CROCODILE **Total Home Protection**



The basic information for the user.

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U.S.A. Standard from the Crocodile Family

Jorakay Corporation Co., Ltd.

CROCODILE
Innovation for Your Family's Happiness

CROCODILE **Total Home Protection**

SWIMMING POOL

PROTECT SWIMMING POOL

Innovation for Your Family's Happiness



SWIMMING POOL

“ SWIMMING POOL ”

Will stay beautiful and keep you happy for long if it has :

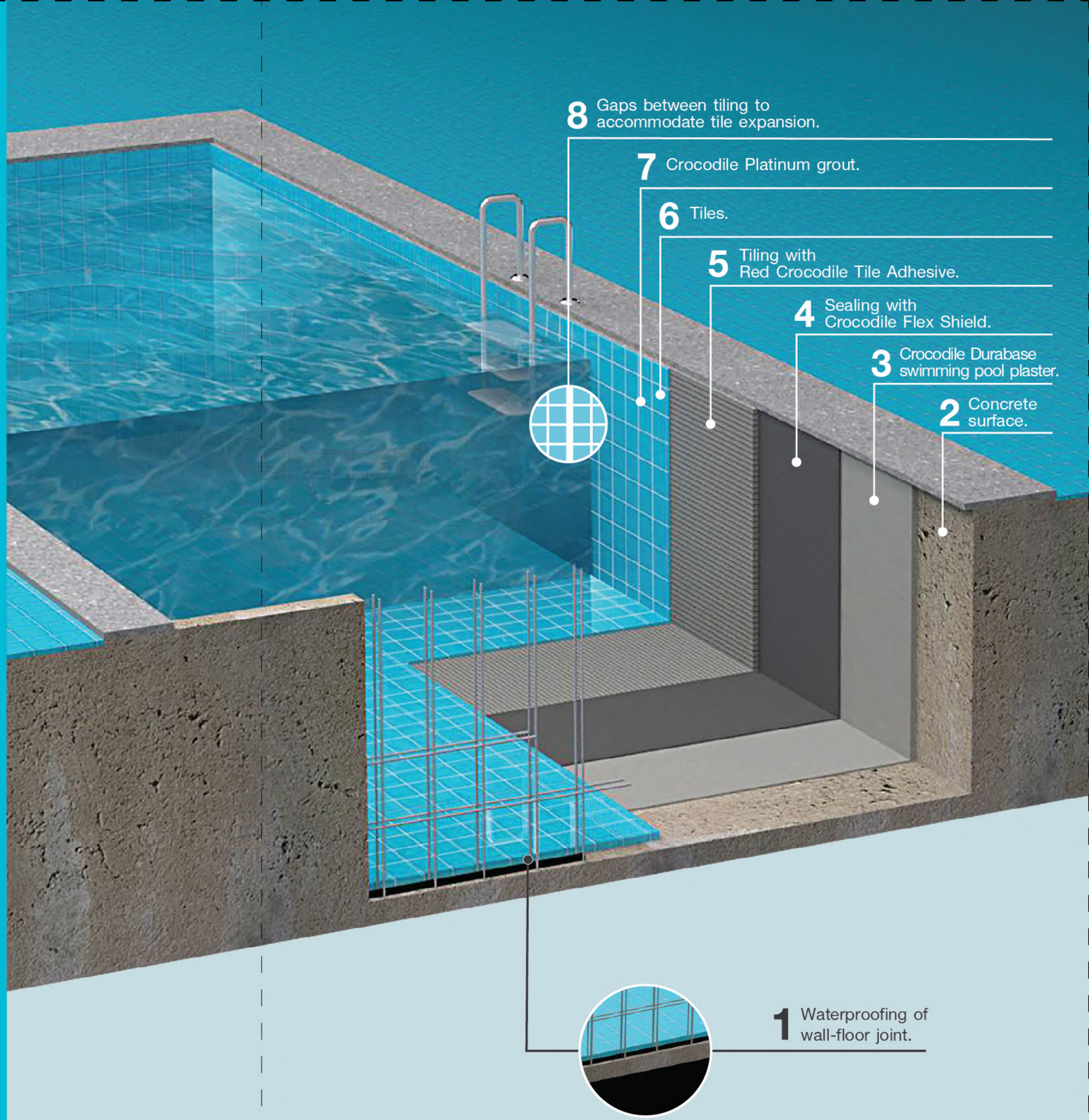
Good, stable structure, efficient seal, tiling and grouting with high-quality material, good construction planning will reduce cost and headaches in future repairs.

