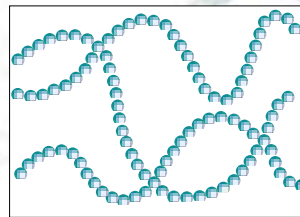


# MONDOFLEX II: CREATION OF A NEW COMPOSITE

## VULCANIZED RUBBER

### ABOUT VULCANIZATION

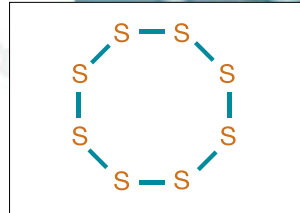
Rubber molecules are very long polymers, the strands intervene, but are not joined, this allows them to stretch while still remaining attached together. **Raw rubber has the consistency of chewing gum, too stretchy and soft to be of much use.**



+

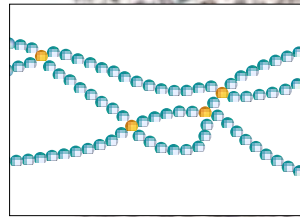
Addition of sulphur molecules or organic peroxide, together with accelerators and retarding agents.

**All those components are heated together under pressure (crosslink).**



The sulphur atoms attach to the ends of each rubber molecule, all along the lengths of the polymers. This increases the strength of the rubber, but still allows it some elasticity.

**The molecular chains link into a rigid, 3-D structure; these crosslinks tie all the polymer molecules together in one single molecule big enough to be picked up by a hand.**



### This process brings:

Vulcanized rubber does not melt when it gets hot or doesn't get brittle when it gets cold because all the polymer molecules are tied together.

**Increases Tensile strength, Tear strength, Fatigue life, and Toughness.**

## ABOUT OUR NEW COMPOSITE

A modern composite made of three layers, the 1<sup>st</sup> and 2<sup>nd</sup> layers made of vulcanized rubber, a thermoset material, and a 3<sup>rd</sup> layer made of a three-dimensional cross-linked polyurethane elastomer. The three layers combine during the curing/manufacturing process to form the new generation Mondoflex gym surface.

### PRODUCTION

#### Performance Matched to End Use -

Predictable performance, the performance of foam cushioning can be matched to the end use.

#### Pre-manufactured -

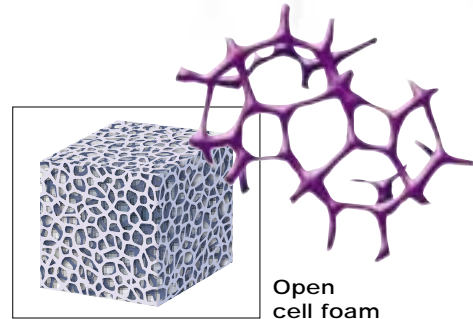
Production efficiency, guaranteed product uniformity, reduced and recycled waste.

#### Controlled Performance Testing -

In the testing laboratory, under closely controlled atmospheric conditions, performance capabilities can be evaluated using standardized testing procedures.

## ABOUT POLYURETHANE FOAM

Polyurethanes are the single most versatile family of polymers there is. Polyurethane can be made in a variety of densities and hardness by varying the type of monomer(s) used and adding other substances to modify their characteristics, notably density, or enhance their performance.



Open cell foam

Polyurethane foam is made by adding small amounts of water to one of the liquid precursors of polyurethane before they are mixed together. This reacts with a portion of the isocyanate, generating carbon dioxide throughout the liquid, creating relatively uniform bubbles which then harden to form a solid foam as polymerization progresses.

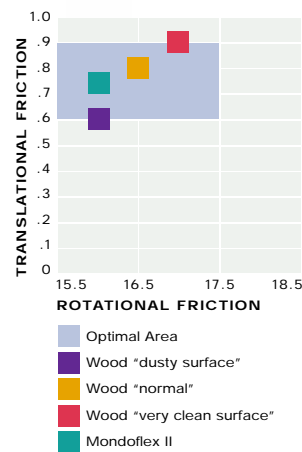
The open cell foam construction means that the foam bubbles (cells) remain mostly open, resulting after a critical stage in the foam-making process. This is a vitally important process to control the viscoelastic properties by modifying the catalysts and polyols used during the production process to make a dense yet elastic polyurethane foam and create a three-dimensional cross-linked structure.

### This process brings:

**Shock absorption, energy return, insulation, noise-absorption, load-capacity & elasticity**

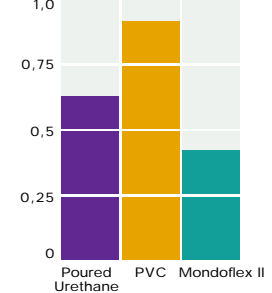
### ROTATIONAL AND TRANSLATIONAL FRICTION

FRICTION CHARACTERISTICS OF MONDOFLEX II VS. WOOD



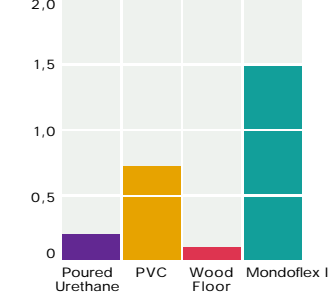
### RESISTANCE TO INDENTATION

mm



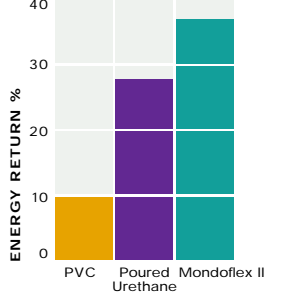
### WEAR LAYER THICKNESS

mm



### ENERGY RETURN

RESILIENCY MONDOFLEX II VS. Poured URETHANE AND PVC



## PERFORMANCE CHARACTERISTICS

The system meets the requirements of EN 14904 for indoor surfaces with a sports function and offers many advantages over point-elastic and area-elastic sports flooring.

