White Graphene Enhanced PU Timber Coatings

Key findings:

White Graphene (WG) dramatically reduces water vapour permeation, enhances wear resistance by up to 500%, enhances adhesion by up to 30%, and inhibits bacterial growth of water-based and oil-based PU timber coatings.

- Water vapour permeation: Dramatically reduced
- Water adsorption: −20%
- Wear resistance: +500%
- Adhesion: up to +30%

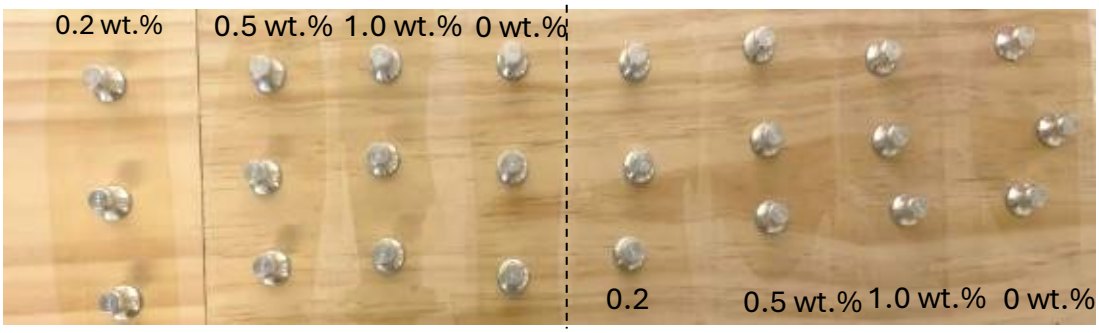


Figure 1. Appearance of different contents of White Graphene in PU timber coatings.

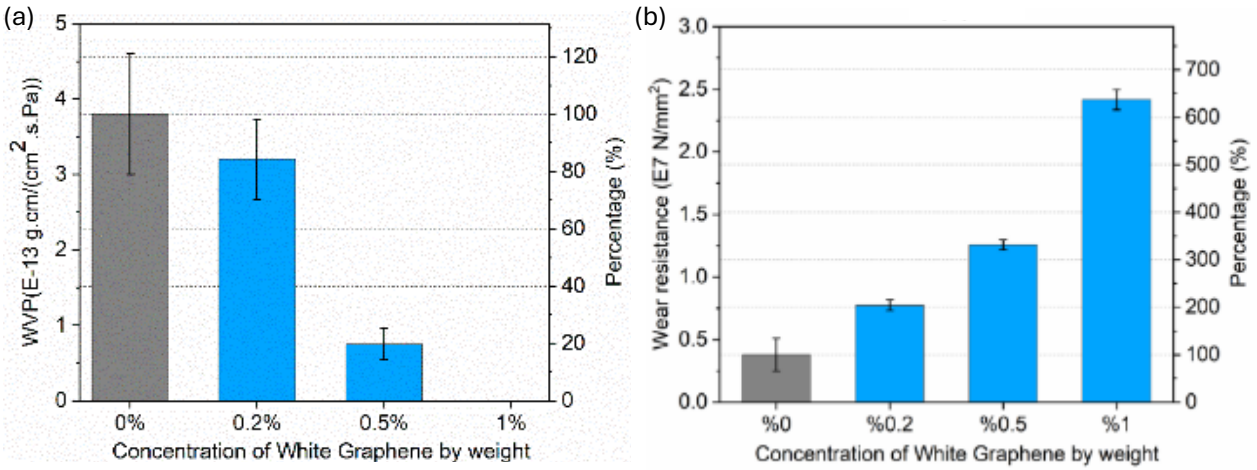


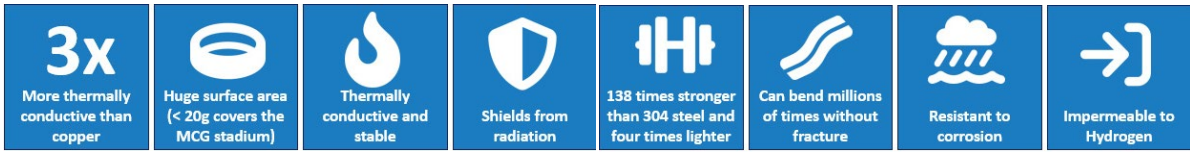
Figure 2. (a) Moisture permeability of oil-based polyurethane films, (b) wear resistance.

White Graphene

A novel two-dimensional layered nanomaterial - BNNS







PRODUCT CHARACTERISTICS	METHDOLOGY	STANDARD
Appearance	Visual	White solid powder
Lateral Size	Scanning Electron Microscope	0.3-10 µm
Lateral Aspect ratio	Scanning Electron Microscope	1:1 - 1:30
Thickness	Atomic Force Microscope	1-50 nm
Bulk density	EN17199-1 weighting method	0.055 g/cm³
Respirable dustiness fraction	EN17199 Small Rotating drum (M4)	55 mg/kg
Water solubility	OECD 105 Flask Method	Insoluble
Chemical composition and Impurities	Raman Spectroscopy	BN vibrational peak
	Fourier-transform infrared spectroscopy	BN vibrational peaks
	Energy-Dispersive X-ray Spectroscopy	B & N > 98% O < 2% Other < 0.5%
Surface functionalization	-	Customized

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