Recommended to use **Crocodile Together, Protect the House.**

Swimming Pool Structural Works

**Ready for all systems,
full attention to every part.**

1. **Prepare the strong structure**
2. **Build excellent waterproofing**
3. **Tile with international - standard tile adhesive.**
4. **Use tile adhesive dedicated for swimming pool.**



1 Prepare strong foundation





Structural preparation

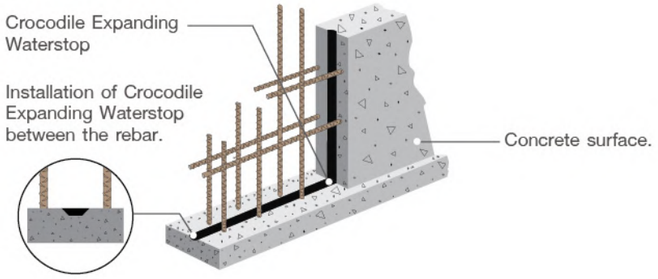
Importance of structural and concrete surface preparation in swimming pool construction is step one of strength and long service life, along with sealing ability of the swimming pool. Poor preparation of the structure and surface will lead to loosening of tiles and grout after filling the pool, or leakage. Repair usually is complicated and expensive.

Structural preparation process

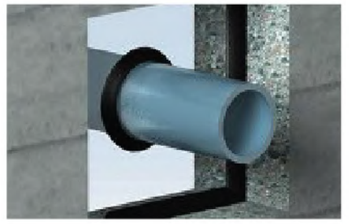
1. Before building the swimming pool, we must be careful about strength of the swimming pool structure. The foundation pile should be designed to bear weight of the pool. The structure must be reinforced concrete that is specifically designed to bear weight of both the structure and water. Good structure must not shift after opening of the pool.

2. During construction of the wall and floor, there will be locations that water can seep through easily, therefore **Crocodile Expanding Waterstop** expanding rubber seal should be used as seal in the structure.

A Floor - wall joint



B Around the pipes



Reaction of Crocodile Expanding Waterstop

Before contact with water.



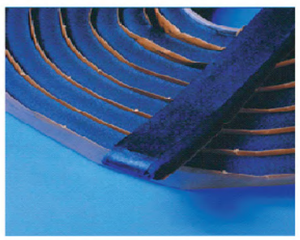
After contact with water.



3. Use **Crocodile Durabase,** a plaster dedicated for swimming pool to plaster the wall and concrete, before sealing and tiling.

4. If sand cement is used to level the ground, **Crocodile Acrylic Bondcrete,** the concrete bonding agent will increase adhesion. Plaster or pour the concrete while the bonding agent is still wet to prevent the agent from drying into a film layer, which might lead to flaking.