- Multipurpose
- Superior Construction
- Superior Performance
- Not a poured System
- High Durability
- Allows for acceleration and directional changes
- Engineered to reduce surface injuries: Optimal Friction
- Remains in safe performance range when wet or dusty
- Uniformity in Play
- High thermal insulation performance
- Exclusive Wear Warranty

# MONDOFLEX • MONDOFLEX II



## MONDOFLEX II Competition areas

A modern composite made of three layers, the 1<sup>st</sup> and 2<sup>nd</sup> layers made of vulcanized rubber, a thermoset material, and a 3<sup>rd</sup> layer made of a three-dimensional cross-linked polyurethane elastomer. The three layers combine during the curing/manufacturing process to form the new generation MondoFlex gym surface.



**OUTSTANDING DURABILITY**  
Unrivalled durability and traction

**NEW BACKING**  
Unrivalled shock absorption

## MONDOFLEX II MAPLE



## MONDOFLEX

Economical system, ideal for multipurpose and renovation, Basketball, volleyball, futsal, handball and badminton.

**IDEAL COEFFICIENT OF FRICTION**

**OUTSTANDING DURABILITY**



# TECHNICAL DATA

ISSUED FOLLOWING THE UNI EN 14904 NORM



## MondoFlex

3 mm • 4 mm

152 cm • 190 cm

14 • 15,1 mtl

3 mm: 4,5 kg/m<sup>2</sup> 4 mm: 6 kg/m<sup>2</sup>

## MondoFlex II

7.5 mm • 9 mm • 11 mm

183 cm • 190 cm

14 • 18,1 mtl

7.5 mm: 5,3 kg/m<sup>2</sup> 9 mm: 7,5 kg/m<sup>2</sup> 11 mm: 8,1 kg/m<sup>2</sup>

SAFETY IN USE PROPERTIES	TEST METHODS	UNIT OF MEASURE	REQUIREMENTS	AVERAGE VALUES RESULTING FROM PRODUCTION CONTROLS				
				MondoFlex		MondoFlex II		
				3 mm	4 mm	7,5 mm	9 mm	11 mm
Slip resistance	UNI EN 13036-4	-	80 ÷ 110	85	85	90	90	90
Shock absorption	UNI EN 14808	%	25 ÷ 34 (type 1)	-	-	25,5	28	33
Vertical deformation	UNI EN 14809	mm	≤ 3,5 ≤ 2 (type 1)	≤ 0,25 -	≤ 0,25 -	- 1	- 1,2	- 1,4

TECHNICAL PROPERTIES	TEST METHODS	UNIT OF MEASURE	REQUIREMENTS	AVERAGE VALUES RESULTING FROM PRODUCTION CONTROLS				
				MondoFlex		MondoFlex II		
				3 mm	4 mm	7,5 mm	9 mm	11 mm
Vertical ball behaviour	UNI EN 12235	%	≥ 90	≥ 95	≥ 95	≥ 98	≥ 98	≥ 98
Resistance to a rolling load (1500 N)	UNI EN 1569	mm	≤ 0,5	in conformity				
Resistance to wear	UNI EN ISO 5470-1 (H18 wheels, 1 kg, 1000 cycles)	mg	≤ 1000	in conformity				
Reaction to fire	UNI 8457 UNI 9174	CLASS	CLASS 2	CLASS 1	CLASS 1	-	-	-
Specular gloss	UNI EN ISO 2813	%	≤ 30	in conformity				
Resistance to indentation	UNI EN 1516	mm	≤ 0,5	≤ 0,05	≤ 0,65	≤ 0,1	≤ 0,12	≤ 0,15
Resistance to impact	UNI EN 1517	mm	≤ 0,5	in conformity				

OPTIONAL PROPERTIES	TEST METHODS	UNIT OF MEASURE	REQUIREMENTS	AVERAGE VALUES RESULTING FROM PRODUCTION CONTROLS				
				MondoFlex		MondoFlex II		
				3 mm	4 mm	7,5 mm	9 mm	11 mm
Colour fastness to artificial light	ISO 105-B02 (method 3)	degree	-	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6
Dimensional stability	UNI EN 434	%	-	no appreciable variation				
Thermal resistance	UNI EN 12667	m <sup>2</sup> K/W	-	0,009	0,012	-	-	-
Thermal conductivity	UNI EN 12667	W/mK	-	0,32	0,34	-	-	-
Improvement in footfall sound absorption	ISO 140/8 ISO 717/2	dB	-	11	13	-	-	-
Hardness	ISO 7619	Shore A	-	65	65	-	-	-
Hardness of wear layer	ISO 7619	Shore A	-	-	-	85	85	85
Indoor sport floor covering	NF P 90-203	-	manifold	-	-	-	in conformity	

Mondo keeps the right to modify the characteristics of the products in any moment.