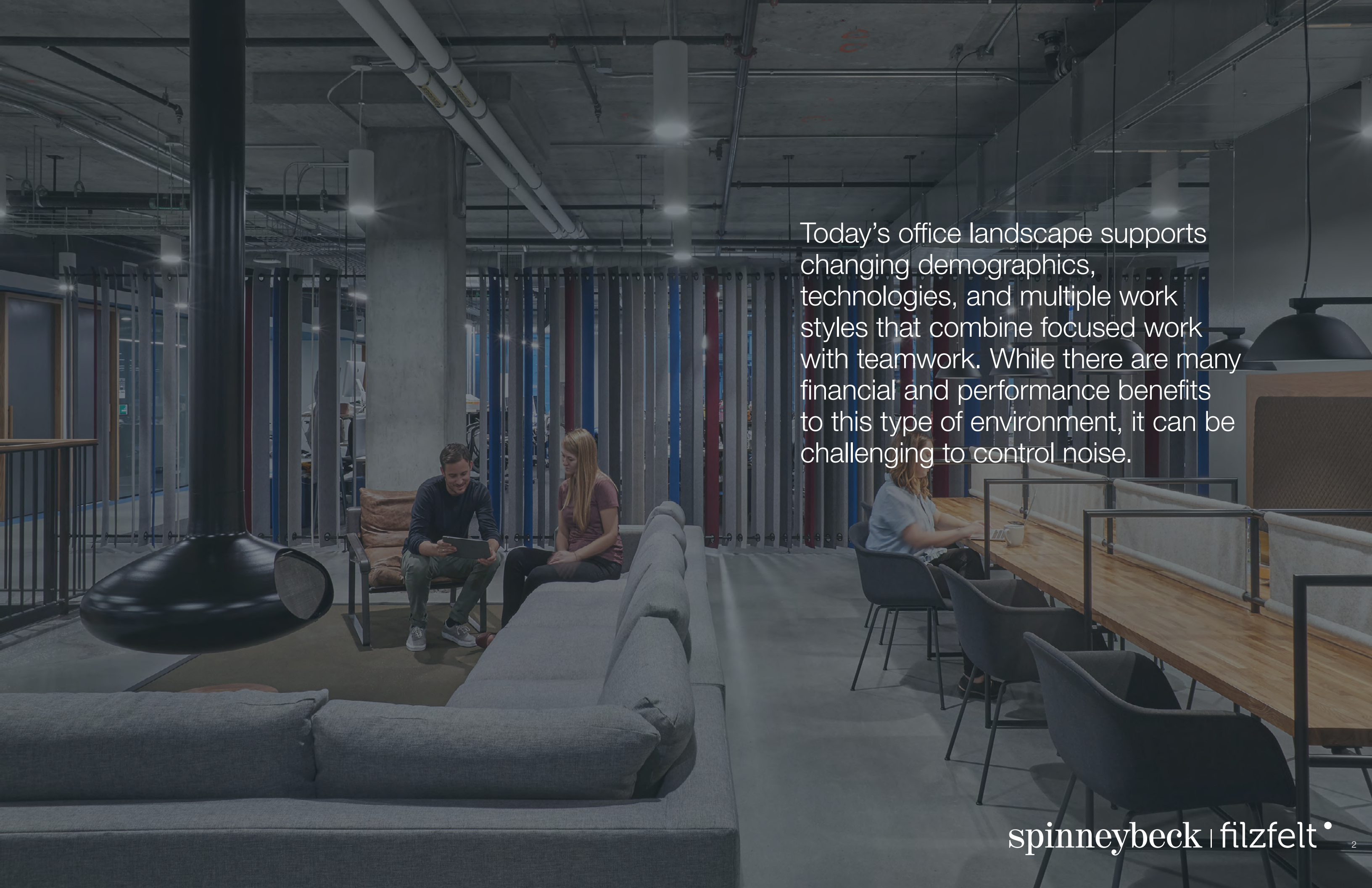




# Acoustics + Natural Materials

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A modern office interior with a grey sofa, a man and woman looking at a tablet, and a woman working at a desk.

Today's office landscape supports changing demographics, technologies, and multiple work styles that combine focused work with teamwork. While there are many financial and performance benefits to this type of environment, it can be challenging to control noise.