5. Install sealing with cement-based coating before tiling (Read details in the next page)



Crocodile Expanding Waterstop
Expanding rubber seal

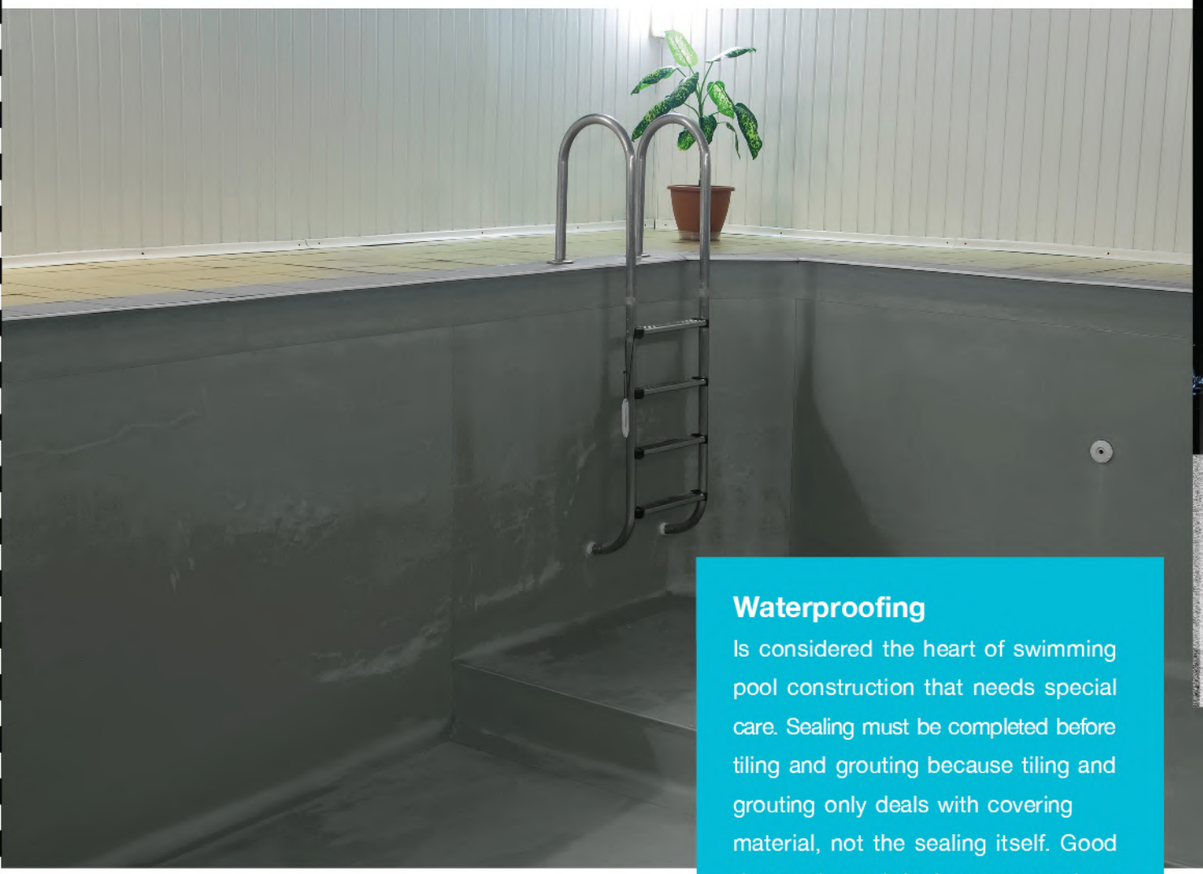


Crocodile Durabase
Plaster for swimming pool

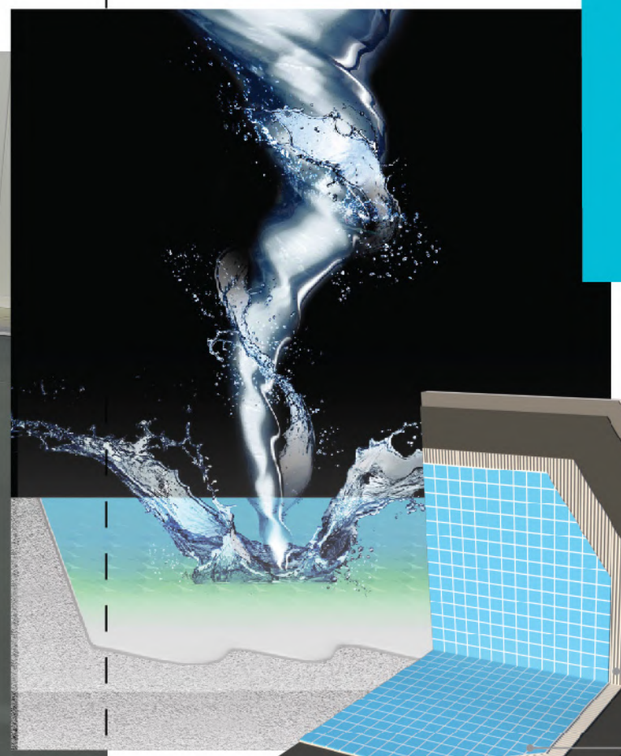


Crocodile Acrylic Bondcrete
Concrete bonding agent, increasing adhesion

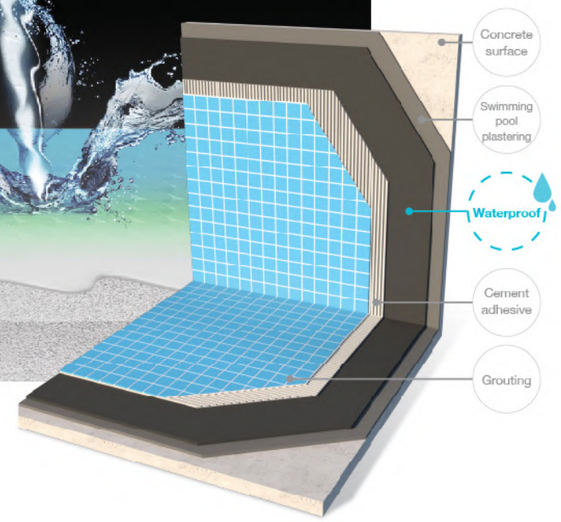
2 Excellent
in waterproofing



Waterproofing
Is considered the heart of swimming pool construction that needs special care. Sealing must be completed before tiling and grouting because tiling and grouting only deals with covering material, not the sealing itself. Good decoration might become useless without good sealing, without good sealing future expense to fix leaking might be very high.



