Pentens®

Green Waterproofing, Leader in Asia

GREEN WATERPROOFING SYSTEM

Pentens® Waterproofing Products

- Product Introduction & Technical Specification
- Waterproofing System
- Company Profile & Project Reference

MGBC

SIRIM ECO-LABEL

GreenLabel SINGAPORE

綠建材 Green Building Material · 健康 Healthy · 生態 Ecological · 再生 Recycling · 高性能 High-performance

Pentens eco-building material

GO GREEN

DJI International (the Group), established in 1989, is one of the leading manufacturers and distributes specialist in building material for all industry which include raised floor system, water-based resin, water resistant floor, low pressure cracks, silicon-rubber waterproofing paint, soft resin mortal for waterproofing and high strength epoxy flooring.

The key vision of the Group is through dynamic and innovative management while teamwork to improve quality of products and services in order to commit excellences. On top of that, our team of architects and engineers are constantly searching for new innovative ideas and processes. Therefore, the group is assured of superior quality, versatility, durable and reliable products.

The Group believes that trust is the most important key in business activities and recognizes improvement in the quality of products and services will gain more consumers' and customers'. Besides that, the Group also aims for a better living society and a wholesome environment.

In parallel with the industrial growth in ASIA, the Group has diversified into designing and manufacturing of various kinds of industrial building materials. These manufacturing activities have significantly contributed to the role of import substitutions. With the achievement of ISO 9002, recognition in its manufactured products, the Group is presently exporting its manufactured products to 6 countries in Asia Pacific and 4 countries in Middle East.

DJI International is currently establishing distribution centers in other ASEAN countries according to their cost competitiveness and resources, e.g. **PT. UFON NANO CHEMICAL**. (since year 2014).

The Group has also increased its research and development activities in all facets of product design and process innovation, gearing it to move towards the production of greater value-added products as well as improving current production techniques and process based in Taiwan.

Through its globalization plan, the Group seeks to continuously provide quality products and engineering services to all level of industries in **Indonesia**. Simultaneously, the Group also looks forward to position **Taiwan** industrial products to be recognized in the international market.

OUR MISSION

- Environmentally Friendly
- Clean, Aesthetic, Flexibility
- Comfortable and Eternal Quality

WHY CHOOSING PENTENS GREEN WATERPROOFING ..

- Low VOC.
- A long-term warranty against defects.
- Over 20 years Relevant Specialist in Waterproofing Experience.
- Regional Manufacturing Facility.
- Excellent Quality, Service and Competitive Price

A MEMBER OF DJI INTERNATIONAL GROUP

CONTENTS:

GREEN WATERPROOFING SYSTEM

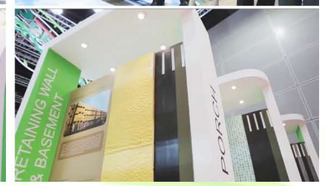
- Green Roof
- Cool Roof
- Re-Roof
- Toilet / Bathroom
- Balcony, Kitchen & Yard
- Swimming Pool & Feature Pond
- Basement, Retaining Wall

PROJECT REFERENCE

- Taiwan, Malaysia, Thailand, Vietnam, Myanmar
- Indonesia

CERTIFICATE / MEMBERSHIP

- Singapore GREEN LABEL
- SIRIM ECO-LABEL
- Taiwan GREEN BUILDING MATERIAL (台灣綠建材標章)
- Malaysia Green Building Confederation
- ISO 9001:2000
- USA POLYUREA DEVELOP ASSOCIATION member



T-100

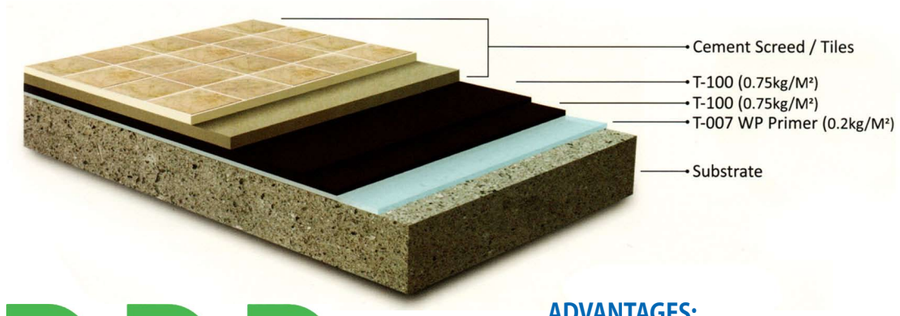
Water-Based PU Bituminous Waterproofing Membrane

Pentens T-100 is a single component which is newly developed polymer of **MMA**, **natural rubber,** and **polyurethane** combines with the reaction with **asphalt** and then being modified and further emulsified to form elastic waterproof membrane.

To provide a better water and vapor-proof in complicating application surface compare to membrane-type and ensure better integrity between applied surfaces and waterproofing coating.

AREAS OF APPLICATION INCLUDE:

Floor slabs, Suspended floors, Terraces and balconies, Patios, Bathrooms, RC gutters and planter boxes, Swimming pools, Water tanks, Basements and fountains, Retaining walls



10X
Durable Elastic
Elongation: 1128.6 %

Easy Application
Excellent Bonding

ADVANTAGES:

- Ease of application directly from container.
- High elasticity.
- Superb adhesive strength.
- Can apply directly on damp or wet surfaces.
- The softening point will not be further softened due.
- To hot and humid climate in tropical countries.
- Resistant to any bubbling or side osmosis
- Phenomenon even submerge in water for a long time.
- Non-toxic.


1. Surface Preparation (a)


2. Surface Preparation (b)


3. Surface Preparation (c)


4. Grout Fillet & details

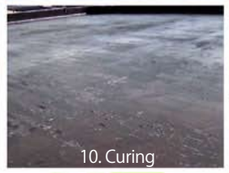

5. Primer Coat


6. T-100 Mixing


7. T-100 First Coat


8. Install W-015 (FB Mesh)


9. T-100 2nd Coat


10. Curing


11. Ponding Test


12. Screed

Option Layer: Pentens W-015 Akali Resistant Fiber Glass Mesh

SURFACE PREPARATION

All the surfaces must be clean, free from grease, oil, laitance, and remove all the dirt and contaminants, which might affect adhesion. The impurity outside the structure body should be cleaned thoroughly.

Any crack or water leakage area should be pre-treated and reinforced with Pentens Repair System (for more detail, please refer to our Technical Department) before the waterproofing.

For some difficult areas, such as the position of cracks, secondary joint, right angle of wall and the boundary shall be strengthened first with one layer of Pentens T-100.

MIXING

Generally it is not required but for smoother application, not more than 1kg of clean water can be added into 20kg of Pentens T-100.

When used as a sand mortar, the amount of sand added to Pentens T-100 will determine the plasticity of the mortar and the hardness of the set material.

APPLICATION

Substrate should be primed with a 1:3 mixture of Pentens T-007 and water. Brush on at the approximate rate of 0.3kg/m^2.

On areas exposed hot drying winds. 2 to 3 thin coats of paint may be more successful than 1 thick coat. For indoor areas, it is recommended that allow approximately 30 minutes or after the primer becomes tacky then apply T-100.

With brush, roller, or spray method apply the first coat of Pentens T-100 on the application surface. The first coat should be applied in one direction only. If possible the second coat should be applied at right angles to the first. Leave to cure for approximately 8 hours before applying second coat.

COVERAGE

Bathroom and kitchen: 1KG/M^2 2 coats.
Roof, planter box, balcony, water tank and basement: 1.5KG/M^2 2 coats.

CURING

For optimum performance, Pentens T-100 should be allowed to cure for 24 hours before the finishing concrete, tiles etc and during this time precautions must be taken in order to prevent damaging to the coating.

NOTE

The best method to assure good penetration of the first coat into the surface is by application with a nap roller. The succeeding coats may be spray or roller applied.

Cleaning
Tools and equipment just can be clean with clean water immediately after use.

SAFETY

Impervious gloves and barrier cream should be used when handling these products. Eye protection should be worn. In case of contact with eyes, wash thoroughly with plenty of water and seek medical advice if symptoms persist. If contact with skin occurs, it must be removed before curing takes place. Wash off with an industrial skin clearer followed by plenty of soap and water. Do not use solvent. Ensure adequate ventilation when using these products.

TECHNICAL & PHYSICAL DATA

Foam	Paste like Emulsion
Color	Dark Brown
Specific Gravity (CNS 6986, CNS 6988)	1.08
Hardness (HS) (CNS 6986, CNS 6988)	35
Tensile Strength (kgf/cm2) (ASTM D 412)	20.9
Elongation (%) (ASTM D 412)	1128.6
Tensile Strength at 100% Elongation (kgf/cm2) (ASTM D 412)	3.5
Tear Strength (kgf/cm2) (CNS 6986, CNS 6988)	11
100% Modulus of Elasticity (kgf/cm2) (CNS 6986, CNS 6988)	5.5
Water Vapour Transmission of Materials (ASTM E 96)	6.165 grains/ft^2 X h x in x Hg
Punture (kgf) (ASTM E 154)	1.6
Chemical Resistance (10% HCOOH, 60°C , 24 hrs)	No Changes on the Surface of the sample
Shelf Life	1 year when unopened And damaged
Storage Condition	Store in a dry cool place
Packaging	20 KG Pail

IMPORTANT NOTES

1. Thoroughly agitate contents before use.
2. Minimum ambient and substrate temperature is 5°C.
3. Never apply more than 1 kg/m^2 of Pentens T-100 in one single layer.
4. Apply only to clean, sound substrates where surfaces should be well dampened but free of surface water and leaks.

FLESEAL T-200^{H}

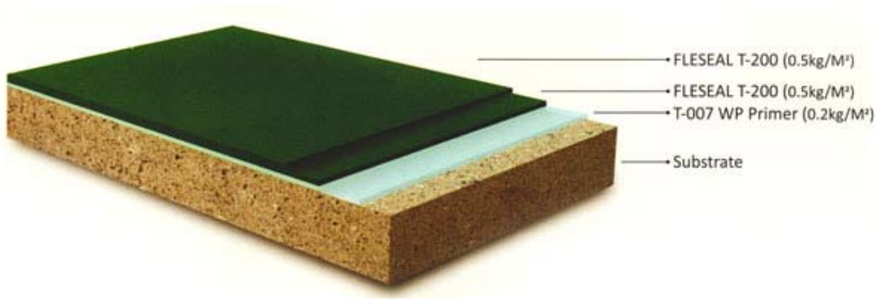
UV Resistant Elastomeric PU Waterproofing Coating

Pentens T-200H is based on a newly developed Water based **Polyurethane** and **Acrylic** Polymers. It is dramatically reduces solar heat absorption in either air-conditioned or non-air conditioned buildings. It takes the majority of the heat load off a building's skin and reduces temperatures to approximately that of outside shade.