## Noise + Sound Reverberation

Noise is a leading source of employee dissatisfaction in offices. In a University of California–Berkeley study, workers talking on the phone and overhearing private conversations were the source of acoustic concerns for eighty-six percent of the respondents. Another survey reported that sixty percent of the respondents said they could get more done if their workspace was quieter.

Understanding sound is key to creating an environment which is supportive of the work that needs to be accomplished. When a sound wave is produced, it travels and bounces off the reflective surfaces it comes in contact with. The amount of time it takes (in seconds) for that sound energy to dissipate is termed “reverberation time” or RT.

The reverberation of a sound wave is affected by all surfaces (and contents) within a room, including the furnishings, window treatments, and even people. In a space where the walls, floors, and ceiling are all hard and reflective, the sound waves bounce around the room multiple times before they become inaudible. Lengthy reverberation times allow sounds to build up and conflict with one another. Ideal reverberation times vary based on the space use however shorter RTs (<1 second) are preferable for high quality intelligibility in private offices, meeting rooms, and classrooms.

Given this information, how do we improve the acoustic experience in high performing work environments? The solution is either reduce the noise or sound events that take place within the space or add materials that will absorb the sound.

## Natural Materials are the Solution

Since we know we often can't control the sound that takes place in an office, we can compliment the space with well-designed acoustic materials and products to provide sound absorption and reduce the reverberation time to an acoustically comfortable range. Spinneybeck | FilzFelt offers a range of products that achieve an NRC rating from 0.10 to 0.35 for direct applied felt to 1.20 for acoustic baffles. These acoustically absorptive products may be combined to provide a little to a lot of sound absorption with wall and floor coverings, hanging panels, acoustic panels, and baffles.

Want to get technical? Noise Reduction Coefficient (or NRC) is a representation of the amount of sound absorbed when a sound wave strikes a surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption however due to the formulas used, its important to note that the NRC rating is not a percentage so values larger than one are possible. And while NRC ratings are commonly used in reference to office furniture components and are indicators of absorptive characteristics, it is the RT that is most meaningful when determining how sound is controlled in a space.

To aid clients in determining the appropriate products to achieve their acoustic goals, Spinneybeck | FilzFelt has developed a proprietary RT calculator. By entering data including the cubic feet of space, ceiling height and finish materials, the calculator establishes a baseline RT without added acoustic materials. We can then determine approximately how many square feet is needed of the appropriate product—yardage, baffles, panels, planks, or tiles—required to meet the desired reverberation goals and a report is generated showing the metrics.





