym XP system.



## Stravigym HP

Stravigym HP is a “High Performance” discrete isolator floating floor system that is performance-engineered to control vibrations, minimize low-frequency impact noise, and reduce the transmission of audible structure-borne sound.

Stravigym HP is suitable for areas with medium impact energy, like strength or cardio areas.

We recommend combining Stravigym HP with either:

- Stravigym GympactLayer-45 + Stravigym GympactFloor (or other flooring choice)
- Stravigym GympactLayer-20 + Stravigym GympactFloor (or other flooring choice)
- Stravigym GympactTile

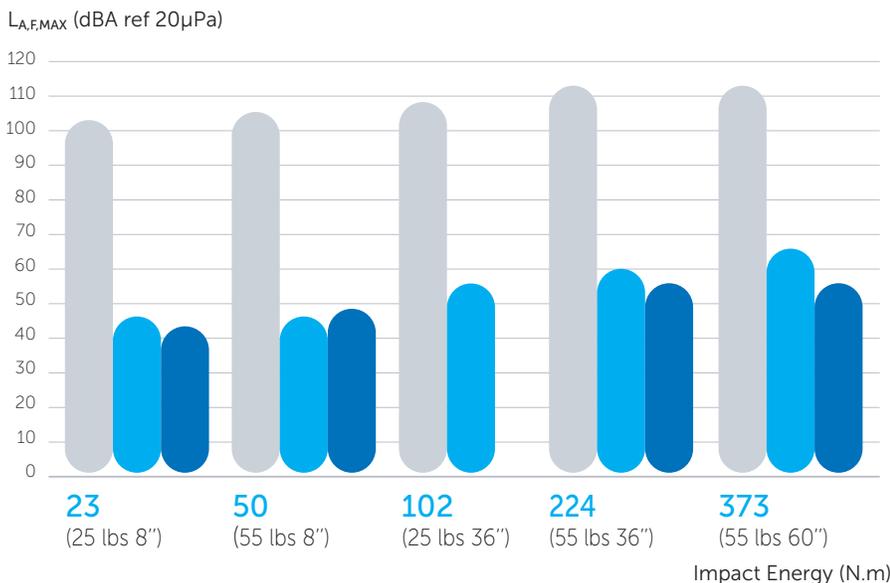
**75**  
**83**

IIC\* (ASTM E492)

Stravigym HP with GympactLayer-20 or -45 and dBooster® technology

\* Over 8" (200 mm) concrete slab and with 3/8" (9.5 mm) Stravigym GympactFloor.

### Drop Weight Tests Overall Noise Level



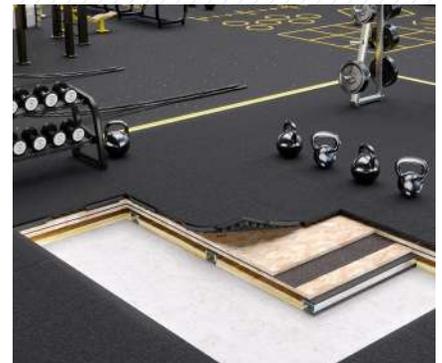
- Bare Slab (8" / 200 mm)
- Stravigym HP with dBooster® and GympactLayer-20
- Stravigym HP with dBooster® and GympactLayer-45

Build-up height:

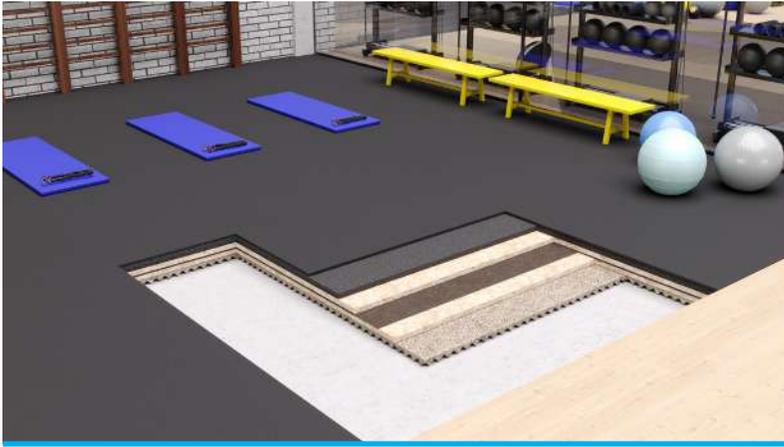
- ± 4-3/4" (120 mm) – with Stravigym GympactLayer-20\*
- ± 5-5/8" (145 mm) – with Stravigym GympactLayer-45\*

- If combined with Stravigym GympactLayer-45: suitable for residential and light commercial gyms (impact energy < 445 lbf-ft (600 N.m)).