Pentens T-200H is a one-part elastomeric cross linking latex copolymer emulsion designed as exposed waterproofing coating.

AREAS OF APPLICATION INCLUDE:

RC gutters and planter boxes, Floor slabs, Roof decks, Wood siding / Fences



5X
Super Elastic
Elongation > 515 %

UV Resistant
SRI > 86 %

ADVANTAGES:

- High elongation.
- Can resist to ponding water.
- Water based, environment friendly.
- Air and UV protection.
- Easy-cleaning and weather resistant
- Chemical resistant and waterproof.
- User friendly, suitable use on any surface.
- Adheres well over aged, galvanized and metal roofs, wood, asphalt or aluminum coatings, polystyrene foam insulation, polyester plastic panels, pre-cast flat concrete and barrel cement tiles and many roofing materials.
- Prevention of ravages of acid rain, freeze thaw, cycles, sunlight, bacteria and fungus.

Non-toxic.

OPTION LAYER: Pentens W-15 Fiber Glass Mesh
PURPOSE: Crack Protection

SURFACE PREPARATION

Surface must be sound, dry and clean (free of dirt, gravel, pollution, mildew and all foreign material). Do not apply if any rain is imminent. Repair flashings and damaged areas. Cracks and old bitumen joints shall be repaired first. On existing surfaces must be thoroughly cleaned before applying Pentens T-200^{H}.

Remove all gravel. The main reason on of applying gravel on the roof was to protect the old surface from the sun's rays. Removing g gravel will greatly reduce the weight load on the roof, and provide a firm surface for the new coating.

Sweep and vacuum or power wash surface to remove dirt and dust. Cut out roof of blisters and repair with acrylic embedded in polyester fabric or polymer concrete.

Remove mildew with sodium hypochlorite or other algaecide and rinse with Tack down curled, lifted seams flush with the surface. Fill any other gaps with silicon impregnated latex caulk. Any loose shingles should be gently lifted and glued down with roofing cement.

APPLICATION

Substrate should be primed with a 1 1:3 mixture of Pentens T-007 and water. Brush on at the approximate rate of 0.3kg/ m^2.

On areas exposed hot drying winds. 2 to 3 thin coats of paint may be more successful than 1 thick coat.

Pentens T-200^{H} is suggested to apply at least 2 coats. The first coat should be a applied in one direction only. If possible the second coat should be applied at right angles to the first. Leave to cure for approximately 2 to 8 hours before applying second coat. Pentens T-200^{H} can be installed with conventional airless spray equipment, brush or roller.

PRECAUTIONS

The best method to as sure good penetration of the first coat into the surface is by application with a nap roller. The succeeding coats may be spray or roller applied.

COVERAGE

Coverage: On concrete roof 0.8~1.0 kg/m^2/2 layer
On facade/vertical 0.67~1.0 kg/m^2/2 layer
NOTE: Actual coverage may vary depending on substrate texture and porosity.

CLEANING

Tools and equipment can be clean with clean warm water immediately after use. Hardened material can only be mechanically removed.

SAFETY

Pentens T-200^{H} is non-toxic. For personal precautions, applicators are recommended to wear gloves and goggles when handling Pentens T-200^{H}.

TECHNICAL & PHYSICAL DATA

Foam	Liquid
Color	Grey, Light Grey, White, Green
Resin	Modified Polyurethane and Acrylic
Density	1.10
Solid Content	> 55 % by weight
Elongation (%) (ASTM D 412)	> 515 %
Tensile Strength (kgf/cm2) (ASTM D 412)	> 40
Tear Strength (kgf/cm) (ASTM D 624)	> 15
Solar reflectance (JIS R 3106)	86.9 %
Aging Test (80oC, 168hrs) (ASTM D 573-04)	
a. Tensile Strength	> 50 kgf/cm2
b. Elongation	> 450 %
c. Tear Strength	> 15 kgf/cm
Water Vapour Transmission (ASTM E 96 Method B)	< 5 perms
Curing Time	12 hours
Application Temperature	5°C ~ 40°C
Service Temperature	0°C ~ 80°C
Shelf Life	At least 1 year when unopened and damaged
Storage Condition	Store in a dry cool place
Packaging	20 KG Pail

IMPORTANT NOTES

1. Thoroughly agitate contents before use.
2. Minimum ambient and substrate temperature is 5°C.
3. Never apply more than 1 kg/m^2 of Pentens T-200^{H} in one single layer.
4. Apply only to clean, sound substrates where surfaces should be well dampened but free of surface water and leaks.

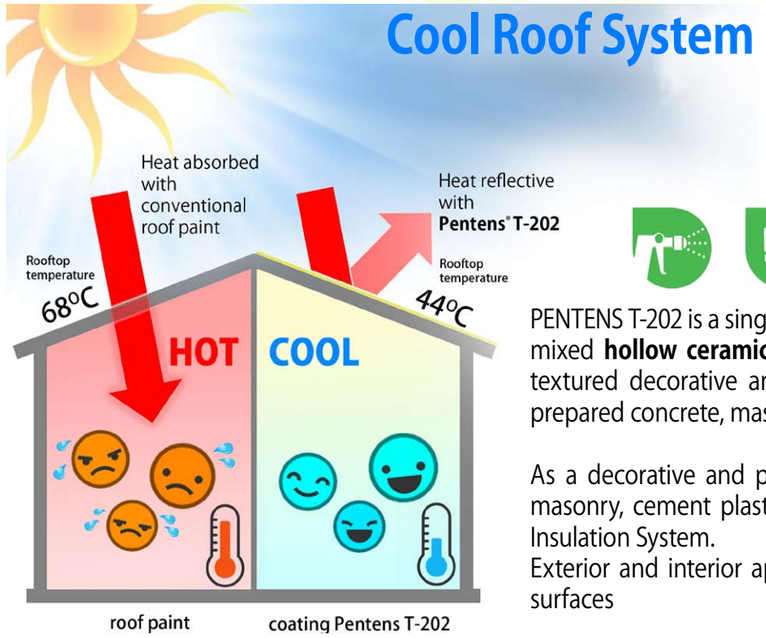
RELATED PRODUCT:

Pentens® T-201
- Acrylic Waterproofing Emulsion

Pentens® L-210 (WP-5)
- Synthetic Rubber Based, Waterproof Thermal Insulation Coating

T-202

Solar Reflective Ceramic Coating



PENTENS T-202 is a single component, water based, ready mixed **hollow ceramic capsules** , acrylic based, coarse textured decorative and protective coating finish over prepared concrete, masonry and steel structures.

As a decorative and protective finish coat of concrete, masonry, cement plaster, stucco and PENTENS Thermal Insulation System.
Exterior and interior applications. Wall, floor, overhead surfaces

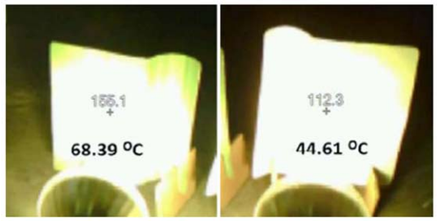
ADVANTAGES:

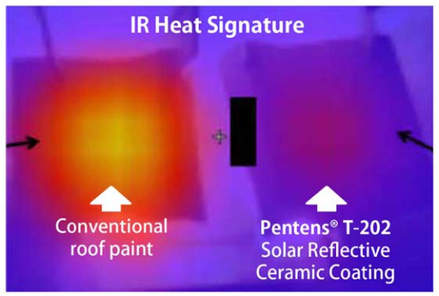
- Ready to use
- Excellent adhesion and durability
- Excellent weather resistance
- Excellent abrasion resistance
- Good impact strength
- Good flexibility
- Freeze-thaw resistant
- Vapor permeable
- Water resistant
- Corrosion resistant
- Easy to maintain

Solar Reflection
SRI > 110 %

Thermal Insulation
Low Coat for Air-Con.

Hi-Tech Material
Hollow Ceramic Capsule





LAB Test, PT. UFON NANO CHEMICAL

SGS Carbon Footprint Verification
PAS 2050:2011

T-305TH

Flex Cementitious Waterproofing Coating

Pentens T-305TH is a cement based waterproofing coating incorporates 2 polymer components. Apply directly to concrete and mortar to prevent water infiltration.

Pentens T-305TH can be used for positive and negative side waterproofing, sealing of hair line cracks and as a protective coating against aggressive chemicals such as carbon dioxide (eg. in concrete repair work), frost and de-icing agents.