## Ceiling

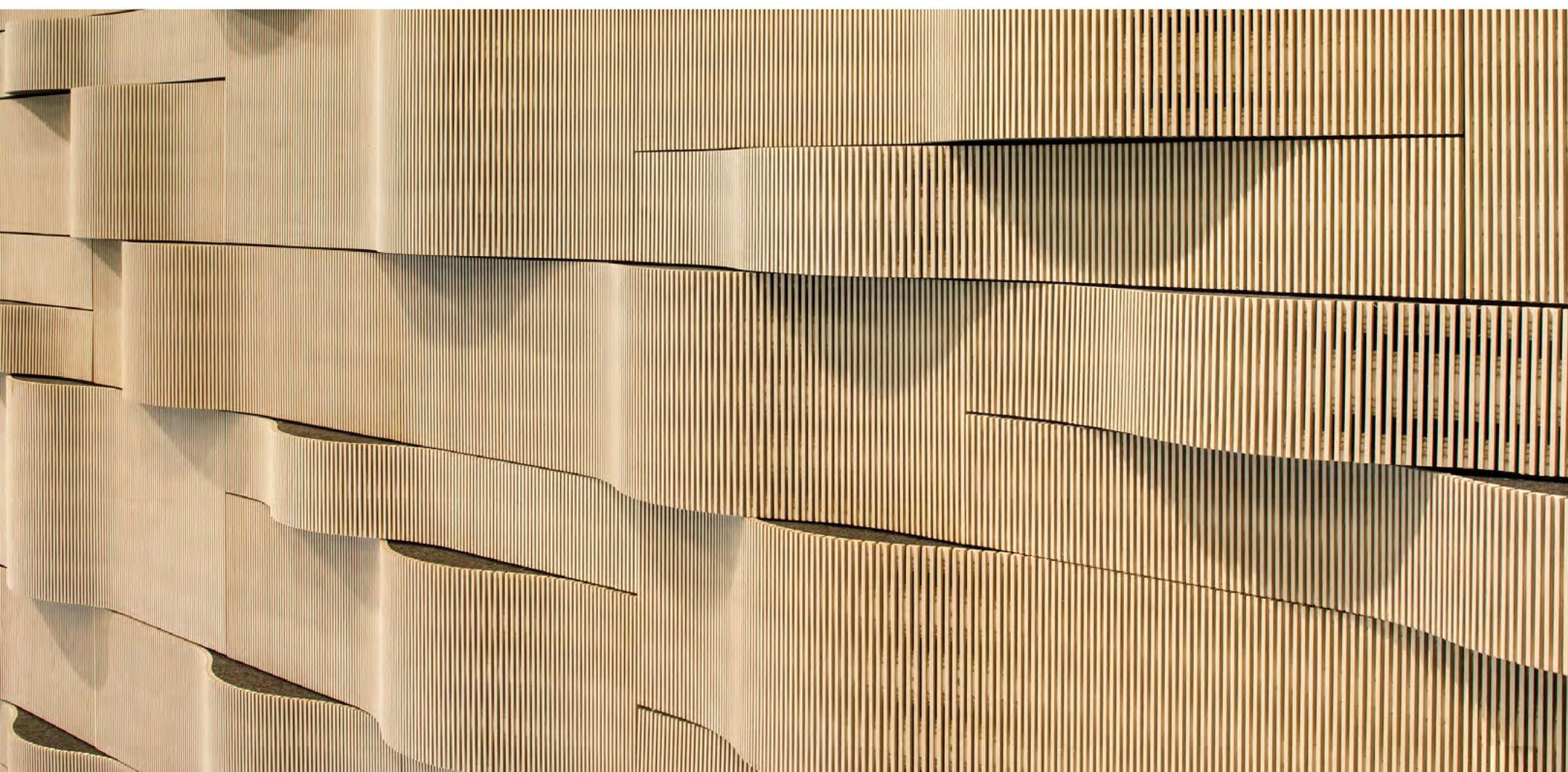
Spinneybeck | FilzFelt offers a variety of customizable ceiling systems that offer smart acoustic solutions that hang subtly overhead, providing the highest quality sound absorption while maximizing space.



# Cabanas + Canopies

A nod to wool felt's early uses as tents and yurts, draped felt creates semi-private work cabanas or acoustic canopies in open areas. These straightforward (though anything but boring) installations make the most of wool felt's thickness and rigidity in sound-mitigated spaces draped in soft, all-natural texture.





## Wallcoverings

Spinneybeck | FilzFelt acoustic wallcoverings come in a variety of sound-absorbing materials including 100% wool, heat-molded composite cork, and engineered wood that is made flexible with a patented incision process. Each brings a unique and distinctive design aesthetic while providing quality sound absorption.



## Felt

Wool felt wallcoverings are a cost effective way to achieve texture, saturated color, and sound absorption wherever you need it. Available in thicknesses from 2mm to über-thick 10mm, felt can be directly adhered without a backing to walls, ceilings, and even millwork to provide a NRC rating of 0.20 to 0.35, which provides modest muffling of sound.

Need a bit more oomph? Amp up the impact while reducing sound reverberation with FilzFelt's extensive line of acoustic felt products. With a wide spectrum of designs (and colors!) to choose from and customization capabilities far beyond the norm, push a space to a new level with products that take combining form and function seriously.