Waterproofing for swimming pool
Crocodile Flex Shield is a flexible, one-ingredient sealing cement innovated by Jorakay. Only add water and mix. Highly flexible and can cover cracks well. Non-toxic.



Waterproofing
1. Should seal at least 14 days after leveling and plastering .
2. Surface must be cleared of dust and dirt.
3. Cement base coating should be applied before tiling. Sealing for swimming pool must have good adhesion to cement concrete, can be tiled over.



Crocodile Flex Shield
Flexible Waterproofing Cement (1 component).
One for all areas waterproofing.



Crocodile Ecoshield
Waterproofing Cement Coating (1 component) for tiling works.
**Good for swimming pool with less than 5m in depth. Cannot be left naked or exposed to sunlight.*

3 Tiling with tile adhesive
Of International standard



Tiling in the swimming pool where the tiles are exposed to water pressure, temperature change and chemicals need certified tile adhesive. It is recommended to use Jorakay tile adhesive that is ANSI-certified from the United States, the popular standard worldwide accepted by professional constructor and TISI as the first product group by Ministry of Industry.

Use the standard-compliant Crocodile Stainless Steel Notched Trowel to spread tile adhesive on the floor and wall before tiling, and use Crocodile Tile Spacers to align the tiles.

Tiling process



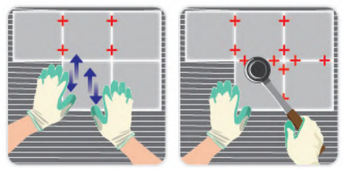
1 Prepare the surface
Smoothen and level the surface. The surface must be strong, and cleared of dust and oil.



2 Mixing
Mix the tile adhesive with water using the ratio written on the back of the bag, stir.



3 Spreading
Use the non-notched side of the trowel to plaster the adhesive, then run the notched side over the adhesive.



4 Tiling
Press the tile on the adhesive, knock it with a rubber hammer. Place spacers on the corner of the tile to align the tile groove, remove the spacers after tiling.





Red Crocodile Tile Adhesive
Tile adhesive for swimming pool tiling



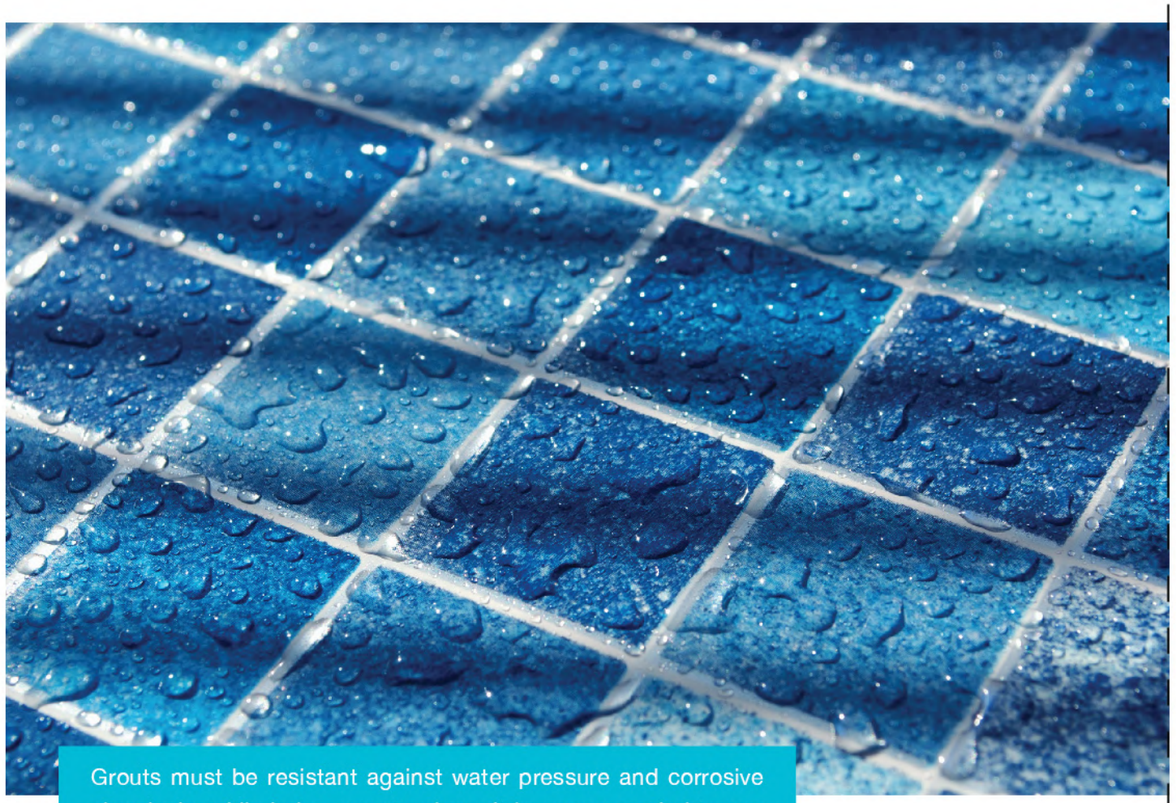
Gold Crocodile Tile Adhesive
The ultimate tile adhesive with the top certification from the United States. Can be used for many types of tiling, especially mosaic and low-absorption tiles