PACKING: 10 kg/pail + 25 kg/bag

AREAS OF APPLICATION INCLUDE:

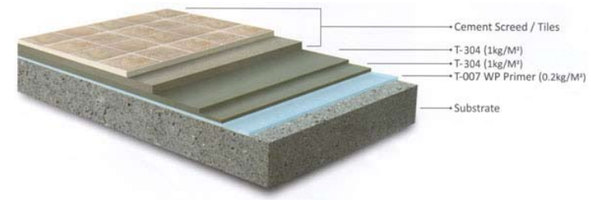
Potable water tanks, Terraces and balconies, RC gutters, Bathroom floors and walls, Basements, Retaining walls, Seawalls

ADVANTAGES:

- Pre-batched and ready for used
- Mixes and applies easily
- Highly workability
- Good adhesion to sound substrates
- Impermeable
- Increased frost and salt resistance
- Resist carbon dioxide penetration
- Non-toxic
- Slightly flexible

Esay Application
Available for Roll

Crack Seal
Excellent Bonding



TECHNICAL & PHYSICAL DATA

Tensile Strength (kgf/cm2) (ASTM D412 (Die C)	8.3
Elongation (%) (ASTM D412 (Die C)	24.30
Tear Strength (kgf/cm) (ASTM D624)	7.20
Hardness (Shore A) (ASTM D2240)	54
100% Modulus of Elasticity (kgf/cm2) (ASTM D412 (Die C))	5.80
Shear Strength (kgf/cm2) (ASTM D1002)	4.70
Water Vapor Transmission of Material i. WVT (g/hxm2)(23oC, 50%RH) - ASTM E96 ii. Permeance (g/sxm2xPa) – Method B	37 1.98 x 10-5
Abrasive Test (g) – Taber CS-17, 1000g, 1000 Cycles (ASTM C501)	0.043
Puncture (kgf)	9
Compressive strength @ 28 days (n/mm2) (ASTM E154)	>40
Packaging	T-305THA: 10kg/pail T-305THB: 25kg/bag

RELATED PRODUCT:

Pentens® T-304 (18 kg/pail + 25 kg/bag)
- High Elastic Cementitious Waterproofing Coating

Pentens® T-305 (5 kg/pail + 25 kg/bag)
- Cementitious Waterproofing Coating

T-308

Crystalline Admixture Waterproofing

PENTENS T-308 is a reactive crystalline type waterproofing material which is formulated by proprietary blends of chemicals (mainly organic and inorganic salts), quartz, sand and cement. PENTENS T-308 is an environmentally friendly and low VOC material. It is an integral waterproofing system that added to batches of concrete during mixing process. The active waterproofing chemicals which react with moisture and free lime in the concrete or cement-based materials, it causes a catalytic reaction that creates long chained complexes a non-soluble crystalline formation which crystallizes in the pores and capillary tracks.

In a long run, under a supersaturation environment inside concrete, PENTENS T-308 initiates crystallization process. When this process takes place, millions of needle-like crystals form and fill the naturally occurring capillary pores and microscopic voids within the concrete. Path for harmful moisture and aggressive chemicals are blocked permanently.

PENTENS T-308 is added to batches of concrete during the mixing process for new construction projects. The high-growth organic component of the product reacts with water and unhydrated particles in concrete to form millions of needle-like crystals. These crystals grow and migrate through the concrete to fill in hair-thin pores and microscopic voids up to 0.4mm that would otherwise serve as passages for harmful moisture.

PENTENS T-308 technology enhances the natural hydration process in concrete, increasing compressive strength over time and dramatically reducing cracking caused by shrinkage. Pentens T-308 is also selfsealing.

TECHNICAL & PHYSICAL DATA

Appearance	Cement powder (grey)
Specific Gravity	1.10 at 20° C
Chloride Contents	Nil
Water Absorption Test	<1.5%
Potable Condition	Complied
Water Permeability	$<2.0 \times 10^{-12}$
Water Permeability	<15mm
Can seal hairline cracks	Up to 0.4 mm
Packaging	25 kg/Bag

DOSAGE RATE

PENTENS T-308: 0.8% - 1.0% by weight of cementitious content.

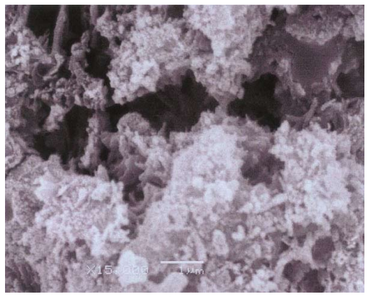
Note: Under certain conditions the dosage rate may be between 2-3% depending on the quantity and type of total cementitious material.

Consult with Pentens Technical Department Representative for assistance in determining the appropriate dosage rate and for further information regarding enhanced chemical resistance, optimum concrete performance, or meeting the specific requirements and conditions of your project.

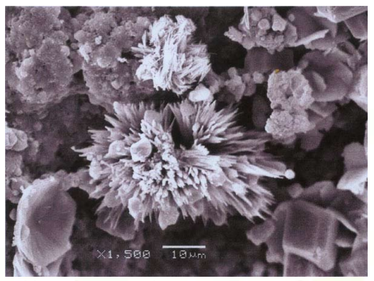
CRYSTALLIZATION GROWTH

The crystallization process consists of two events: nucleation and crystal growth. Nucleation is the step where the solute molecules dispersed in the solvent start to gather to create clusters in the nanometer scale (elevating solute concrete in a small region) is to become stable under the current operating conditions. These stable clusters constitute the nuclei. The clusters need to reach a critical size in order to become stable nuclei. Such critical size is dictated by the operating conditions (temperature, super saturation, irregularities, etc.). It is at the stage of nucleation that the atoms arrange in a defined and periodic manner that defines the crystal structure – note that "crystal structure" is a special term that refers to the internal arrangement of the atoms.

Crystallization growth process in concrete is in theory a continuous process which may last between 7-15 years of the concrete age. Therefore, we anticipate that the crystal growth were at its infancy since that preliminary study will only observe the crystal growth up to 28 days of the concrete age.



Micro Structure Analysis – Untreated Concrete



Micro Structure Analysis – Treated Concrete

WHY CHOOSE PENTENS T-308

- Easy to use – only mixing with concrete.
- It provides significant cost saving because it eliminates labour cost for the application process.
- Integral protection for the ENTIRE concrete.
- Permanent protection even if the surface is damaged.
- Can seal the capillaries and minor shrinkage cracks up to 0.4mm by crystal formation.
- Protection from any direction.
- Time-Saving.
- Low VOC, Non-toxic.
- Environmental friendly. dsfaf

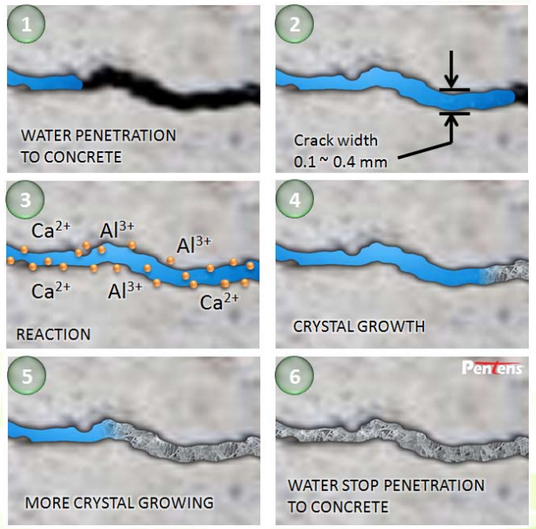
AREAS OF APPLICATION INCLUDE:

- Basement floors and retaining walls
- Concrete flat roof
- Water retaining / excluding structures
- Lift Pits
- Swimming pool

INSTRUCTION FOR USE

Trial mix shall be conducted for concrete intended to utilize PENTENS T-308, to waterproof a particular concrete structure.

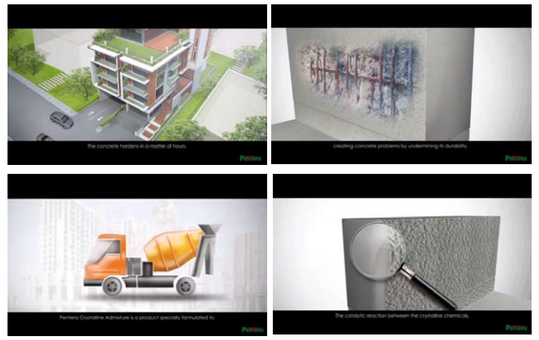
For project site, mix PENTENS T-308 with water to form very thin slurry (e.g.: 25kg of powder mixed with 31.5 liters of water). Pour the required amount of material into the drum of the ready-mix truck. The aggregate, cement and water should be batched and mixed in the plant in accordance with standard practices (taking into account the quantity of water that has already been placed in the ready mixed truck). Mix for at least 5 minutes to ensure even distribution of the PENTENS T-308 throughout the concrete.
short-term strength development. Long term strength is unlikely to be affected. Should segregation of concrete occur, due to excessive increase in workability, the concrete shall not be used.



Note: It is important to obtain a homogeneous mixture of PENTENS T-308 with the concrete. Therefore, do not add dry PENTENS T-308 powder directly to wet concrete as this may cause clumping and thorough dispersion will not occur. The targeted compressive strength of a latest particular grade of concrete shall be complied with BS 5328:1981, or its latest revision. The use of PENTENS T-308 shall be under adequate supervision. For further advice, please contact Pentens Technical Representative.

GREEN LABEL TEST DATA

Heavy Metals : (EPA 3025 / EPA 6010B : ICP)	
a. Cadmium (Cd)	Not Detected
b. Lead (Pd)	Not Detected
c. Total Chromium (Cr)	Not Detected
d. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	1.21
Total Halogenated Organic Solvent (ISO 11890-2) (%)	Not Detected
Total Aromatic Organic Solvent (ISO 11890-2) (%)	Not Detected
Epichlorohydrin (ISO 11890-2) (%)	Not Detected
N-Methyl Pyrrolidinone (ISO 11890-2) (%)	Not Detected
Formaldehyde (High Performance Liquid Chromatography) (%)	Not Detected
Alkyl Phenol Ethoxylate (LCMS-MS) (%)	Not Detected
Flash Point (ASTM D3828-07a) (°C)	> 61



VIDEO AVAILABLE

ON YouTube CHANNEL

Keyword: Pentens T-308

RELATED PRODUCT:

Pentens® T-308M (Coating)
- Crystalline Cementitious Waterproofing Compoun

Pentens® T-308FLEX (Flexible Coating, 2 component)
- Self-Healing Crystalline Waterproofing

T-007

Cement Modifier (Primer)

Pentens T-007, 100% acrylic cement modifier is based on a proven 100% acrylic polymer design to improve the chemical, corrosion, moisture and salt resistance of cement renders. It is superior to more common PVA and SBR based modifiers because of its superior durability and resistance to hydrolysis. It has been specifically formulated for use in highly alkaline cement environments. Cement mortars based on Pentens T-007 will adhere to a wide range of materials such as metals, timber, insulation foams as well as new and old concrete.

Not only used as the waterproofing primer, but also used as an additive in cement mortars, renders, patching / repair work, GRC panels, and waterproof cementitious coatings.