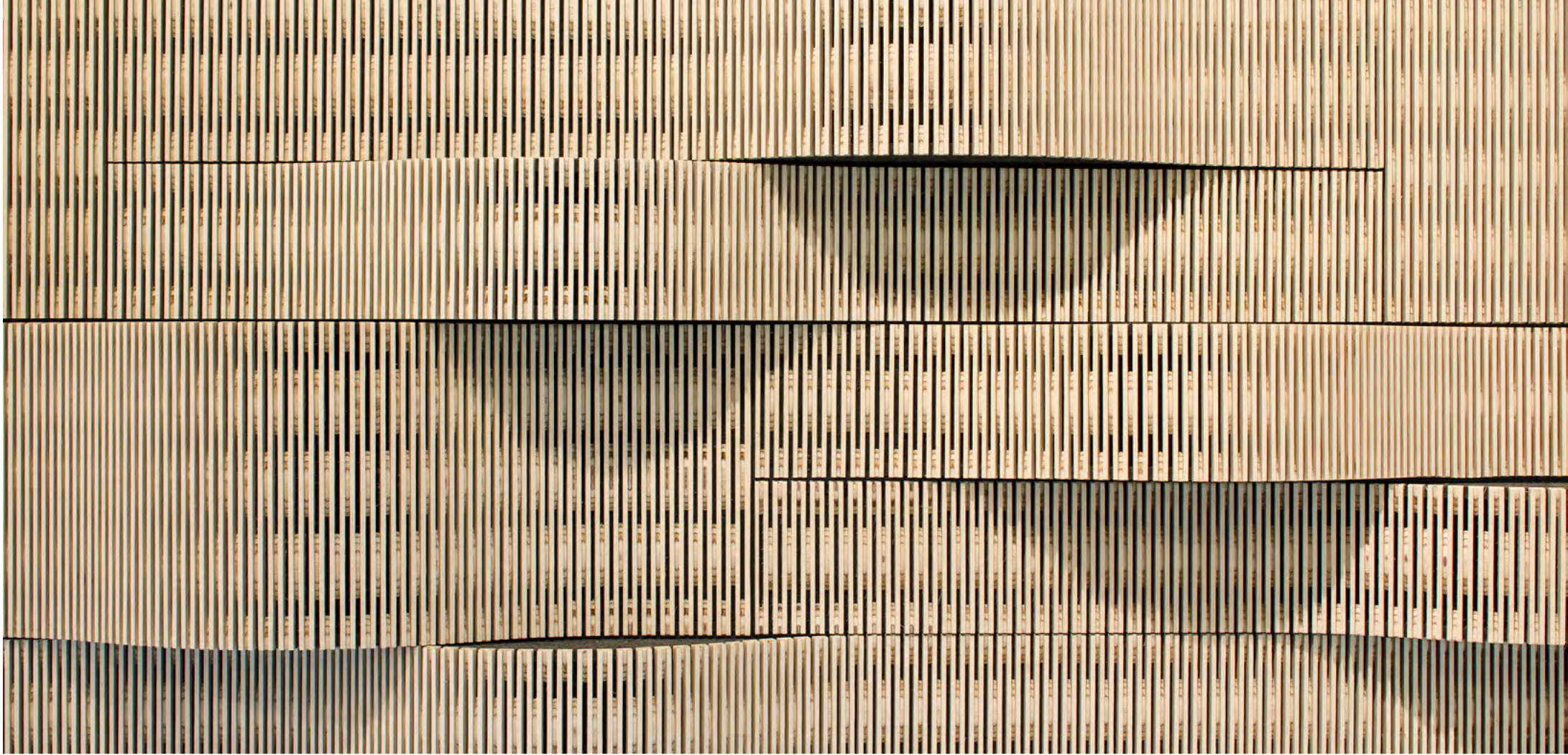
## Cork

The Beller Collection introduces a new natural material to the iconic brand known for five decades as a purveyor of full grain leather. Driven by a lifelong fascination with the marriage of nature and technology instilled in his native Norway, Lars Beller Fjetland was immediately drawn to cork. Manufactured with waste material from wine stopper production, the resulting product is ninety-three percent recycled cork produced in a waste-free molding process. Lisboa and Porto tiles secure to a unique pressure fit rail system with a gentle push. The heat-molded composite cork tiles provide graphic patterning across wall surfaces while assisting with acoustic absorption.



# Flexible Wood Collection

Wood and engineered wood are made flexible with a patented incision process developed by Switzerland-based Dukta. Complex incisions allow textile-like properties plus create transparency and sound absorption unexpected from wood products. Flow, Still, and Wave come in various patterns of incised wood that are available in select engineered woods and hardwoods.





