



Formwork Solution for Affordable Housing

kumkang Kind



Aluminum Formwork



Lightweight

Average 23kg/m²



Not dependent on tower crane

Manual transportation by labors



Monolithic construction

Single concrete pour for all structures



Faster construction

Average 4 to 7 days cycle per floor



Repetition

Average 150~300 repetition per panels



Environment friendly

High scrap value

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kumkang
Kind



ALUMI ALUMINUM FC FORMWO FORMWORK SYS' SYSTEM

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INTRODUCTION

Kumkang Kind is proud to have its products in more than 30 countries around the world. Our Aluminium Formwork is made of high strength aluminium extrusion which, compared with steel formwork, allows a large but lightweight panels. Our formwork will not only achieve better concrete finishing but also allow a faster construction. With 40 years of experience, our Aluminium Formwork System has proven to:

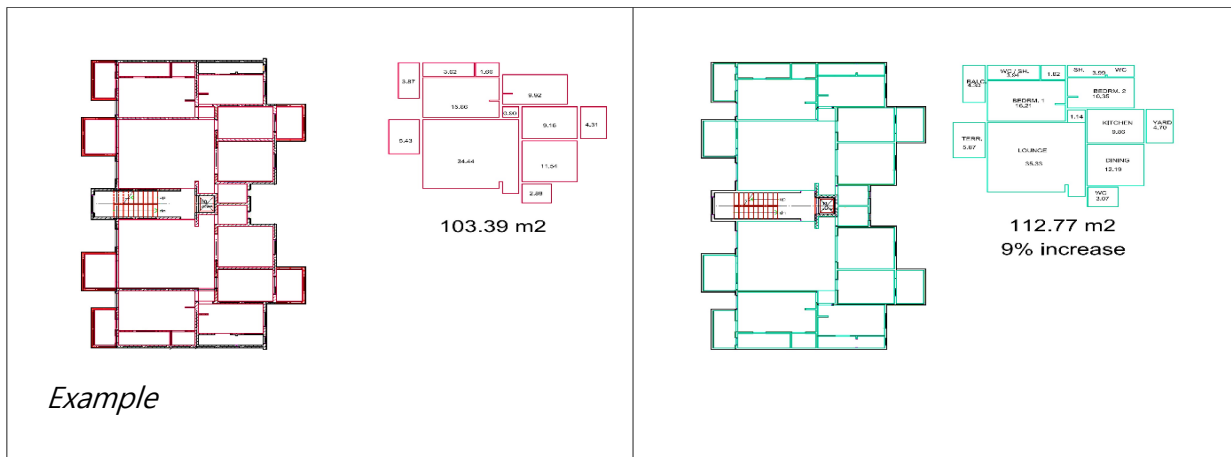
- ✓ Increase Quality – Stronger concrete structures produced with an unbeatable concrete finishing.
- ✓ Save Time – A single pour of wall, beam, column, slab and staircases thus allowing for a 4 to 7-day cycle.
- ✓ Reduce Cost – No plastering, no tower crane, reduced labour and use of unskilled workers.
- ✓ Be Environmentally Friendly – Reusable for hundreds of repetitions and is 100% recyclable.



ADVANTAGES OF USING ALUMINIUM FORMWORK

Larger usable spaces

Concrete walls are stronger than conventional brick and mortar, thus can have thinner dimensions allowing for an increase in room sizes. A reduction from 200mm to between 150mm and 100mm wall thickness can result in an increase of 5% – 10% usable carpet area.



Fair-faced finish

Our Kumkang Aluminium Formwork produces an unbeatable concrete finishing which does not require any plastering. After a skim coat, the walls are ready for paint.



