MIROTONE

MIROTHANE PU

Clear Coatings

Product Information Guide

Innovative Coating Solutions

General Description

Mirotone's range of polyurethane clear coatings are ideal for use on high quality fixtures and furniture. Easy to use and available in a range of gloss levels, Mirotone has the right system to meet your requirements.

Advantages

- Economical range ideal for use on high quality furniture
- Premium range with excellent water and chemical resistance

Recommended Use

Economical System (MIROTHANE PU 5533 Sealer with MIROTHANE PU 5588 Topcoat)
Internal Doors
Kitchen Cabinets
Commercial Joinery / Wall Panelling
Domestic & Commercial Furniture
Children's Toys

Premium System (MIROTHANE PU 5545 Sealer with MIROTHANE PU 5555 Topcoat)
All of the above plus
Bar & kitchen bench tops
Interior marine fit-outs

MIROTHANE PU 5577 Sun-Shield
Interior: reconstituted, dyed and natural wood veneers, kitchen cupboards, wall panelling, table topcoat, bench tops, commercial furniture and fit-outs, window furnishings and blinds, children's toys.

Semi Exterior: covered entry doors and internal faces of opening windows

Exterior: when used as a protective clear topcoat over an exterior grade pigmented basecoat e.g. MIROTHANE PU 5610 polyurethane on metal, plastic or over appropriately primed carbon fibre.

Product Compliance

Children's Toys (Heavy Metal Content)
Mirotone's "Chemicals of Concern Policy" requires that all of its wood coatings comply with the following standards that specify stringent limits on the permitted amount of toxic heavy metals:
• AS/NZS ISO 8124.3:2003 (Children's Toy Safety Requirements)
• BS/EN 71-3:1995 (Safety of Toys) Part 3. Specification for migration of certain elements.

Fire Rating Compliance – MIROTHANE PU 5533 Clear Sealer & MIROTHANE PU 5588 Clear Topcoat (AS/NZS 3837 "Method of test for heat and smoke release rates".

The following information only applied when MIROTHANE PU 5533 and 5588 are mixed with MIROTHANE PU 5747 Part B Hardener. This coating system has been tested by the CSIRO to Australian / New Zealand Standard 3837. Report number FNK 0052, November 2003.

Sample Classification: Group Number: Group 1 (In accordance with Specification A2.4 of Building Code of Australia)

When tested over fibre cement, the MIROTHANE coating system above meets the most stringent requirements. It is suitable for use in Class 2 and 9 buildings i.e. residential buildings, offices, shops, healthcare buildings, theatres, halls, schools and aged care buildings (refer to Specification A2.4 for further details and exceptions).

Note: To comply with the Building Council of Australia, suppliers need to provide Fire Hazard Certificates / Test Reports for the products used. These certificates / test reports need to cover the whole product system i.e. substrate, coatings, adhesives etc. The test results above apply to the coating only and it is therefore

the users responsibility to have their complete system tested for compliance.

Fire Rating Compliance – MIROTHANE PU 5545 & MIROTHANE PU 5555 (AS/NZS 1530.3:1999 Clause 4.4.3 "Simultaneous determination of Ignitability, Flame Propagation, Heat release and Smoke release".

The following information only applies when MIROTHANE PU 5545 Clear Sealer and MIROTHANE PU 5555 Clear Topcoat are mixed with MIROTHANE PU 5747 Hardener. The system above has been tested by an accredited third party testing authority over a Group 4 substrate as specified by Clause 4.4.3 of the Australian Standard. Simultaneous determination of Ignitability, Flame Propagation, Heat release and Smoke release. Therefore the coating system complies with Lift Standard Class 2-9 Buildings & some areas of Theatres & Public Halls Act.

Note: To comply with the Building Council of Australia, suppliers need to provide Fire Hazard Certificates / Test Reports for the products used. These certificates / test reports need to cover the whole product system i.e. substrate, coatings, adhesives etc. The test results above apply to the coating only and it is therefore the users responsibility to have their complete system tested for compliance.

Marine Fire Rating Compliances - MIROTHANE PU 5545 & MIROTHANE PU 5555

The following information only applies when MIROTHANE PU 5545 Clear Sealer and MIROTHANE PU 5555 Clear Topcoat are mixed with MIROTHANE PU 5747 Hardener.

Fire testing procedures and ratings for interior marine surface finishes are set by the International Convention for the Safety of Life at Sea (SOLAS), 1974 as amended. The SOLAS convention was established in 1914 in response to the earlier "Titanic" disaster, and is administered by the Maritime Safety Committee of the International Maritime organisation (a United Nations Agency).