AREAS OF APPLICATION INCLUDE:

- As a primer of water-based waterproofing / flooring works
- Repairs to drinking water and waste water concrete structures
- Repairs and resurfacing of factory floors, driveways
- New and old concrete bonding agent
- Angle fillets
- Multi-purpose adhesive

ADVANTAGES:

- Increases durability of concrete and mortars
- Waterproof
- Suitable for use in contact with drinking water
- Resists acids, alkalis, fats & oils
- Increases abrasion resistance
- Increase tensile, flexural, impact & compressive strengths
- Can be applied in thin coats
- Excellent UV durability
- Promotes adhesion superior to PVA's & SBR's

SPECIFICATIONS FOR MIX RECOMMENDATION

Primer (0.3kg/m2)
Pentens T-007: 1 L
Water: 3 L

Slurry coating (1mm)
Portland cement: 2 kg
Fine sand (AG10): 1 kg
Pentens T-007N: 2 L

Waterproof render (3~5mm)
Silica sand (AG3): 135 kg
Portland cement: 45 kg
Pentens T-007N: 10 L
Water: 20 L

Light duty flooring screed (3~5mm)
Flooring sand: 135 kg
Portland cement: 45 kg
Pentens T-007N: 10 L
Water: 20 L

Heavy duty granolithic topping (6~30mm)
Granite chips (3mm): 150 kg
Flooring sand: 150 kg
Portland cement: 100 kg
Pentens T-007N: 9 L
Water: 72 L

TECHNICAL & PHYSICAL DATA

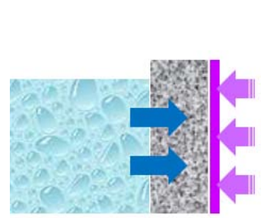
Form	Emulsion
Appearance	Milky
Density (kg/ltr)	1.01
Solid Content (%)	> 45
Viscosity (Brookfield), (cP)	3,000 (approx.)
Thinner	Water
Self Life	At least 1 year when unopened and damaged
Storage condition	Store in a dry cool place
Packaging	20 kg pail

Dr. WALL

Efflorescence Treatment Paint

PENTENS DR. WALL is a rich combination of organic and inorganic chemical composition plus specific modification of quartz sand, cement and concrete. A special formula design for the construction surface layer (paint layer).

PENTENS DR. WALL can be used in concrete or cement catalytic substrate. It effectively suppresses the efflorescence.



ADVANTAGES:

- Strong surface contact power with special crystal generation material.
- Provide waterproofing from negative side.
- Easy application by coating.

Remediate construction surface, remove debris from the structure completely.

The application area need to be the size double of the efflorescence in order to get the best result.

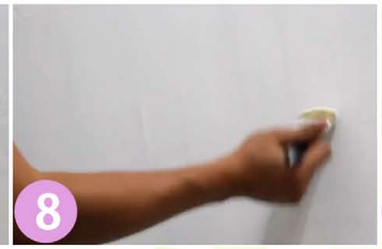
Clean the dust and dirt by brush.

Using wet towel or brush to clean and apply clean water to wetting the surface.

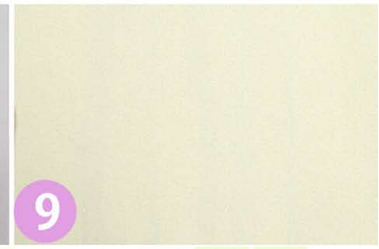
Mix Dr. Wall and Clean water 1:1 thoroughly, then apply 1st coating, repeat brush with all details.

Waiting 4~5hrs, apply 2nd coat.

Reapeat coating until all area was covered by Dr. Wall.



After dry it for more than 8 hours, 1-3 days observation needed to determine whether more



Apply to soil painting if needed.

Q-SET

Plasticising Acclerator

PENTENS Q-SET is a liquid form cement admixture and also is a ready to use. PENTENS Q-SET only addition of cement/concrete to produce an ultra fast setting mortar. In addition, it helps to reduce shrinkage, improve workability of the mixtures, resulting in increase early strength of the concrete and also allow the water/cement ratio to be reduced.

APPLICATION

Add PENTENS Q-SET to the gauging water prior to addition to portland (standard) cement mix

PENTENS Q-SET = 500 ml, Cement = 50 kg
(*Should dispersed in water before added to the cement or concrete.)

ADVANTAGES:

- Increase early tensile strength
- Reduces water to cement ratio
- Improve workability

LATEX-108

Multi-function Water-resistant Bonding Agent

Pentens Latex-108 is an one-component, acrylic based liquid resin, mix with normal Portland cement or white cement, used as flexible adhesive, patching mortar, base coat and the water-resistant.

Pentens Latex-108 can only apply to sound, clean, dry, well prepared, frost-free surfaces. After mixing with cement, it may be used:

- As a base coat for floor screeds
- As a flexible adhesive for tiling, glazing,
- As a patching mortar, concrete repair mortars
- As a abrasion resistant linings

ADVANTAGES:

- Easy to use, only mix with cement on the job site
- Excellent adhesion and durability
- Crack resistance
- Good flexural strength
- Good impact strength
- Freeze-thaw resistance
- Vapor permeable
- Low alkalinity
- Excellent water resistance

Bonding Strength on concrete (7 days) = 10 kgf/cm2

W-015

Akali Resistant Fiber Glass Mesh

Unit Weight: 55 g/m² **Tensile Strength:** 440~500 N/50mm **Packing:** 1mx100m

T-250

Colorful Wear-resistant Surface Coating

PENTENS T-250 is a specially formulated mineral based coating system of inorganic nature for both exterior and interior use. As a decorative and protective finish, PENTENS T-250 has outstanding durability. When applied correctly to a suitable backing, it will neither flake nor peel. What makes PENTENS T-250 durable is an acrylic-based resin and selected pigments to which are added mica, hollow ceramics, and fine hard aggregates, to ensure long life and special anti-slip properties. PENTENS T-250 also contains a biocide which combats bacterial and fungus growth.

USES

PENTENS T-250 is suitable for application on to the following surfaces:

- Any indoor and outdoor ball court for tennis, basketball, badminton, hand ball, volleyball, squash, skate, in-line skate… etc.
- Dust-proof and wear-resistance floor of warehouse, parking yard.
- Metal roof for reducing heat.
- Protective coating for waterproofing materials.

ADVANTAGES

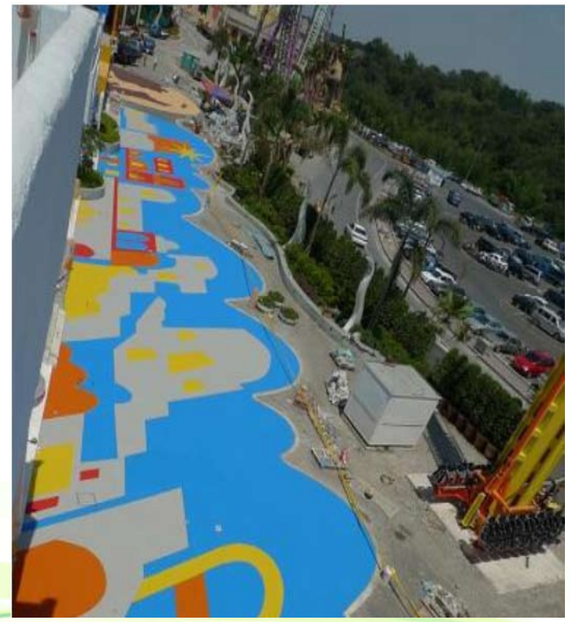
- Wear-resistance.
- Heat resistance – thick application.
- Vapor barrier.
- Resistance to pollution attack - ideal for industrial and coastal areas.
- Good mechanical and chemical stability.
- Water based, environment friendly.
- Air and UV protection.
- Non-toxic.
- Prevention of ravages of acid rain, freeze-thaw, cycles, sunlight, bacteria and fungus.

SUBSTRATE TYPES

Provide good bonding to:

- Concrete, cement mortar, sand renderings
- Asphalt concrete
- Asbestos cement

ITF classified court pace 2 MEDIUM-SLOW



PU-300

One Part Polyurethane Grouting

Concrete often cracks. It is inevitably recognized and experienced. Concrete construction requires construction joints and cold joints. All of these unwanted openings in concrete structures may cause very serious problems of water leakage. Most of these problems can be economically solved by utilizing the Pentens High Pressure Injection Systems. Pentens PU-300 one part polyurethane grouting is 100% solvent free and 100% solids. Its have been proven to accomplish two major purposes: one is to stop water leakage permanently, and the other is to maintain or even restore design strength. Slabs on grade, construction or control joints, parking garages, manholes, tanks, dams, and many other structures can now be fixed permanently. Pentens PU-300 is approved for drinking water contact.

Product	PU-300
Component	One
Solubility in water	Hydrophobic
Induction Time (20°C / 68°F)	15 sec
Gel Time (20°C / 68°F)	60 sec
Elongation at break (%) (ASTM D 412-98)	> 20

HP-023

High Pressure Crack Injection Systems & Equipment

Max. Pressure: 10,000 psi
Flow: 0.74 liters/minute
Voltage: 110V / 220V
Weight: 9 kgs

Pentens continuously develops and refines Crack Injection Systems and recommendations. High Pressure Polyurethane is an important system used by thousands of applicators. Basic product knowledge helps users to reduce possible problems. The right injection technology should be identified before the project is started.

Epoxy injection resins usually "fail" in stopping active water leakage because of their slow reaction time and inability to bond to wet surfaces; this failure is resolved with the Pentens Polyurethane System.

