

# UN-P102A



**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 Oil
	Miscible No
Stability	Light pH range Temperature
	Stable 2 -10 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

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

**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.