The SOLAS convention (Chapter 11-12) makes the provisions of the International Code for Application of Fire Test Procedures (FTP Code) mandatory.
The MIROTHANE clear coating system above has been tested by VTEC Laboratories Inc. of New York (Test report no. VTEC #100- 1807 2 dated 8/2003) and complies with the requirements of:

- IMO MSC 41(64) FTP Code
- Part 2 (smoke generation and toxicity test)
- Part 5 (test for surface flammability)
- IMO A 653 (16) Flame Spread

Note: These results are for the coating system only and do not apply to the substrate.

MIROTHANE PU 5577 Sun-Shield – Third Party Testing

During 2007 Mirotone participated in a study commissioned by the Forest and Wood Products Research and Development Corporation. The objective of the research was to investigate the discolouration of various wood veneers when coated with various coating systems and then exposed to ultraviolet (UV) light. Twenty-seven different veneers that were known to be prone to UV discolouration were selected for testing. This included:

- 15 types of reconstituted natural veneers
- 8 types of dyed veneers
- 4 types of natural veneers

Mirotone's MIROTHANE PU 5577 Sun-Shield Clear Polyurethane system was reported as being one of the best performing coating systems out of the eight systems evaluated. Mirotone is confident in recommending its MIROTHANE PU 5577 Clear Polyurethane coating system to minimise the risk of colour change in reconstituted, dyed and natural wood veneers when exposed to UV light.

Application Methods

Suction Gun:	Use 1.5 to 2mm (59-79 thou) orifice with 350-400kpa (50-55 psi).
Pressure Pot:	Use 1.5 to 2mm (59-79 thou) orifice with pressure pot air-cap. Gun pressure 350-400kpa (50-55 psi) and a pot pressure of 45kpa (6 psi) max.
Airless Spray:	Use 0.23 to 0.33mm (9-13 thou) orifice, 15cm fan (dependent on job) with

	regulated pump pressure of 350-400kpa (50-55 psi).
Air Mix Guns:	Settings similar to airless spray with the air-assisted regulator pressure at 70-90kpa (10-15psi).

MIROTHANE PU Part B Hardeners

Part B	Cure Speed	Low Yellowing	Solids	Flexibility
MIROTHANE PU 5728	Fast	Will Slightly Yellow	High	Good
MIROTHANE PU 5735	Fast- Medium	Will Slightly Yellow	High	Very Good
MIROTHANE PU 5757	Medium	Low Yellowing	High	Very Good
MIROTHANE PU 5776	Medium – Slow	Low Yellowing	High	Excellent
MIROTHANE PU 5784	Slow	Low Yellowing	High	Excellent
MIROTHANE PU 5789	Slow	Non Yellowing	High	Excellent
MIROTHANE PU 5747	Fast	Will Slightly Yellow	Low - RFU	Good
MIROTHANE PU 5780	Medium - Slow	Low Yellowing	Low - RFU	Excellent

The low yellowing rating guide refers to the MIROTHANE PU Part B only. Where a low yellowing system is required the user must check that the MIROTHANE PU Part A Base meets their low yellowing requirements.

MIROTHANE PU 5795 Accelerator

In cold temperatures, MIROTHANE PU 5795 Accelerator may be added to MIROTHANE PU coatings to speed up the drying time.

Add up to 3% MIROTHANE PU 5795 Accelerator (% addition calculated on Part A volume only).

Note: Use of MIROTHANE PU 5795 will shorten the pot life.

Force Drying

Flash Off:	15 min at 20°C
Force Dry:	30-60 min at 40-50°C (dependent on airflow)
Cool Down:	15 min at 20°C

Handy Hints

- High Humidity and Moisture: All wood will swell and discolour if allowed to come into contact with water vapour. The protection provided by a coating is dependent on the moisture transmission of the coating and on the thickness of the dry coating film applied. Coated edges are usually the most vulnerable to damage either from the coating being removed or by inadequate film builds in high wear / traffic areas. Special care should always be given to sharp edges as coatings do not build well onto them, resulting in reduced protection in high moisture environments.
- Damp Wood: Do not apply coatings over damp wood (moisture content greater than 15%) as it may result in loss of adhesion, cracking or veneer checking of the wood.
- High Humidity at Time of Application: Application of coatings at high humidity will speed up the drying process and reduce the pot life.
- Care must be taken to apply a uniform wet film thickness as gloss level is dependent upon WFT.
- Bridging / Cracking: Adding excess accelerator or hardener will lead to loss of flexibility of the coating. Do not exceed the recommended wet film thickness as excessive film weights will result in increased potential for cracking of the coating, particularly on routed MDF panels and doors.
- Inter-coat Adhesion: To ensure sound inter-coat adhesion, thoroughly sand between coats. To reduce the potential for adhesion failure in field, Mirotone strongly recommends you carry out regular and

appropriate quality control testing of your production output.