\*Excluding floor covering



! Stravigym GympactTile can be used as impact absorption layer in a Stravigym HP system.



## Stravigym SP

Stravigym SP is a “Standard Performance” gym system. It is a continuous support floating floor that provides great performances in the reduction of low-impact sound while offering a high level of comfort for any type of training.

We recommend combining Stravigym SP with either:

- Stravigym GympactLayer-20 + Stravigym GympactFloor (or other flooring choice)
- Stravigym GympactTile
- Stravigym GympactFloor (or other flooring choice)

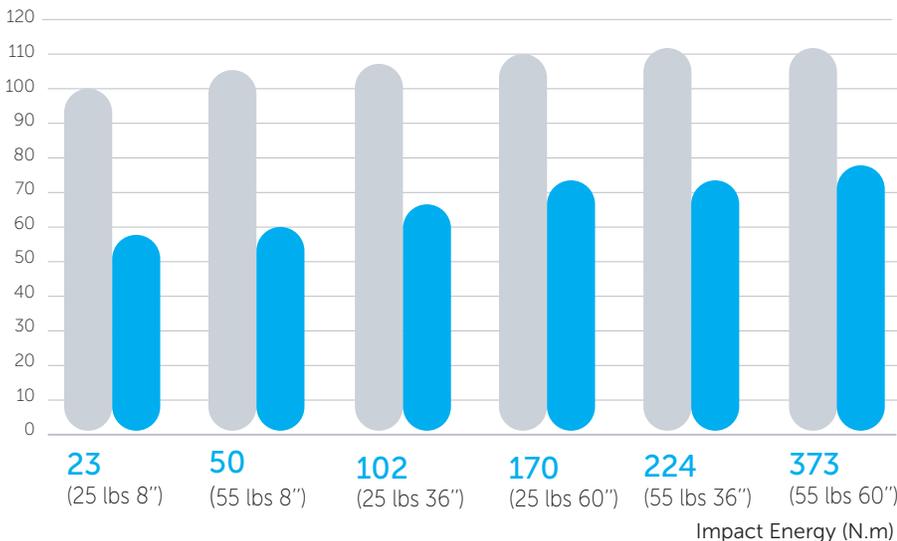
70

IIC\* (ASTM E492)  
Stravigym SP with GympactLayer-20

\* Over 8" (200 mm) concrete slab and with 3/8" (9.5 mm) Stravigym GympactFloor.

### Drop Weight Tests Overall Noise Level

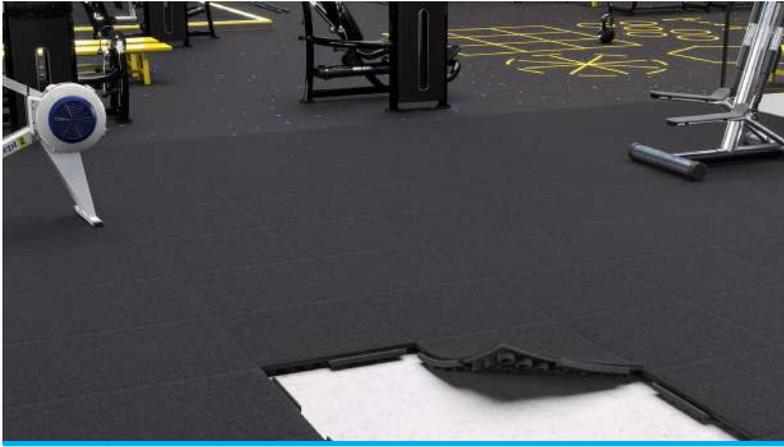
$L_{A,F,MAX}$  (dBA ref 20 $\mu$ Pa)



- Bare Slab (8" / 200 mm)
- Stravigym SP with GympactLayer-20

- Build-up height from 2-9/16" (65 mm) - excluding floor covering.
- Ideally suited for areas with restricted additional floor build-up.