MICROBAN

Crocodile Epoxy Plus
Strong tile adhesive, 100% resistance against chemical corrosion, good for mosaic tiles.

4 Dedicated grouts for swimming pool

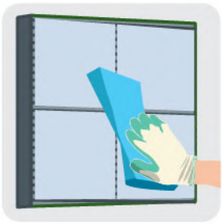


Grouts must be resistant against water pressure and corrosive chemicals, while being easy to clean. It is recommended to use Jorakay grout as it is innovated to suppress black mold, green algae and bacteria with Microban, which is safe and accepted worldwide.

Required to use Crocodile Rubber Face Trowel to apply the grout to swimming pool tiles, both on the floor and wall.



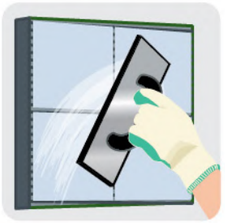
Grouting process



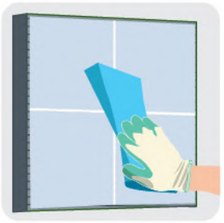
1 Clean the tiles thoroughly



2 Mix the grout with water at the ratio written in the back of the bag.



3 Fill tile joints with the mixed grout, then use a rubber trowel to push the grout deeper into the joint. If the grout is getting sticky **DO NOT** add more water.



4 Use a rag or sponge and Crocodile Cement Remover to clean the tile surface before filling the pool with water.



5 Before filling, clean the pool one more time.



Crocodile Platinum
Grout for swimming pool, spa, sauna and widejoint tiles



Crocodile Epoxy Plus
The best grout with strong surface and adhesion, 100% resistance against chemical corrosion.

5 Water Filling and Care



Filling the pool with water

To have the grout at its best, the pool should be filled :

- At least 24 hours after grouting with **Crocodile Platinum Grout**
- At least 7 days after grouting with **Crocodile Epoxy Plus,** slowly fill the pool with water to acclimatize the pool to pressure.

* Under the correct use per instructions



Care of water in the pool

The swimming pool should have good water monitoring, especially for control of chemicals such as acidity, chlorine, calcium, and sulfate. All of which play a hand in corrosion of grouting. Control of water condition has following details.

1. **pH value,** normally pH value of pool water should be kept between 7.2 - 7.8 (pH>7 = basic, pH<7 =acidic). If the pool water has pH value of less than 7, it is slightly acidic and thus might corrode grouting and tile adhesive.

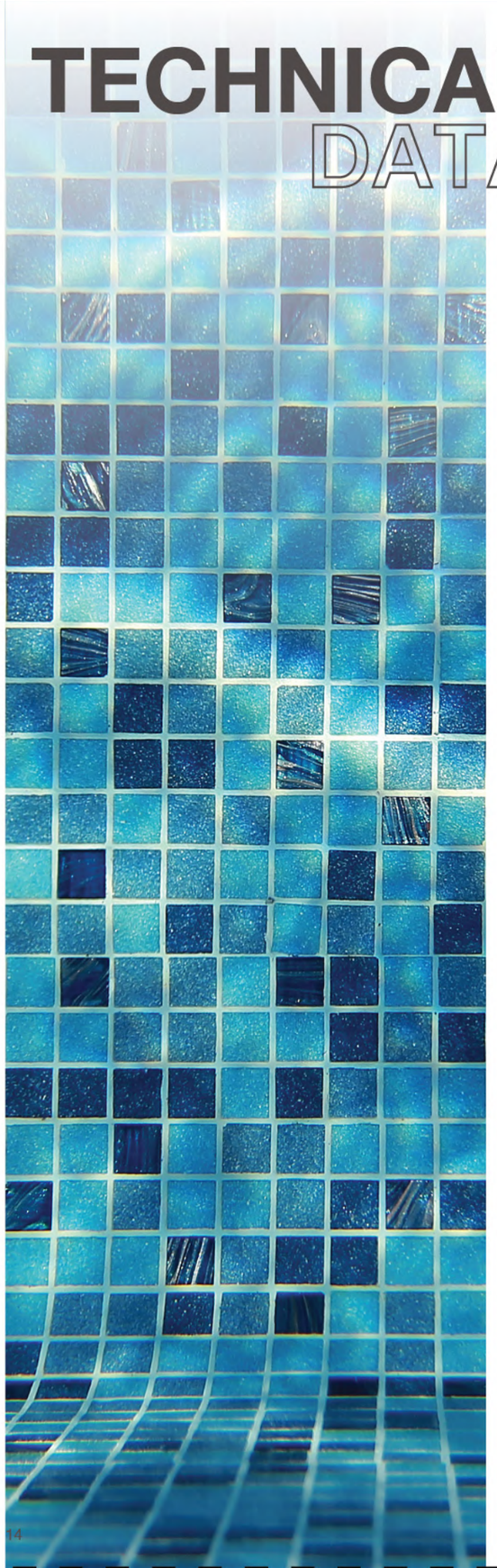
2. **Sulfate** must not exceed 250 ppm, excess amount might corrode grouting and tile adhesive.