- Cold Temperature: Application below 10°C will affect the drying and gloss level of the coating.
- Clear coatings do not permanently protect the substrate (in particular, wood) from the ageing / discolouration effects of temperature and sunlight. Even when UV absorbers are present in a coating they will sacrificially break down over time and eventually no longer help to protect the substrate.
- Take care when handling as oils or fats from the skin may transfer to the surface of the coating and leave visible finger prints.
- Due care must be taken in harsh in-service environments as coatings can be damaged by sharp objects. Use placements, coasters, table cloths and other protective covering to prevent damage.

Application System

Surface Preparation: Surface must be free from dust, grease, dirt and all contaminants. MIROSOL 1231 Wax & Grease remover can be used to wash the surface to remove wax and grease. Fill all defects with a water based wood filler (i.e. cracks, holes etc.) or fill open grain woods with MIROFIL 1702 if a full high build finish is required.

Sand: Sand wood with 180-240 grit paper. Sand MDF with 240-320 grit paper. Remove all dust using an air gun and clean lint free cloth.

Staining: If required, prepare and stain substrate per the directions on the MIROSTAIN product data sheet.

Sealer: Apply one of the following clear sealers per the instructions on the relevant data sheet:

Economical System	Premium System	MIROTHANE PU 5577 Sun-Shield
MIROTHANE PU 5533 MIROTHANE PU 5588 MIROCAT PC 3241, 3242, 3244	MIROTHANE PU 5545	MIROTHANE PU 5500 Isolator MIROTHANE PU 5577 MIROTHANE PU 5545 with MIROSHIELD 3900 UV Absorber Additive

Coatings systems using multiple coats of sealer will increase the risk of the dry film appearing milky (especially when applied over dark stains or wood) and may result in white marking if the film is damaged by sharp objects.

Sand: Allow to dry per the technical data sheet and sand with 280-320 grit paper just prior to top coating. Use 400-500 grit paper where a high gloss finish is being applied. Remove all sanding dust.

Toning: If required to provide extra colour depth, add up to 10% by volume MIROSTAIN 2013 Dye Stain or unreduced MIROSTAIN 2616 Pigment Stain to the topcoat. Apply in light even coats over the sealed wood.

Note: Do not use MIROSTAIN by itself between coats of clear as this may cause delamination.

Topcoat: Apply two coats of one of the following topcoats per the directions on the technical data sheet:

Economical System	Premium System	MIROTHANE PU 5577 Sun-Shield
MIROTHANE PU 5588	MIROTHANE PU 5555	MIROTHANE PU 5577

The following application technique is recommended for full gloss coatings:

- Apply a light ‘tack’ coat (100-125 WFT)
- Allow 1 – 5 minutes to flash off (depending upon temperature)
- Apply a second even wet coat.

Buffing: Allow the topcoat to dry for a minimum of 18 hours at 20°C before buffing. Buff / polish by hand or machine with a polish recommended for high gloss polyurethane finishes.

MIROTHANE PU 5577 Sun-Shield

To achieve maximum film clarity over Dark Stained / Dark Coloured Wood or Veneer where a low gloss final finish is required, apply full gloss coatings to achieve the desired look (e.g. open pore or closed pore) and finish with a single coat of MIROTHANE PU 5577 Sun-Shield in the subdued gloss level of your choice.

Note: MIROTHANE PU 5577 Sun-Shield will minimise the colour shift of reconstituted, dyed and natural veneers when exposed to UV light. However due to the slight yellow tone attributed to the UV absorber package, MIROTHANE PU 5577 Sun-Shield will impart a slight yellow tone to substrates to which it is applied. Caution therefore needs to be exercised when applying MIROTHANE PU 5577 Sun-Shield over white, light pastel, limed finishes or blond timbers/veneers to ensure that the final colour meets your requirements. Where it is more important for the clear topcoat to not change the colour of the basecoat or substrate (e.g. a topcoat without a yellow tone) than it is to protect the substrate from UV light, Mirotone recommends the use of MIROTHANE PU 5555 Clear Topcoat.

Note: MIROTHANE PU 5577 Sun-Shield will minimise the magnitude of colour shift in natural veneers and solid wood when exposed to UV light but may not completely prevent colour change when these substrates are exposed to broad spectrum daylight (simulating semi-exterior exposure). For some specific natural veneers tested (Blackbutt, Spotted Gum and American Cherry), MIROTHANE PU 5577 Sun-Shield protected the veneers from yellowing but did not prevent some slight darkening and increase in red tone.

Different timber species and different reconstituted and dyed veneers react differently when exposed to UV light. It is the user's responsibility to ensure that MIROTHANE PU 5577 Sun-Shield suits their requirements.

Health & Safety

Before handling, refer to the Material Safety Data Sheet for health and safety information. Ensure that all personnel using this product have read and understood this data sheet and the associated MSDS and packaging label before using this product.

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