The actively flowing water will be stopped by injecting Pentens PU-108, PU-168, PU-300 which reacts quickly with the water to form an expanding foam. The final product is a semi-rigid or flexible closed-cell and strong bonding seal. To control the speed of the chemical reaction a certain percentage of a accelerator is added. The amount of accelerator added allows to control the gel times between a few seconds and several minutes

PACKERS

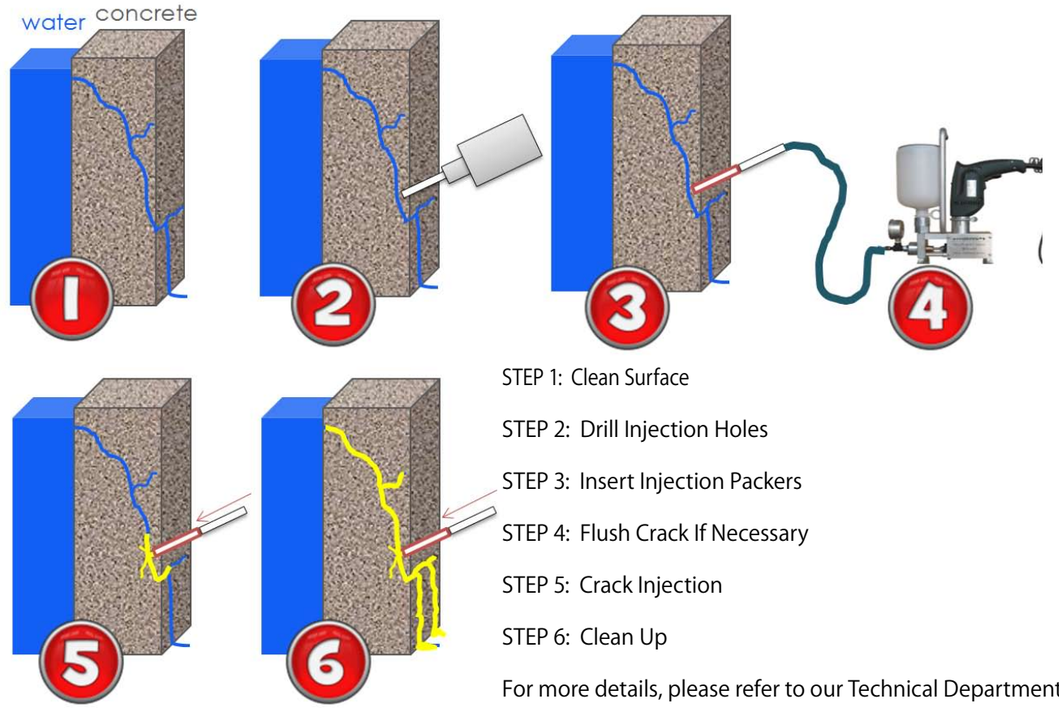
& PARTS

- Packers (8cm, 10cm)

- HP Injection Hose
- HP Injection Valve
- Grease Head
- Grease Head Rubber
- Alex Center

High pressure injection packer
10 cm length / 13 mm diameter HP packer
8 cm length / 10 mm diameter HP packer

PU-INJECTION METHOD



STEP 1: Clean Surface

STEP 2: Drill Injection Holes

STEP 3: Insert Injection Packers

STEP 4: Flush Crack If Necessary

STEP 5: Crack Injection

STEP 6: Clean Up

For more details, please refer to our Technical Department.

Before Grouting Job:

Make sure have no residue inside the plastic container before use

Fill in the PU Foam

Check whether the drill machine is fix with the sleeves

Starting , open the valve and pump out all the air from the pressure pipe

After the PU foam pump out, close the valve and check the machine pressure with the button clicking.

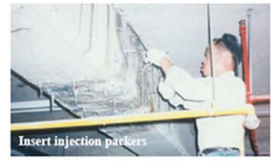
Cleaning:

Fill the cleaning Thinner/engine oil to the plastic container

Switch on the machine and spray the thinner/engine oil inside the plastic container . Recycle the thinner within 2~3 minutes.

Pull out the usage thinner/engine oil and fill in the new thinner.

Redo the thinner/engine oil cleaning work within 1~2 minutes. After cleaning keep storage the machine.



EPOXY PRODUCTS

INDUSTRIAL FLOORING MATERIALS & SOLUTIONS

PRODUCTION AREA



FREEZER / FOOD / CHEMICAL PLANTS


CLEAN ROOM / TANK / SEALER



LABS / HOSPITALS / CONTROL ROOMS



CAR PARK FLOOR

SPEC. & APPLICATION

We welcome your enquiries, regarding any industrial flooring issues.

Our technical support team is always ready to assist you with all your questions

1. Contact us:

For industrial flooring, you might consider of:

a) Operation requirements like :
- Mechanical exposure - Loading, Impact, Abrision and Traffic ...
- Chemical resistant - Greases, Oil, Alkalis, Acids, and Solvent ..
- Heat resistant, Steam, Cold frost and UV resistant ..
- Easy clean, Easy repair, sound-deadening and damping.
- Safety factor - Anti slip, Non-Flammable and low VOC.
- Design, Color and surface textured.

b) Substrate type and preparation.

c) Application area and budget need.

2. Get your design layout, quotation materials or application offer with Pentens certify applicators

Design example:

~ 0.3 mm 2 x **E-620**
~ 0.5 mm 1 x **E-621**
1 mm 1 x **E-10** with
300 g/m² **fiberglass mat**

Features and Benefits:
- Solvent free, non-flammable
- Extremely low VOCs
- Good chemical resistance

~ 0.6 mm 2 x **E-501LN**
~ 0.5 mm 1 x **E-621**
1 mm 1 x **E-10** with
300 g/m² **fiberglass mat**

Features and Benefits:
- Solvent free, non-flammable
- Extremely low VOCs
- High chemical resistance

~ 0.6 mm 2 x **E-610CR**
~ 0.5 mm 1 x **E-621**
1 mm 1 x **E-10** with
300 g/m² **fiberglass mat**

Features and Benefits:
- Solvent free, non-flammable
- Extremely low VOCs
- Excellent chemical resistance

Pentens Industrial Flooring Products:

E-008
Solvent Free Epoxy Primer / Bonding Agent (18+9kg)

E-10
Water-dispersed two-component epoxy resin (18+18kg)

E-500
Solvent-free, Low Viscosity Epoxy Resin (15+5kg)

E-501 / E-501S
Solvent Free Epoxy Resin for Mortar Floor (18+9kg)

E-501LN
Tank Lining Epoxy coating (18+9kg) Clear, (22.5+9kg) Pigmented

E-500SE
Self-emulsified, Solvent-soluble, Hydrophilic Epoxy Resin (15+5kg)

E-502
Solvent Free Epoxy Resin for Mortar Floor (18+9kg)

E-60J
Epoxy Bonding Adhesiv (4+2kg)

E-601
Solvent Free, Self-Leveling Epoxy Top Coat (20+5kg)

E-603
Solvent Based, High Performance Epoxy Top Coat (20+5kg)

E-620F
Water-based Epoxy Coating (20+2kg)

E-610CR
High Performance Chemical Resistant Epoxy Resin(12.5+5kg)

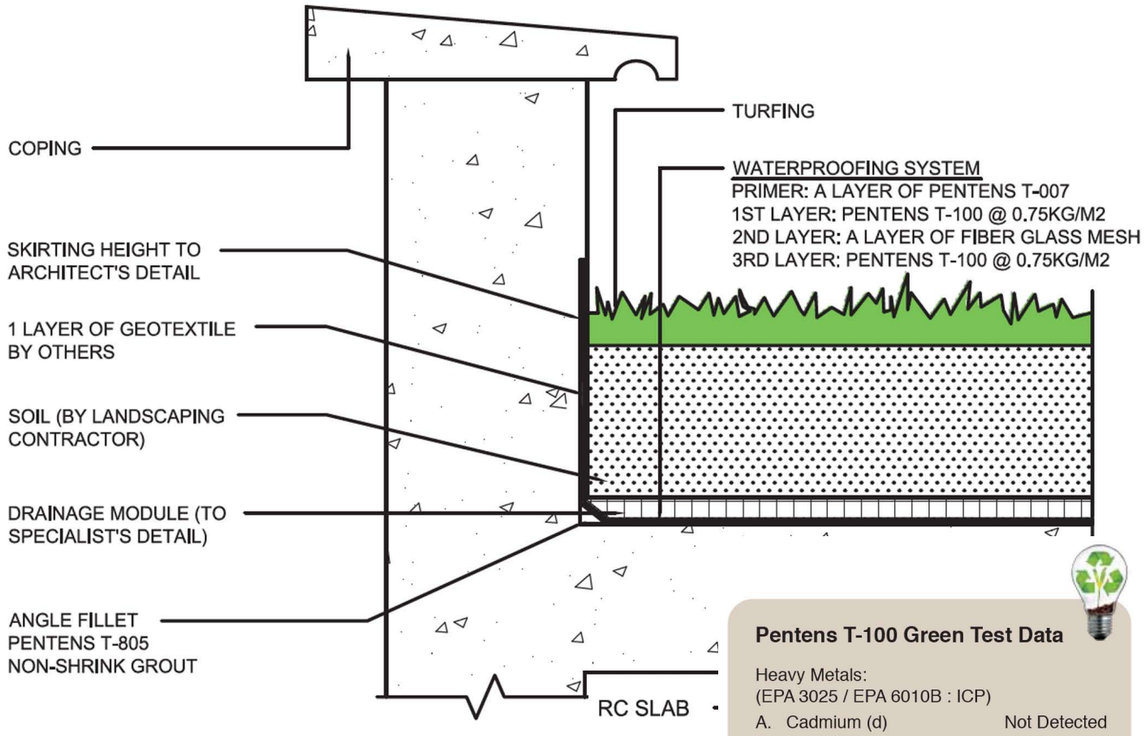
ECO-600CR
Epoxy Clear Coat (15+5kg)

T-303
Moisture Barrier Coating (10+25kg)

... and more

GREEN WATERPROOFING SYSTEM

GREEN ROOF



A green roof system is the roof of a building that is partially or completely covered with vegetation and a growing medium planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems. PENTENS T-100 is a water based polyurethane membrane which is suitable for green roof system with its high elongation that can improve waterproofing performance.