3. **Chlorine** is used to inhabit bacterial and algae growth in the water. Excess chlorine might corrode grouting and tile adhesive and render the water basic, which cannot remove germs and algae. Normally chlorine is kept at 1.0 - 2.0 ppm, as overconcentration will pose a severe danger to the user.

4. **Calcium** in the water or calcium hardness is usually maintained at 200 - 250 ppm. Too low calcium will result on extraction of calcium from grouting, corroding it. Excessive calcium will result in white stains on the tiles or grout. Pumps may also be corroded by this excessive calcium.



TECHNICAL DATA





Crocodile Flex Shield

Flexible Waterproofing Cement
(1 component)

JORAKAY GREEN PRODUCTS

- Easy to use, only water is needed..
- Can be left naked. Resistant against the elements and UV ray.
- For rooftop, balcony, rooftop garden and swimming pool.

Technical Data

Test Method	Standard	Evaluation
Crack Overbridging @ 28 days	EN 14891	0.75 มม. (mm)
Water Impermeability Positivel / Negative	EN 14891	1.5 bar/1.5 bar
Tensile Strength @ 28 days	EN 1348	>2 N/mm^2
Non-Toxicity	-	Pass





Crocodile Ecoshield

Waterproofing Cement Coating
(1 component)

JORAKAY GREEN PRODUCTS

- Easy to use, only mix with water.
- No strong smell, non-toxic.
- High adhesion for floor and wall prior to tiling
- Good price-per-square meter.

Technical Data

Test Method	Standard	Evaluation
Compressive Strength at 28 days	EN 1015-11	16 N/mm^2
Flexural Strength at 28 days	EN 1015-11	>7 N/mm^2
Tendile Strength at 28 days	EN 1015-12	>1.5 N/mm^2
Water Transmissibility at 28 days	DIN EN 1062-3	0.04 $kg/m^2 .h^{0.5}$
Pull off at 28 days	ASTM D4541	>1.4 MPa
Non-Toxicity	-	Pass



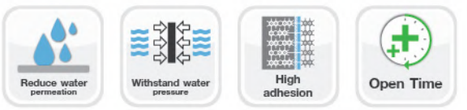
Crocodile Durabase

Plaster for swimming pool

- For plastering the swimming pool.
- Can be used immediately without the need to chisel or texture.
- Easy to plaster but highly adhesive, does not flake easily.
- Can level at the thickness of 0.5-5cm
- Longer drying time to allow finer work.

Technical Data

Test Method	Standard Method	Standard value	Evaluation
Pot life	In house	> 3 ชั่วโมง	4 ชั่วโมง
Bonding strength 3 days 7 days 7 days (in water) 28 days 28 days (in water)	EN 13892-8	≥ 0.50 N/mm^2	 1.245 N/mm^2 1.586 N/mm^2 0.885 N/mm^2 1.562 N/mm^2 1.170 N/mm^2
Flexural strength 28 days	EN 13892-2	-	5.280 N/mm^2
Compressive strength 28 days	EN 13892-2	-	15.850 N/mm^2
7-day water absorption rate (10mm) 30 min 1 hour 1 day	EN 1062-3	- - -	0.000 cc/sq.m 18.400 cc/sq.m 55.200 cc/sq.m





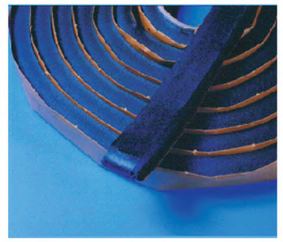
Crocodile Acrylic Bondcrete

Concrete bonding and fortifying agent

- Painted to bond the old and new concrete
- Increase adhesion and resistance against impact, scraping, moisture or chemicals.
- Increase flexural strength for repair paste.