## Custom Wallcovering

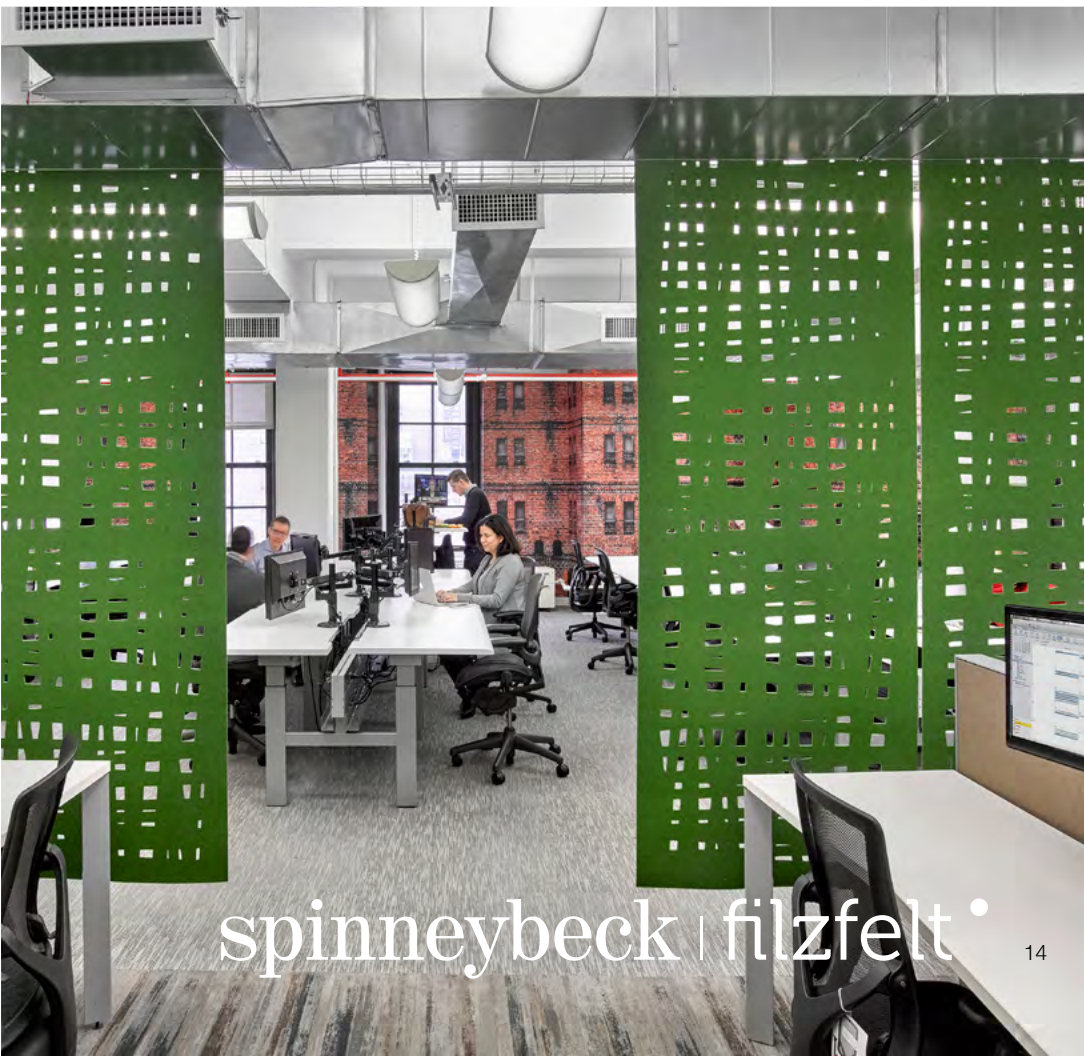
One of the super features of this nonwoven textile is that it can be cut with the edges left raw and will not fray. This characteristic allows for installations created through a variety of custom cutting techniques including CNC and roll cutting. FilzFelt's custom cut felt options create patterning, corporate logos, or even dimension through layering pieces of felt.



# Space Division

Hanging Panels and privacy screens are another way to add functional acoustic absorption. FilzFelt's colorful hanging panels come in a number of standard patterns and provide a modern screening system that allow for visual and acoustic privacy to varying degrees.