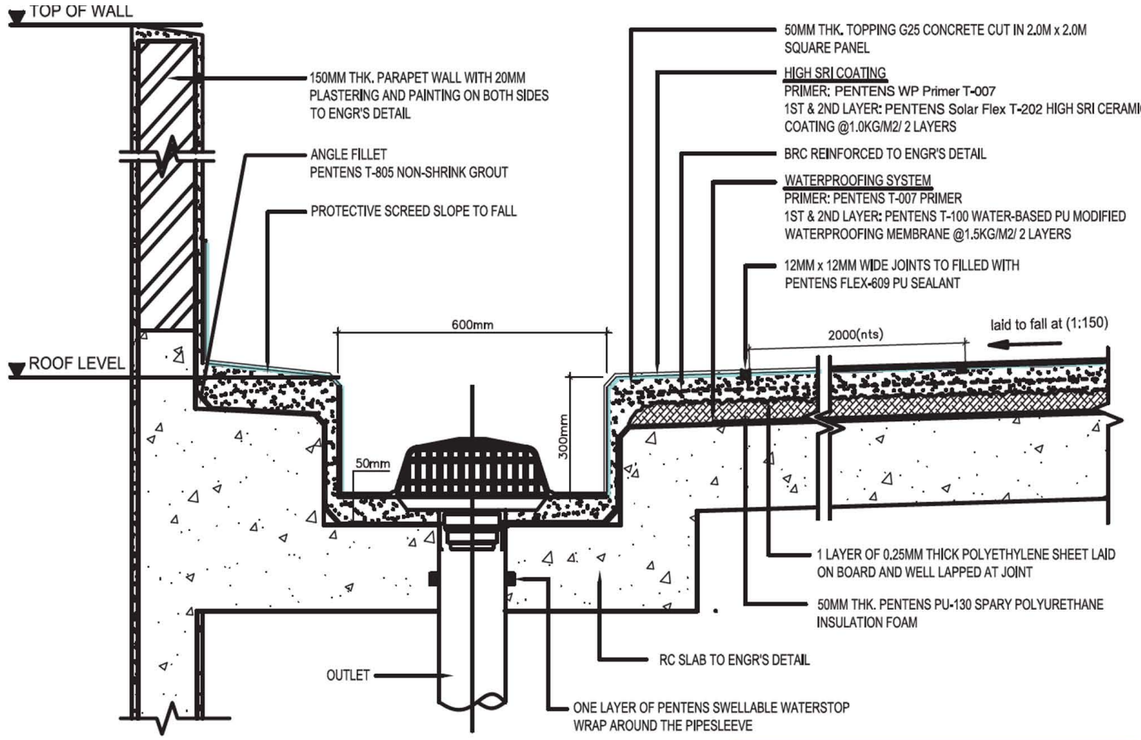
Pentens T-100 Green Test Data

Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
A. Cadmium (d)	Not Detected
B. Lead (Pd)	Not Detected
C. Total Chromium (Cr)	Not Detected
D. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	0.53
Total Halogenated Organic Solvent (ISO 11890-2) (%)	Not Detected
Total Aromatic Organic Solvent (ISO 11890-2) (%)	Not Detected
Epichlorohydrin (ISO 11890-2) (%)	Not Detected
N-Methyl Pyrrolidinone (ISO 11890-2) (%)	Not Detected
Formaldehyde (High Performance Liquid Chromatography) (%)	Not Detected
Alkyl Phenol Ethoxylate (LCMS-MS) (%)	Not Detected
Flash Point (ASTM D3828-07a) (°C)	>61

Environmentally friendly product

GREEN WATERPROOFING SYSTEM

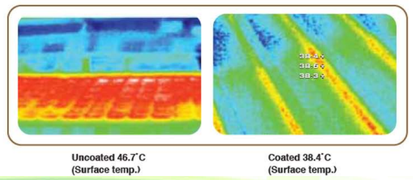
COOL ROOF



Cool roof is a roof that can deliver high solar reflectance as well as high thermal emittance. Cool roof system provides a GREEN alternative energy and efficient solution to your insulation, roofing and waterproofing needs. Spray Polyurethane Foam Pentens PU-130 uses to reduce thermal conductive heat transfer and its air barrier properties helps reduce convective heat transfer; finished layer Pentens Solar Flex T-202 Ceramic Coating with solar reflectance Index (SRI) 110.

Pentens Solar Flex T-202 Green Test Data

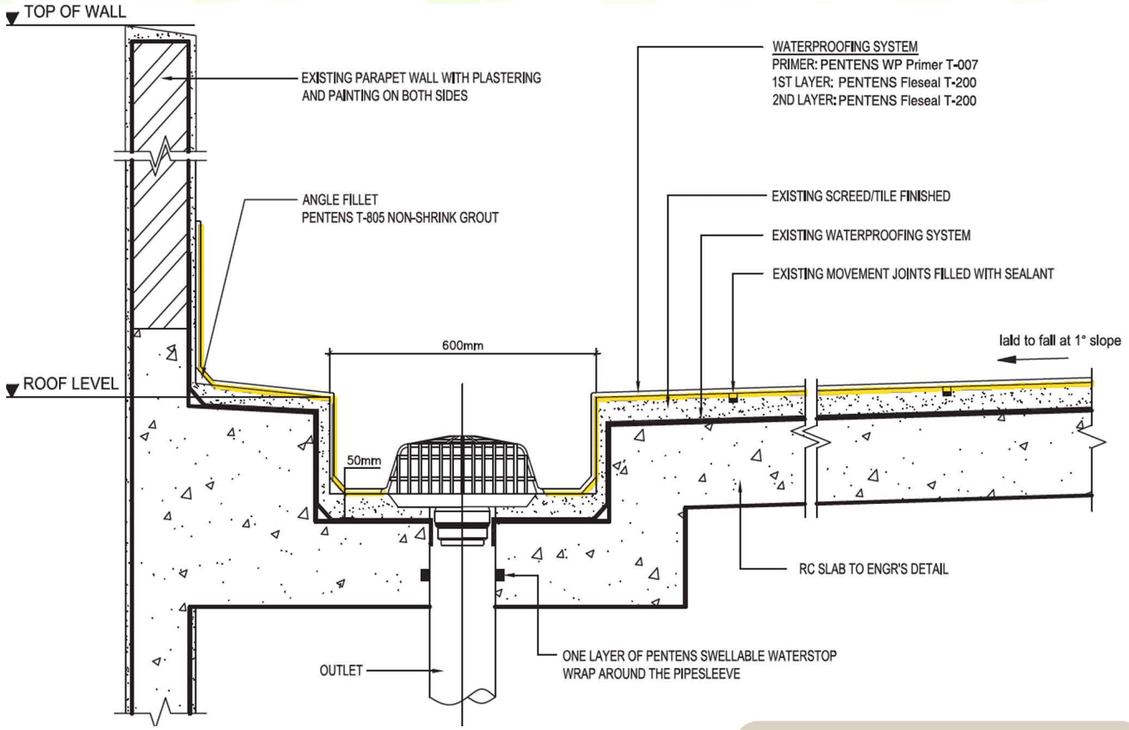
Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
A. Cadmium (d)	Not Detected
B. Lead (Pd)	Not Detected
C. Total Chromium (Cr)	Not Detected
D. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	3.53



Environmentally friendly product

GREEN WATERPROOFING SYSTEM

RE-ROOF



PENTENS re-roof system has been designed to provide a green, toughness and long term durability with the waterproofing of existing roof. PENTENS Fleseal T-200H UV resistant elastomeric PU waterproofing coating is an ideal choice of waterproofing coating for re-roof system. With the fast set nature, this system can help to save time with the ability to return substrate to service in minutes.

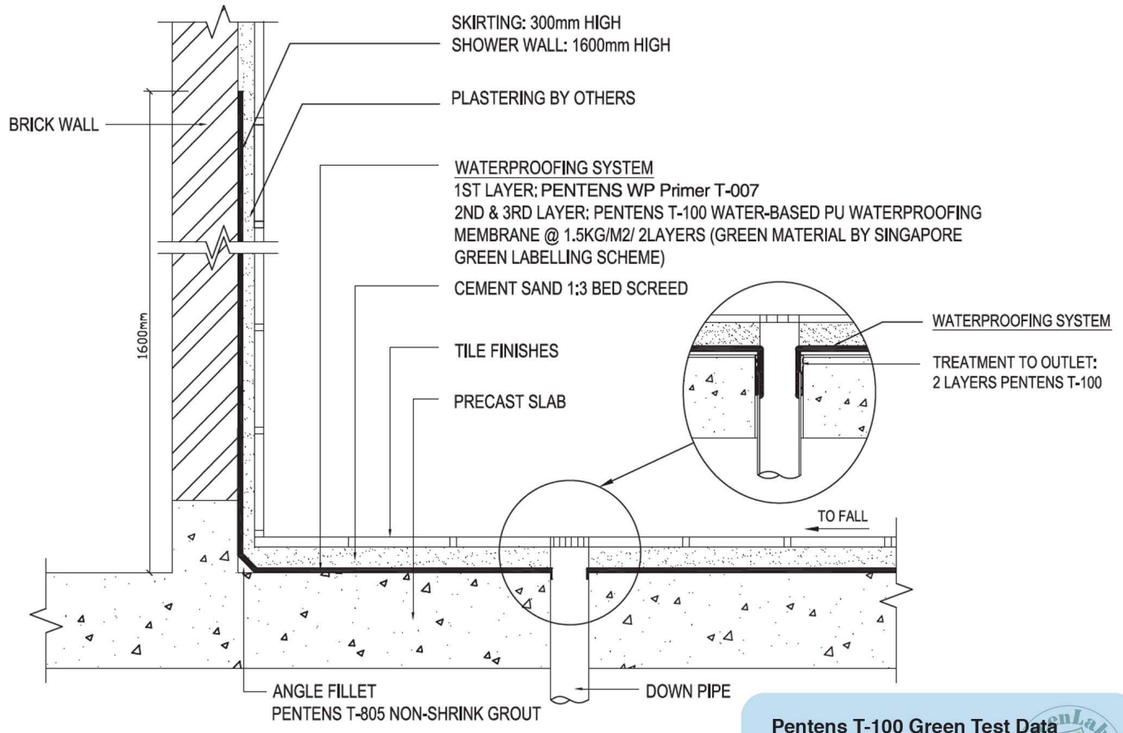
Pentens Fleseal T-200 Green Test Data

Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
A. Cadmium (d)	Not Detected
B. Lead (Pd)	Not Detected
C. Total Chromium (Cr)	Not Detected
D. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	10.19

Environmentally friendly product

GREEN WATERPROOFING SYSTEM

TOILET / BATHROOM



Waterproofing in toilets is critical in the prevention of seepage to the concrete. The consequences of seepage include the hassle and inconvenience to the daily life, degradation of structural integrity of the concrete slab and structures, growth of mold and mildew, and deterioration in indoor air quality due to increase dampness. Pentens T-100 provide a better water and vapour proof in complicating application surface compare to membrane-type and ensure better integrity between applied surfaces and waterproofing coating.