## Stravigym GympactTile

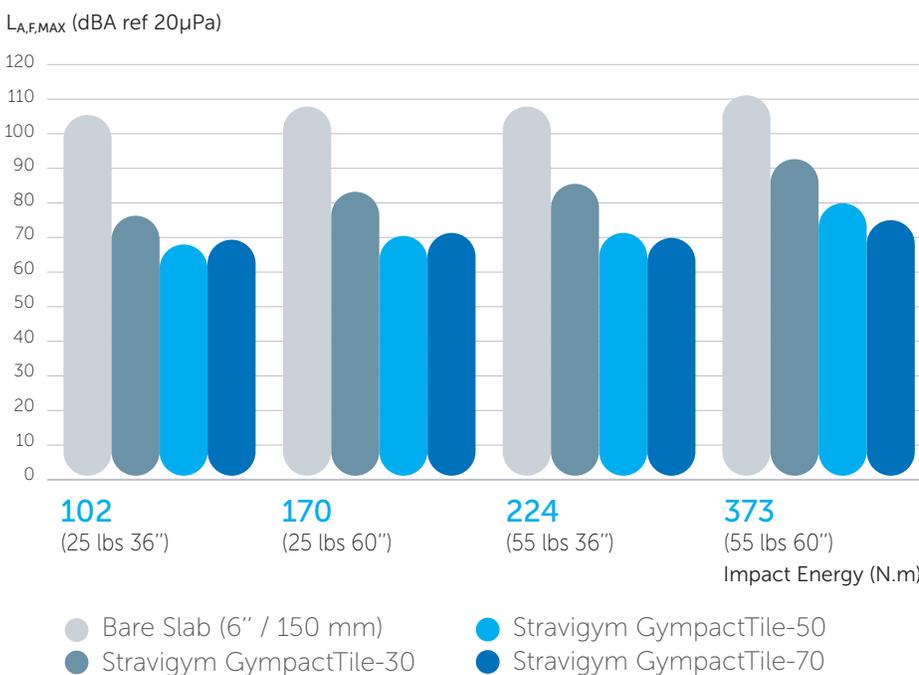
Stravigym GympactTile is a recycled rubber tile that can be used alone (1-1/4" (30 mm), 2" (50 mm) and 2-3/4" (70 mm), to provide a standard level of acoustical performance. It can also be installed as impact absorption layer of CDM Stravitec's Stravigym systems to achieve even higher acoustical performance.

Stravigym GympactTile is compatible with most gym areas and physical activities.

Rating	Stravigym GympactTile-30	Stravigym GympactTile-50	Stravigym GympactTile-70
STC* (ASTM E90)	55	54	57
IIC* (ASTM E492)	56	62	64
$\Delta$ IIC (ASTM 2179)	26	27	28

\* Over 6" (150 mm) concrete slab.

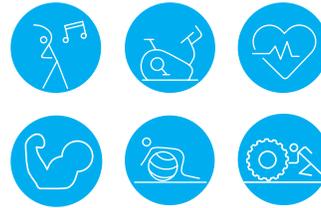
### Drop Weight Tests Overall Noise Level



- Stravigym GympactTile interlocks for easy installation.
- Standard color: black. Other colors available upon request.



! Ramps, inside and outside corners also available.



## Stravigym GympactLayer

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The Stravigym GympactLayer range offers engineered continuous mats. These impact absorption layers are compatible with most available floor coverings, allowing freedom of choice of the final flooring. They can also be combined with Stravigym GympactFloor.

Stravigym GympactLayer-20 (20mm – 3/4")

Stravigym GympactLayer-45 (45mm – 1-3/4")

The right combination of Stravigym GympactLayer and finish floor covering can have a huge impact on the structure-borne noise mitigation through extending the time of contact/impact and, thereby, reducing the peak impact force and the noise generated.



## Stravigym GympactFloor

Stravigym GympactFloor is a compact and robust rubber flooring product with high compression resistance, high friction (non-slip), and is resistant to wear and tear. The material is a composition of regenerated rubber fibers, granules, and virgin rubber color speckles.

Stravigym GympactFloor can be used as stand-alone finish flooring or can be combined with Stravigym subfloor systems (SP, HP, XP) as well as Stravigym GympactLayer impact absorption layers.

It is available as roll (R), tile (T) or interlocking puzzle (P). Within the Stravigym GympactFloor product range, roll material offers a seamless-looking finish, while tiles and interlocking puzzles are suitable for temporary installations.