On a smaller scale, FilzFelt's desktop screens put sound absorption and visual privacy right where you need it for as long as you need it. These screens pair one hundred percent wool felt with thin and lightweight sound-soaking substrates available in a wide range of customizable sizes. The screens disassemble or fold flat for efficient storage but assemble in a jiffy to create pops of color and natural texture with authentic detailing, unexpected forms, and high performance.





## Office Pods

This unexpected circular booth comes in forty-eight inch diameter size with sound softening properties inside and out plus has oodles of finish options. Conceived by iconic designer and Knoll alum, Carl Gustav Magnusson, Silent-Silo's clever circular design takes up a smaller footprint while maximizing functionality. And unlike most office booths, Silent-Silo does double duty on sound absorption with a quiet interior perfect for heads-down work or a private phone call and an exterior that softens sound all around. Choose from over hundred finish options of 100% Wool Design Felt and Flexible Wood to create a custom solution.



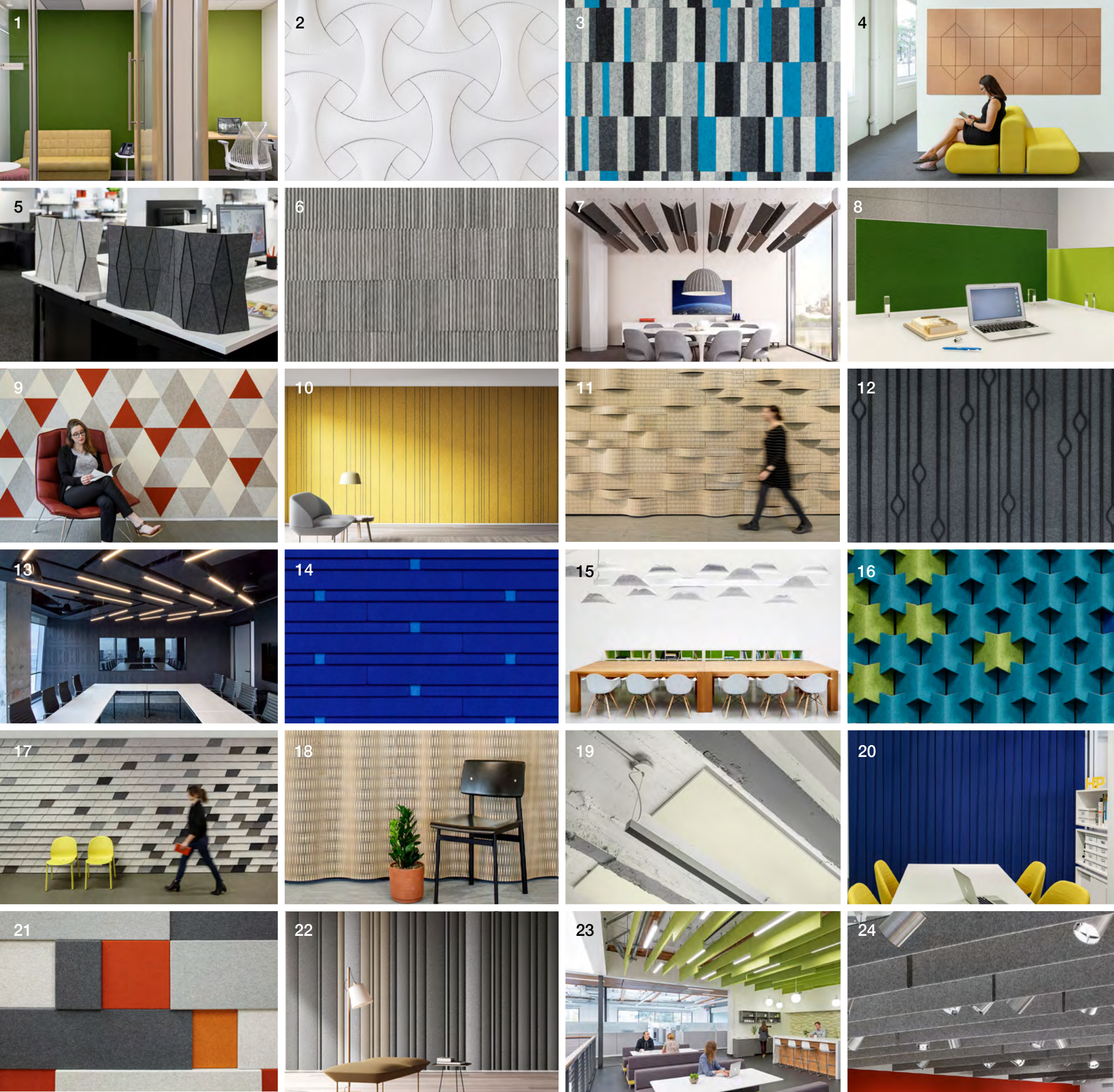


## Floor Coverings

Felt brings durability and natural texture underfoot. Wool felt has long been established as a floor covering due to its durability and resilience. Plus, acoustic testing indicates that soft surfaces may mute reverberation by as much as forty to fifty percent, making felt floor coverings a win-win. Choose from standard shapes or design your own with custom CNC cutting, machine and hand stitching, embellishment, and backing options.



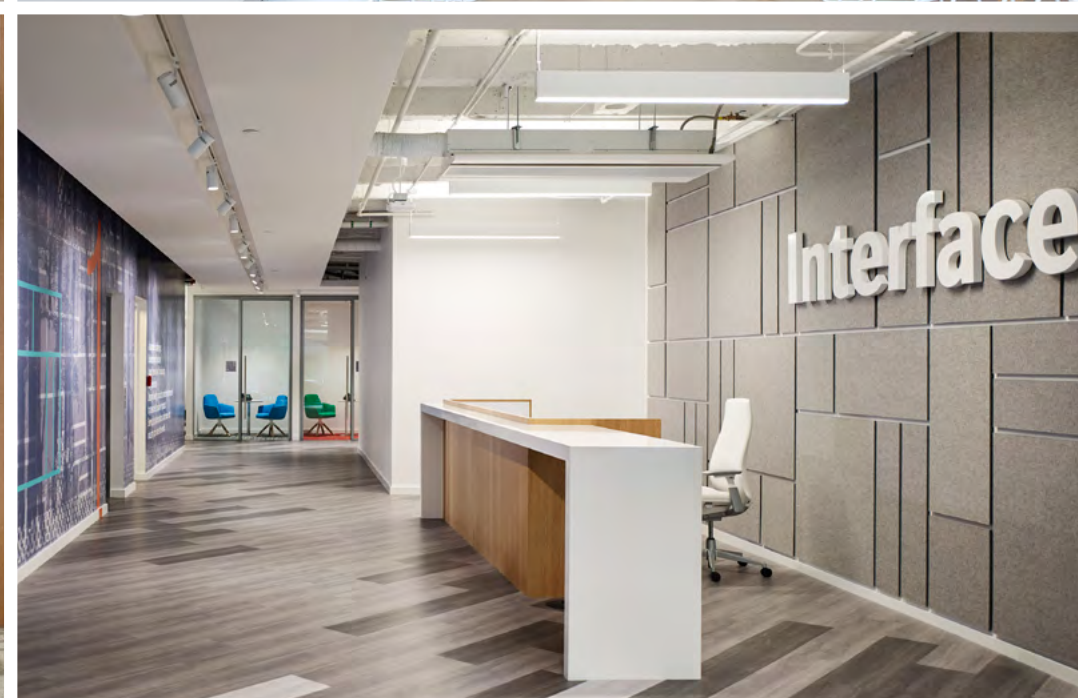
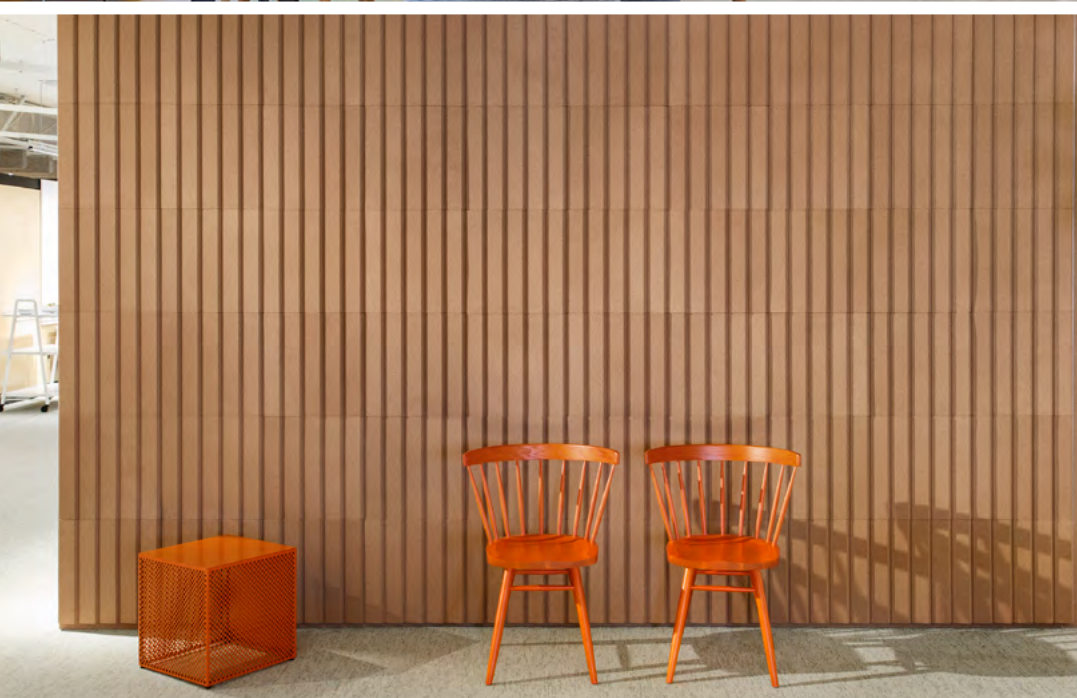