Technical Data

Test Method	Standard	Evaluation
Compressive Strength at 28 days	ASTM C109	>28 MPa
Flexural Strength at 28 days	ASTM C348	>9 MPa
Bond Strength by Slant Shear at 28 days	ASTM C882	>4 MPa
Tensile Strength at 28 days	ASTM C190	>2.5 MPa



Crocodile Expending Waterstop

Expanding rubber seal

- To prevent and repair leaking at the concrete joint.
- Can expand and mend small air pockets and cracks permanently. Stay expanded and waterproof after dehydration.
- Can be used in both flooded areas and areas with changing water level.

Technical Data

Test Method	Evaluation
Material	Bentonite + Butyl Rubber
Color	Black
Specie Gravity	1.5 – 1.85
Service Temperature	-40 °C to +80 °C
Expansion range	>300%
Adhesion on concrete	ดีมาก (Excellent)
Hydrostatic Pressure Test	8.0 bar (>80 m or 120 psi)
Wet / dry cycling)	No effect

TECHNICAL DATA





Red Crocodile Tile Adhesive

Tile adhesive with extra bonding

TISI 2703-2559

- For ceramic and porcelain tiling in swimming pools
- For large granito tiles on the interior wall and floor or exterior floor.
- For marble, granite or natural stone tiles.

American standard: ANSI A 118.1
TISI 2703-2559 (General quality)

Technical Data

Test Method by USA Standard	Referenced standard ANSI A 118.1	ANSI A 118.1 Standard	Evaluation
Tensile Adhesion Strength		Part 5.3	
Open time : Tensile Adhesion Strength 20 minutes at 28 days	Part 5.3	> 75 psi	> 75 psi
Shear Strength Porcelain Mosaic		Part 7.2	
Shear strength at 7 days	Part 7.2.3	> 150 psi	> 300 psi
Shear strength at 7 days (immersed in water)	Part 7.2.4	> 100 psi	> 200 psi
Shear strength at 28 days	Part 7.2.5	> 150 psi	> 300 psi



Gold Crocodile Tile Adhesive

The ultimate tile adhesive with ultimate American standard, for many surfaces

- Can be used for many types of covering inside and outside the building.
- Can be used for very large tiles on interior-exterior floor and wall.
- For marble, granite, natural stone, resin, glass floor and wall tiles.
- Can be used for covering tile, structural plywood or fiber cement.
- Excellent adhesion, resistant to vibration.

American Standard: ANSI A118.1, A 118.4, A 118.11, A 118.15

Test Method by USA Standard	Referenced standard ANSI A 118.15	ANSI A 118.15 Standard	Evaluation
Tensile Adhesion Strength		Part 5.3	
Open time : Tensile Adhesion Strength 20 minutes at 28 days	Part 5.3	≥ 75 psi	> 100 psi
Open time: Tensile adhesion strength 30 minutes at 28 days	Part 5.3	≥ 75 psi	> 75 psi
Shear Strength Porcelain mosaic		Part 7.2	
Shear strength at 7 days (immersed in water)	Part 7.2.4	> 200 psi	> 300 psi
Shear strength at 28 days	Part 7.2.5	> 400 psi	> 450 psi
Shear strength at 28 days after heat aging	Part 7.2.7	> 400 psi	> 500 psi



Crocodile Platinum

Grout for swimming pool, spa, sauna and wide-joint tiles

- Can take compression, water pressure and high temperature. Very high adhesion.
- Resistant against chemicals in the pool.
- Quick drying, can be opened quickly. The pool can be filled 24 hours after grouting*
- Inhibit growth of black mold and algae with Microban technology.
- For grouting joint between 2-15mm in width.