### Available Sizes

#### **Rolls/Interlocking Tiles:**

Thickness - 3/8" (9.5 mm) and 1/2" (12.5 mm)

#### **Rolls:**

Width - 48" (1,220 mm)

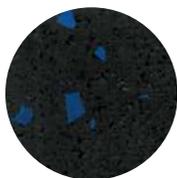
#### **Interlocking Tiles:**

36" x 36" (915 x 915 mm) and 48" x 48" (1,220 x 1,220 mm)

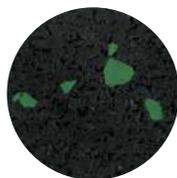
### Available Colors\*



Black



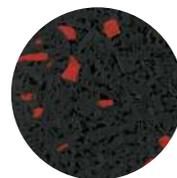
Blue



Green



Grey



Red

\* Other colors available upon request. Product images are for illustrative purposes only and may differ from the actual product.

# Alternative Floor Systems

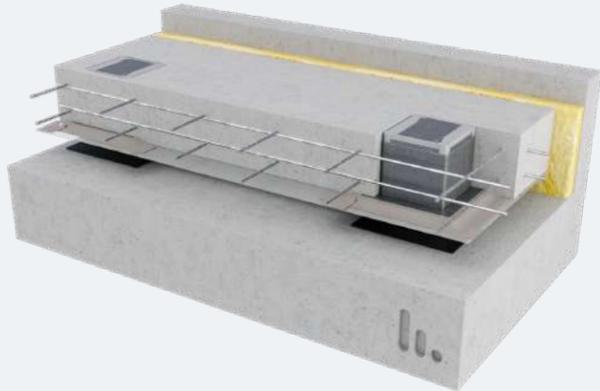
We have designed various robust concrete systems with spring and elastomeric bearings for areas where even higher levels of performance are needed (acoustical or mechanical resistance), such as Olympic weightlifting facilities and basketball courts.

For more information, please see our brochure on high-performance floating floors (Stravifloor range), contact your local representative, or visit our website.



### Stravifloor Deck

High-performance acoustic floating floor deck system using dovetailed metal decking for formwork and reinforcing concrete floors of extremely low thickness.



### Stravifloor Jackup-R

Isolated floating floor system using reinforced steel boxes cast into concrete and jacked up after the concrete has cured, to provide the required void depth. Available with springs or elastomeric bearings for enhanced damping.

# References

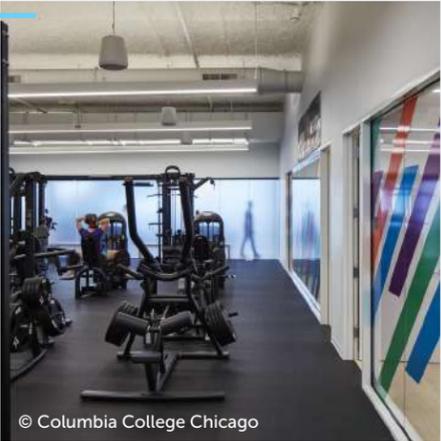
Individual solutions for gyms and fitness centers require flexibility in application, versatility in design, and a sophisticated technology – these requirements have been met by our floating floor systems for more than 70 years. During that time, we have made many contributions to the intelligent design and noise mitigation of gyms with our engineered products. Here, we present a selection of the most interesting projects that we have carried out:



**Crunch Fitness**  
New York (NY)



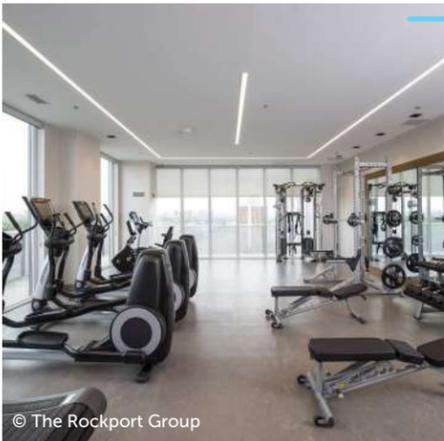
**F45 Training**  
Severna Park (MD)



**Columbia College**  
Chicago (IL)



**Hard Candy Fitness**  
Toronto (ON)



**West22 Apartments**  
Toronto (ON)

**“ WE ARE WHAT WE  
REPEATEDLY DO.  
EXCELLENCE THEN  
IS NOT AN ACT  
BUT A HABIT.**

— ARISTOTLE



# cdm stravitec

Making your world a quieter place

We have qualified engineers in noise and vibration based at different locations around the world – they are only a phone call away.

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