## Noise Reduction Coefficient (NRC) Ratings

Product	NRC	Product	NRC
1 3mm Wool Design Felt	0.10	ARO Plank 2	0.65
2 Design 402	0.10	ARO Plank 3	0.65
Silent-Silo (Flexible Wood exterior)	0.10	ARO Plank 4	0.65
5mm Wool Design Felt	0.20	ARO Plank 5	0.65
Figure No. 1-4	0.20	14 ARO Plank 7	0.65
3 Index Color Blocked	0.20	ARO Plank 8	0.65
Index Dimensional	0.20	Block +	0.65
Index Linear	0.20	15 Wing	0.65
Index Solid	0.20	16 Small Scale	0.70
Index Wide	0.20	Akustika 10 Wall (Interlock attachment)	0.75
4 Lisboa + Porto	0.25	17 ARO Shingle	0.75
5 Just Fold It	0.30	18 Flow	0.75
6 Ribsy	0.35	Large Scale	0.75
8mm Wool Design Felt	0.35	Still	0.75
7 ARO Baffle V1 + V2	0.50	19 Akustika 25 Ceiling	0.80
8 ARO Divide	0.50	ARO Plank 2 (with Infill)	0.80
ARO Fold	0.50	20 ARO Plank 3 (with Infill)	0.80
9 Block	0.50	ARO Plank 4 (with Infill)	0.80
10 Rille	0.50	ARO Plank 5 (with Infill)	0.80
Silent-Silo (100% Wool Design Felt exterior)	0.50	ARO Plank 7 (with Infill)	0.80
ARO Plank 8 (with Infill)	0.80	Akustika 25 Suspended	0.85
11 Wave	0.50	Akustika 10 Wall (Interlock attachment with Infill)	0.85
Akustika 10 Wall (Z-Clip attachment)	0.60	ARO Shingle (with Infill)	0.85
Bulb	0.60	Akustika 10 Baffle	0.90
12 Duet	0.60	21 Muro Plus	0.90
Hex	0.60	22 ARO Plank 1	1.00
Horizontal Bar	0.60	ARO Plank 6	1.00
Rain	0.60	23 Akustika 25 Baffle	1.20
Tac-Tile	0.60	24 ARO Baffle	1.20
Vertical Bar	0.60		
13 Akustika 10 Suspended	0.65		

Noise Reduction Coefficient (NRC) is a representation of the amount of sound energy absorbed upon striking a surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.



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