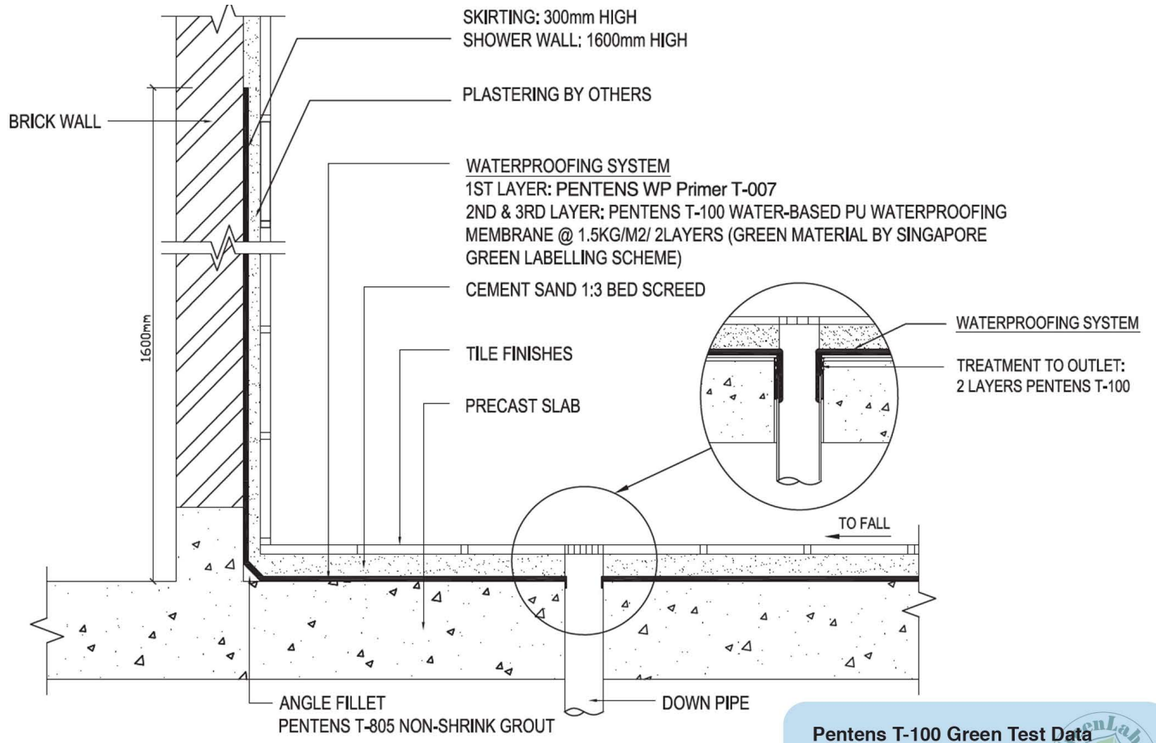
Pentens T-100 Green Test Data

Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
A. Cadmium (d)	Not Detected
B. Lead (Pd)	Not Detected
C. Total Chromium (Cr)	Not Detected
D. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	0.53

Environmentally friendly product

GREEN WATERPROOFING SYSTEM

BALCONY, KITCHEN & YARD



Balcony, kitchen and yard is the perfect addition to any home, so we need to make sure that area is properly waterproofed in order to ensure that there is no damage. Pentens T-100 cementitious waterproofing is the most preferred type of waterproofing for yard, balcony and kitchen. Cementitious waterproofing uses a cement based compound that has special additives and is mixed with water and liquid bonding agents in order to give a waterproof coating. The mix is applied in slurry form.

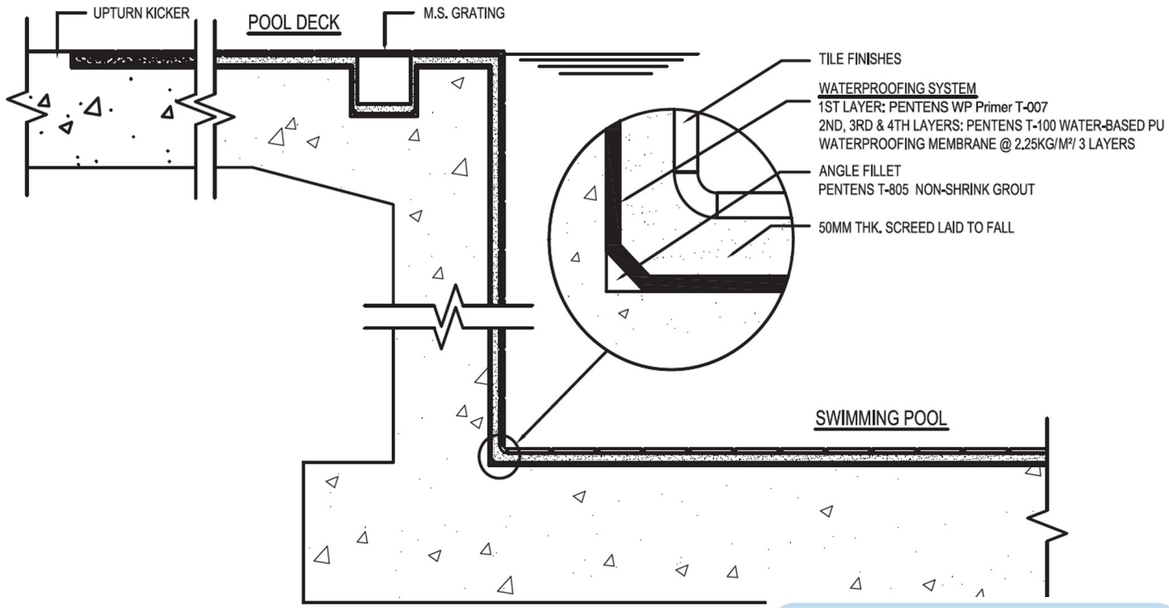
Pentens T-100 Green Test Data

Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
A. Cadmium (d)	Not Detected
B. Lead (Pd)	Not Detected
C. Total Chromium (Cr)	Not Detected
D. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	0.53

Environmentally friendly product

GREEN WATERPROOFING SYSTEM

SWIMMING POOL, POND



Swimming pools are constantly subject to water pressure. The waterproofing also needs to be able to cope with the pool chemicals. If not properly waterproofed, it will suffer from water damage such as cracking and aking, and it will also be damaged by the pool chemicals used. Pentens T-100 waterproofing is the most preferred type of waterproofing for swimming pools. Pentens T-100 is a single component which is newly developed polymer of MMA, natural rubber, and polyurethane combines with the reaction with asphalt and then being modified and further emulsified to form elastic waterproof membrane.

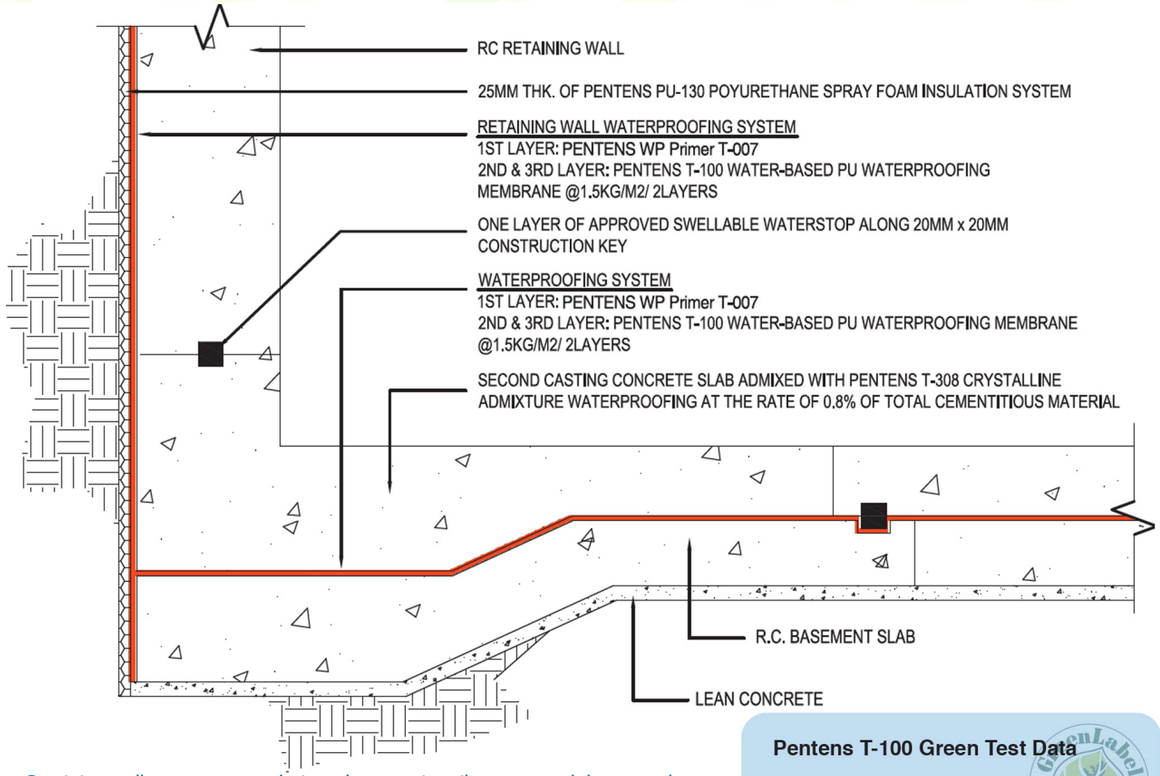
Pentens T-100 Green Test Data

Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
A. Cadmium (d)	Not Detected
B. Lead (Pd)	Not Detected
C. Total Chromium (Cr)	Not Detected
D. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	0.53

Environmentally friendly product

GREEN WATERPROOFING SYSTEM

BASEMENT, RETAINING WALL



Retaining walls are structures designed to restrain soil to unnatural slopes, so they are often made in concrete to make them more durable or long lasting. These retaining walls can easily get soaked in water during the rainy seasons, causing the formation of mold. Proper waterproofing system must be done to prevent water from seeping into the walls and compromising its structure and finish. The best possible solution to fully waterproofing retaining walls is using PENTENS T-100 Water-based PU Waterproofing Membrane. PENTENS T-100 is seamless and will bond to most construction surfaces, it is protected at the time of backfilling with the correct protection boards.

