UN-P102A

UNITED NANOTECH PRODUCTS™

General Description

UN-P102A is a 'DRY-FILM' preservative manufactured by United Nanotech Products Ltd. The product has an added property of 'UV-COLOUR' guard. It is a non-toxic product specially developed for the complete microbiological protection of water based paints against algal and fungal spoilage. **UN-P102A** is a water-based dispersion and excellent in protecting exterior paints for long against microbial growth and UV-degradation.

Composition

UN-P102A is manufactured by United Nanotech Products Ltd. and is described chemically as a combination of metal oxide nanoparticles and surfactants.

Typical Properties

UN-P102A has the following typical properties:

Property		**Analysis**
Appearance		White paste
Odour		Nil
Solubility	Water	Miscible
	Oil	No
Stability	Light	Stable
	pH range	2 -10
	Temperature	0 - 60°C
Specific gravity		1.25 – 1.30
pH (1:10 solution)		7.3 – 7.4
Active component		~ 25 %

Biocidal Properties

UN-P102A is effective against bacteria, fungi and yeast.

Color–guard Properties

UN-P102A is effective on exterior surface against UV-decolourisation

Applications

UN-P102A is recommended for water-based paint where protection against fungi and bacteria is required in the wet state. Its unique colour guard activity is effective for providing longevity to the exterior paints.

Addition

UN-P102A should be added under good stirring at the dispersion stage. Good homogeneous distribution must be observed.

Use Level

The recommended use level of **UN-P102A** is normally in the range 0.2-0.5% based on the total weight of the finished product.

Special Features

UN-P102A is useful as UV-blocking and dry-film preservative for water-based paints and coatings. The enhanced surface area of nanoparticles allows increased interaction of the additive particles with fungus and bacteria. Moreover, higher surface area of nanomaterials also yields thin layer effect, resulting out use of smaller amount of the product for the same area. Extremely high exposed surface reactive area of this nanomaterials derived product stays on the outer core of the target matrix thereby

effectively protecting from fungus/bacteria/yeast and UV-radiation. Thus increase in surface area of aqueous phase **UN-P102A** results in great improved efficiency and longevity of water based exterior paints.

Antimicrobial Activity

UN-P102A has a broad spectrum of activity which includes the following common spoilage organisms;

Bacteria	Fungi	Yeast
Escherichia coli	*Alternaria alternate*	*Candida albicans*
Pseudomonas putida	*Aspergillus niger*	*Rhodotorula rubra*
Proteus vulgaris	*Aspergillus oryzae*	*Saccharomyces cerevisiae*
Pseudomonas aeruginosa	*Aureobasidium pullulans*	*Sporobolomyces roseus*
Klebsiella pneumonia	*Chaetomium globosum*	
Staphylococcus aureus	*Cladosporium cladosporioides*	
	Geotrichum candidum	
	Fusarium sp.	
	Lentinus tigrinus	
	Fusarium solani	
	Penicillium mineoluteum	
	Penicillium glaucum	
	Penicillium ochrochloron	
	Rhizopus stolonifer	
	Sclerophoma pithyophila	
	Trichoderma viride	
	Ulocladium atrum	

UV-blocking Parameters

UN-P102A has the following UV-blocking parameters

UV	Wave length (nm)	Blocking %	Test Method
UV-A	320-380	98.2	ASTM E424
UV-B	280-320	99.1	ASTM E424
UV-C	200-280	99.9	ASTM E424

Test Procedure

Low porous glass material was used as slide, which passes 10% UV-light. Paint prepared using **UN-P102A** was coated on glass slide with a coating thickness of 0.5 micron. Sample slide and a blank slide were exposed simultaneously with the UV-light and percentage of passed light was measured.

Compatibility

UN-P102A is compatible with most of the water-based paint raw materials. Compatibility of **UN-P102A** with the application should always be checked before use.

Storage Conditions

UN-P102A should be stored at temperatures within the range 5-55°C. Containers containing **UN-P102A** should not be exposed to direct sunlight. Storage conditions should also be in conformance with applicable legal, fire and insurance regulations.

Shelf Life

Under correct storage conditions the normal shelf life for this product is 12 months.

Safety Data Sheet

MSDS is available upon request.