



TPO INTERNAL ULTRAPLY

Technical Guidelines

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ANNEXES

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6 Annexes

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6.1 UltraPly™ TPO membrane Declaration of Performance (DoP)

DECLARED PERFORMANCES FIRESTONE ULTRAPLY™ TPO MEMBRANES						
PROPERTY	STANDARD	PERFORMANCE				UNIT
THICKNESS	EN	1.10	1.20	1.50	1.80	mm
WEIGHT	EN 1849-2	1.12	1.235	1.525	1.81	Kg/m ²
TENSILE STRENGTH	EN 12311-2	≥ 800	≥ 800	≥ 1200	≥ 1200	N/50 mm
ELONGATION	EN 12311-2	≥ 20	≥ 20	≥ 20	≥ 20	%
ROOT PENETRATION RESISTANCE	EN 13948	PASS				
RESISTANCE TO STATIC LOAD	EN 12730 (A)	≥ 20	≥ 20	≥ 20	≥ 20	KG
	EN 12730 (B)	≥ 20	≥ 20	≥ 20	≥ 20	KG
RESISTANCE TO IMPACT	EN 12691 (A)	≥ 500	≥ 500	≥ 800	≥ 1000	mm
	EN 12691 (B)	≥ 2000	≥ 2000	≥ 2000	≥ 2000	mm
TEAR RESISTANCE	EN 12310-2	≥ 400	≥ 400	≥ 400	≥ 400	N
JOINT PEEL RESISTANCE	EN 12316-2	≥ 300	≥ 300	≥ 300	≥ 300	N/50 mm
JOINT SHEAR RESISTANCE	EN 12317-2	≥ 800	≥ 800	≥ 800	≥ 800	N/50 mm
FOLDABILITY AT LOW TEMPERATURE	EN 495-5					
DURABILITY - UV EXPOSURE	EN 1297	PASS (> 7500 h)				Visual

Table 6.1



6.2 UltraPly™ TPO membrane reflectivity values

PROPERTY	WHITE	GREY
Solar Reflectivity (LEED) - (New)	0.81	0.37
Solar Reflectivity (CRRC) - (New / Aged 3 years)	0.79 / 0.68	0.34 / 0.34
Solar Reflectivity (Energy Star) - (New / Aged 3 years)	0.79 / 0.78*	NOT AVAILABLE
Solar Reflectance Index (SRI) - LEED	102	43
Solar Reflect. Index (SRI) - CRRC - (New/ Aged 3 years)	98 / 81	37 / 36
* Membrane samples cleaned prior to age testing		

Table 6.2

LEED: Leadership in Energy and Environmental Design is a certification system developed in 1998 by the US Green Building Council to evaluate the durability performance of buildings

ENERGY STAR: Labeling program launched by the US Environmental Protection Agency (EPA) that helps people and organizations to save money and reduce green house gas emissions.

CRRC: Cool Roof Rating Council is a non-profit educational organization created in 1998 to evaluate and label the radiative properties of roofing products.



6.3 Types of European steel deck

TYPE STEEL DECK	DIMENSIONS
42/252/1010	
73/195/780	
106/250/750	
135/310/930	
153/280/840	
158/250/750	

Table 6.3



6.4 Reference projects

		
Parc Commercial Les Dauphins	Eishallen	Kumho Tire
Shopping Center	Sports facility	Factory
Mouscron, Belgium	Inzell, Germany	Nanjing, China
Mechanically Fastened System	Mechanically Fastened System	Mechanically Fastened System
20,000 m ²	26,000 m ²	180,000 m ²
		
Fugo SA	Goodman Duvel	Betek
Factory	Factory	Factory
Poland	Puurs, Belgium	Turkey
Mechanically Fastened System	Mechanically Fastened System + PV	Mechanically Fastened System
36,000 m ²	40,000 m ²	27,000 m ²
		
Etihad Museum	Mango Design Center	Roularta Printing
Museum	Offices	Factory
Dubai, UAE	Barcelona, Spain	Roeselare, Belgium
Mechanically Fastened System	Mechanically Fastened System	Fully Adhered System
6,000 m ²	10,000 m ²	21,200 m ²

		
Saltoki Barberá del Vallés	Bridgestone	Olympic Stadium (athletics)
Distribution center	Factory	Sports facility
Barcelona, Spain	Tatabanya, Hungary	Rio de Janeiro, Brazil
Mechanically Fastened System (InvisiWeld™)	Mechanically Fastened System	Mechanically Fastened System
40,000 m ²	115,000 m ²	30,000 m ²
		
Dongdaemun Design Plaza & Park	First Solar	Apartments
Shopping Center	Factory	Residential
Seoul, South Korea	Kulim Hi-Tech, Malaysia	Krk, Croatia
Mechanically Fastened System + green roof	Mechanically Fastened System	Mechanically Fastened System
20,000 m ²	170,000 m ²	2,000 m ²
		
Carrefour St Malo	Scania	Carrasco International Airport
Supermarket	Offices	Airport
St Malo, France	Paskov, Czech Republic	Montevideo, Uruguay
Mechanically Fastened System	Mechanically Fastened System	Fully Adhered System
14,000 m ²	1,764 m ²	40,000 m ²

Table 6.4

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