Pentens T-100 Green Test Data

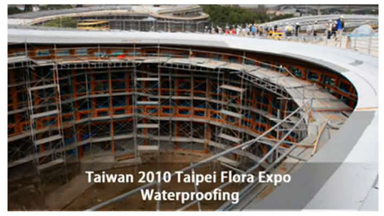
Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
A. Cadmium (d)	Not Detected
B. Lead (Pd)	Not Detected
C. Total Chromium (Cr)	Not Detected
D. Mercury (Hg)	Not Detected
Volatile Organic Compounds (ISO 11890-2) (g/L)	0.53



Environmentally friendly product

REFERENCE

Taiwan, Malaysia, Thailand, Vietnam, Myanmar


Taiwan 2010 Taipei Flora Expo Waterproofing


Taiwan Kaohsiung Dream Mall Waterproofing


Taiwan Lanyang Museum Waterproofing, Flooring


Taiwan Taoyuan Rainbow Bridge Waterproofing


Taiwan Taipei World Trade Center Waterproofing


Taiwan Taipei MRT Epoxy Flooring


Taiwan Taipei 101 Office Epoxy Flooring


TaiwanTaiwan High Speed Rail Paints and Coatings


Malaysia Kuala Lumpur Petronas Office Raised Floor


Malaysia Kuala Lumpur 1Mont Kiara Spray Polyurethane Insulation Foam

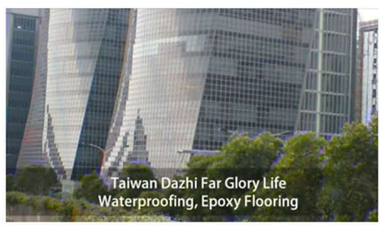

Thailand Ajinomoto Factory Spray Polyurea Waterproofing

Malaysia MAS Cargo Spray Polyurea Waterproofing

Vietnam Vedan Factory Spray Polyurea Waterproofing, Epoxy Tank Lining


Myanmar Aircraft maintenance shop Epoxy Flooring


Taiwan Kaohsiung EDA World Waterproofing, Chromatic Pavement


Taiwan Dazhi Far Glory Life Waterproofing, Epoxy Flooring


Taiwan Hualien Farglory Ocean Park Waterproofing, Epoxy Flooring

Malaysia Selangor Posco Malaysia Epoxy Flooring

REFERENCE

Indonesia

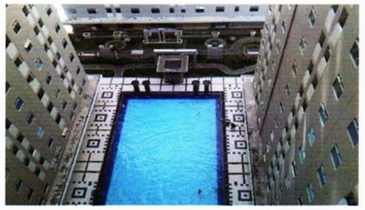
MALL OF INDONESIA
YEAR: 2008
AREA: 5,000M2
MAIN CONTRACTOR: MAKMUR JAYA SERASI, PT.

ASCOTT CIPUTRA WORLD
YEAR: 2013
AREA: 20,000M2
MAIN CONTRACTOR: PT CIPUTRA ADIGRAHA

BUDDHA TZU CHI INDONESIA
YEAR: 2011
AREA: 6,000M2
MAIN CONTRACTOR: PULAU INTAN

HOTEL GRAND ZURI
YEAR: 2010
AREA: 2,300M2
MAIN CONTRACTOR: TRIPUTRA HOTEL INDONESIA, PT.

HOTEL PREMIER
YEAR: 2010
AREA: 1,100M2
MAIN CONTRACTOR: HAMIDI MARKOM



GADING NIAS APARTMENT
YEAR: 2009
AREA: 4,800M2
MAIN CONTRACTOR: PP PERSERO, PT.

SEKOLAH TARAKANITA
YEAR: 2010
AREA: 1,200M2
MAIN CONTRACTOR: KWINTO VIRATUS, PT.

MENARA 165
YEAR: 2011
AREA: 1,100M2
MAIN CONTRACTOR: PP PERSERO, PT.

JKT EYE CENTER
YEAR: 2011
AREA: 2,000M2

MANHATAN SQUARE
YEAR: 2013
AREA: 1,100M2
MAIN CONTRACTOR: WASKITA KARYA

HOTEL AMARIS, BANDUNG
YEAR: 2010
AREA: 1,000M2
MAIN CONTRACTOR: MITRA BANGUN PRIMA

QUEST HOTEL, BALI
YEAR: 2011
AREA: 3,500M2

REFERENCE

Indonesia

NO	PROYEK	KONTRACTOR	TAHUN
1	DIRJEN DIKTI	PP	2006
2	SOHO SLIPI	WISMA BENHILL	2007
3	KAMOGAWA RESTAURANT	KAJIMA INDONESIA	2007
4	STUDIO TRANS MAKASAR	LINGGAR DJITI WIGENA	2007
5	SPBU PERTAMINA	DELTA BAJA MASA	2007
6	CARREFOUR CAKUNG	EKAMITRA TELENTAMA	2007
7	BMG	PP	2007
8	GKN SEMARANG	KARYA GRAHA UNGGUL AGUNG	2007
9	GKN BANDUNG	KARYA GRAHA UNGGUL AGUNG	2008
10	RUKO ARTHA LOKA - BSD	PROBUILDER	2007
11	JL. GURUMUKTI - KUNINGAN	WISMA BENHILL	2007
12	SEKOLAH ST. PAULUS - SUNTER	KWINTO VIRATUS	2007
13	VILLA PRMATA GADING BLOK C	BP. HANDOYO	2007
14	KEMCHICK PASIFIC PLACE	ZENTHA MAHARDIKA	2007
15	HOTEL BANDUNG	TATAMULIA	2007
16	HITACHI INDONESIA	KAJIMA INDONESIA	2008
17	KANAAN GLOBAL SCHOOL	SBIP	2008
18	BPK PENABUR BEKASI	ERKAWIDURI	2008
19	SUDIRMAN SETIABUDI TOWER	TATA-CIPTA JO	2008
20	PALM BEACH ANCOL	TUNAS JAYA SANUR	2008
21	RUKO GRAHA MAS FATMAWATI	SUKANDA MULIA	2008
22	FX SUDIRMAN	ANEKA BINA LESTARI	2008
23	SEKOLAH KANAAN KEMAYORAN	YAYASAN KANAN	2009
24	HOTEL SANTIKA BOGOR	PULAU INTAN. PT	2009
25	GRAND ZURI CIKARANG	GRAND ZURI	2009
26	MASJID AL-IKHLAS	YAYASAN MASJID AL-IKHLAS	2009
27	VILA KEMAH GEDE CIPANAS	KWINTO VIRATUS. PT	2009
28	PASIR PUTIH ANCOL	CIPTA AREA LESTARI ASRI	2009
29	WISMA AMARIS BANDUNG	LENTERA. PT	2010
30	BCA LUBUK LINGGAU	EKAMITRA	2010
31	CARREFOUR MOJOKERTO	EKAMITRA	2010
32	LAPIAZA	CRESCENDO	2010
33	HOTEL SULTAN	SURYA CENDRA PURAMEGAH	2010
34	MC. DONALD ARTHA GADING	WKC. PT	2010
35	STC SEMANGGI	APARTEMENT STS	2010
36	VILLA ANGSA GUNUNG GELIS	KWINTO VITARUS	2010
37	GEREJA ARNOLDUS	KWINTO VITARUS	2010

REFERENCE

Indonesia

NO	PROYEK	KONTRACTOR	TAHUN
38	DAIKI ALUMUNIUM INDUSTRY	KAJIMA INDONESIA	2011
39	DJKN	PP	2011
40	PLAZA SIMATUPANG	KSO-TATA KALIRAYA	2011
41	HOTEL CANDRA TANGERANG	GIGA KONSTRUKSI. PT	2011
42	VILLA ARTHA GADING	TATAMULIA NUSANTARA INDAH	2011
43	RS GRAHA PERMATA IBU	PERMATA HUSADA SAKTI	2011
44	NIFFARO	HUTAMA KARYA	2011
45	MESS ANTAM CIBULAN	PP	2011
46	OTTO PHARMACEUTICAL	OTTO PHARMACEUTICAL	2011
47	EMC DAHANA	PP	2011
48	VILLA MUTIE KIRANA	MERINCO CATUR DAYA	2011
49	RESIDENCE ONE	HUNI PERSADA	2011
50	EXIM MELATI	NUSA RAYA CIPTA	2011
51	KOMATSU INDONESIA	KAJIMA INDONESIA	2012
52	BASURA CITY	PROBUILDER	2012
53	KJI PLAZA VILLAGE MALL	SURYABANGUN INDOPERKASA PT	2012
54	BINA BANGSA PIK	KWINTO VIRATUS	2012
55	CIBUBUR MALL	PROBUILDER	2012
56	GRANDZURI PADANG	BPK. HAMIDI MARKOM	2012
57	BEST WESTERN MOI	KANG PT	2012
58	WISMA MULIA WEST	MULIA KARYA GEMILANG. PT	2012
59	TAMAN GOLF LIPPO KARAWACI	CELIO MITRA GRAHA	2012
60	OPASARAYA JM LUBUK LINGGAU	JAYA MASAWAN	2012
61	HOTEL PRAYANA	PRIMA CIPTA KARYA	2012
62	HOTEL SANTIKA BINTARO	PT CATUR BANGUN MANDIRI	2012
63	SAWANGAN GOLF HOTEL	PT KRISTEF MEGA SEJAHTERA	2012
64	METRO PARK KEDOYA	KANG PT	2012
65	TANTRI ABENG UNIVERSITY	PT MITRA GUSNITA NANDA	2012
66	HOTEL PRAYANA BSD	PT PRIMA CIPTA MANDIRI	2013
67	GRAND LULEY MANADO	PT BINTANG SEWU	2013
68	KANTOR AIRMAS	PT AIRMAS	2013
69	SHOWROOM MILENIA	BPK JOHANES	2013
70	TAMAN TEKNO	DELTA BAJA MASA	2013
71	HOTEL GRAND ZURI MUARA ENIM	PT SATRIA ARTHA NIAGA	2013
72	JUNGLE LAND SENTUL	SBIP PT	2013
73	WISMA MULIA WEST	MULIA KARYA GEMILANG. PT	2013
		*** PROJECT REFENCE UPDATE TILL MID OF 2013	

REFERENCE

Indonesia (Recent Project)

Project GOLD COAST / PULAUINTAN 2015

Project TJIWI KIMIA / PRAMBANAN DWIPAKA 2015

Project EDUCITY / PP 2015

The LANGHAM Residence, District 8 / ACSET 2015

THE BALAVA HOTEL - MALANG, SANTIKTA - BANYUWANGI, TERMINAL DZAMRUD - PELINDO III, IBIS STYLE - JEMURSARI
BANK DRNAMON - SURABAYA, MUSEUM MERAPI - YOGYAKARTA, TENNIS COURT - PERTAMINA, ... and more

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