American Standard: ANSI A 118.6 (Sanded), A118.7 (Sanded)

* Under correct use per instructions

Technical Data

Test Method	Evaluation
Setting Time	
• Initial Set	25 min
• Final Set	35 min
Bucket Life	
• At temperature 23+20C	20 min

Test Method	ANSI A 118.7 (Sanded)	Evaluation
Compressive Strength 28 days	> 3000 psi (20.7 N/mm^2)	> 3500 psi (24.1 N/mm^2)
50% R.H. to Immersion	< 5 %	< 2 %
Linear Shrinkage 1 day	< 0.10%	< 0.10%
7 days	< 0.20%	< 0.20%

Note : 1 MPa= N/mm^2 = 10.2 ksc=145 psi





Crocodile Epoxy Plus

Ultimate tile adhesive and grout, high adhesion

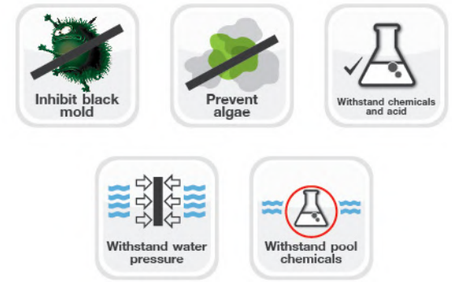
- Ultimate tile adhesive and grout, high adhesion
- Resistant against impact and water pressure.
- For especially glossy tiles such as glass or resin mosaic

American Standard: ANSI A 118.3

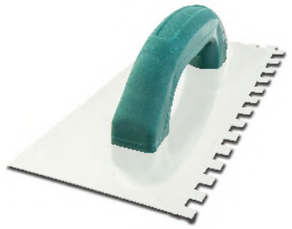
Technical Data

Test Method	ANSI A 118.3	Evaluation
Bond Strength	> 1000 psi	> 1500 psi
Compressive Strength 28 days	> 3000 psi (20.7 N/mm^2)	> 8000 psi (55.2 N/mm^2)
Linear Shrinkage) 7 days	< 0.25%	< 0.1%

Note : 1 MPa= N/mm2 = 10.2 ksc=145 psi



Decorative material
Agent and equipment



Crocodile Stainless Steel Notched Trowel

- quick and level work at reduced cost.
- Long-lasting.
- **3 mm.** side is good for mosaic tiles and small tiles
  Use 2 kg of tile adhesive per square meters.
- **6 mm.** side is good for medium-large tiles
  Use 3.5 kg of tile adhesive per square meters.
- **10 mm.** side is good for very large tiles, granite or marble tiles.
  Use 7 kg of tile adhesive per square meters.



Crocodile Rubber Face Trowel

- Ergonomic handle, smooth and quick spreading.
- Can fill the joint finely, and can reach corners.



Crocodile Tile Spacers

- Perfectly align all tiles.
- Prevent tile bursting and flaking grout.



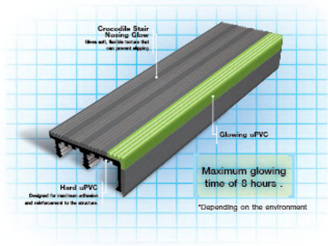
Crocodile Cement Remover

- Remove cement, grout and adhesive stain after tiling
- Reduce scratches on the tiles by other scratching tools.
- Can be used with ceramic and porcelain tiles



Crocodile Epoxy Remover

- Remove remaining grout, adhesive and epoxy stain after tiling.
- Reduce scratches on the tiles from use of other chiseling tools.
- Can be used with ceramic, porcelain and glass-coated tiles.



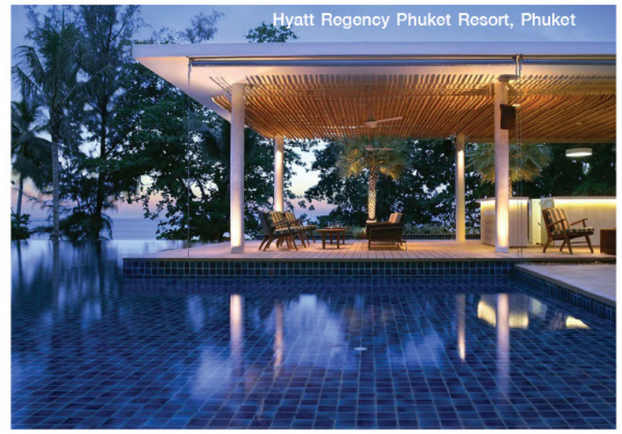
Crocodile Stair Nosing Light Plus Microban

- Soft, non-slipping surface that glows in the dark and does not cut into skin.
- Microban prevents growing of black mold, bacteria and algae.

PROJECT REFERENCE


Four Season Resort, Chiang Mai


Renaissance Phuket Resort and Spa, Phuket


Hyatt Regency Phuket Resort, Phuket


Atmosphere Kanifushi, Maldives


My Samui Beach Resort Spa, Surat Thani


Hideaway Beach Resort and Spa, Maldives


Amari Watergate Hotel, Bangkok


Intercontinental Hua Hin Resort, Prachuab Kiri Kan


Maraguez Hua Hin Resort and Spa, Prachuab Kiri Kan


Banyan Tree Samui, Surat Thani