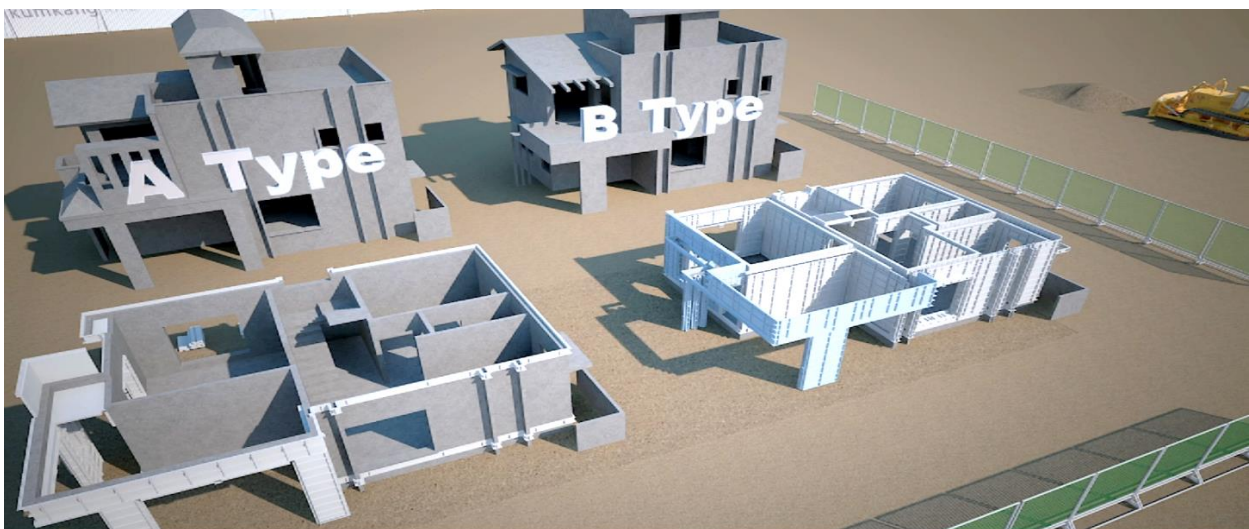
Reusability

One of the best advantages of the aluminium formwork is repetition. While the conventional formwork is disposed after 5 – 10 repetitions and steel formwork after a repetition of 50 – 60, the aluminium panels can last for hundreds of repetitions. Furthermore, after maximum use, the panels can be recycled or sold at scrap value.



Adaptable to various typologies

A majority of the panels we supply are of standard sizes and can be used across various building designs. Should floor heights and opening sizes be maintained, this efficiency is increased significantly.



PROJECT EXPERIENCE IN AFRICA

Project: Impala Gardens Townhouses, Ongata Rongai
Developer: [Impala Developers](#)
Location: Kajiado, Kenya
Number of units: 88 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 1,230m² of aluminum formwork



Project: Maisha Makao, Tilisi Developments
Developer: [Maisha Housing](#)
Location: Kiambu, Kenya
Number of units: 243 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 1,700m² of aluminum formwork



Project: Unity East, Tatu City
Developer: [Unity Homes](#)
Location: Kiambu, Kenya
Number of units: 640 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: Previous material plus additional 1,160m² of aluminum formwork



Project: Maisha Mapya, Tilisi Developments
Developer: [Maisha Housing](#)
Location: Kiambu, Kenya
Number of units: 350 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 1,500m² of aluminum formwork



Project: Gerji Village
Developer: [Ovid Construction](#)
Location: Addis Ababa, Ethiopia
Number of units: 510 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 19,000m² of aluminum formwork



Project: Pangani Estate Affordable Housing Project
Developer: [Urban Housing Renewal Development LLP](#)
Location: Nairobi, Kenya
Number of units: 1,500 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 1,310m² of aluminum formwork



Project: Unity West, Tatu City
Developer: [Unity Homes](#)
Location: Kiambu, Kenya
Number of units: 384 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: Previous material plus additional 1,220m² of aluminum formwork



Project: Hargeisa Villas, Somalia
Developer: [Shubsan Construction Company](#)
Location: Hargeisa, Somaliland
Number of units: 40 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 575m² of aluminum formwork



Project: Tribute House
Developer: [Denya Developers Limited](#)
Location: Osu Badu Crescent, Accra, Ghana
Type of units: 1, 2 and 3 Bedroom Apartments
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: Previous material plus additional 1,310m² of aluminum formwork



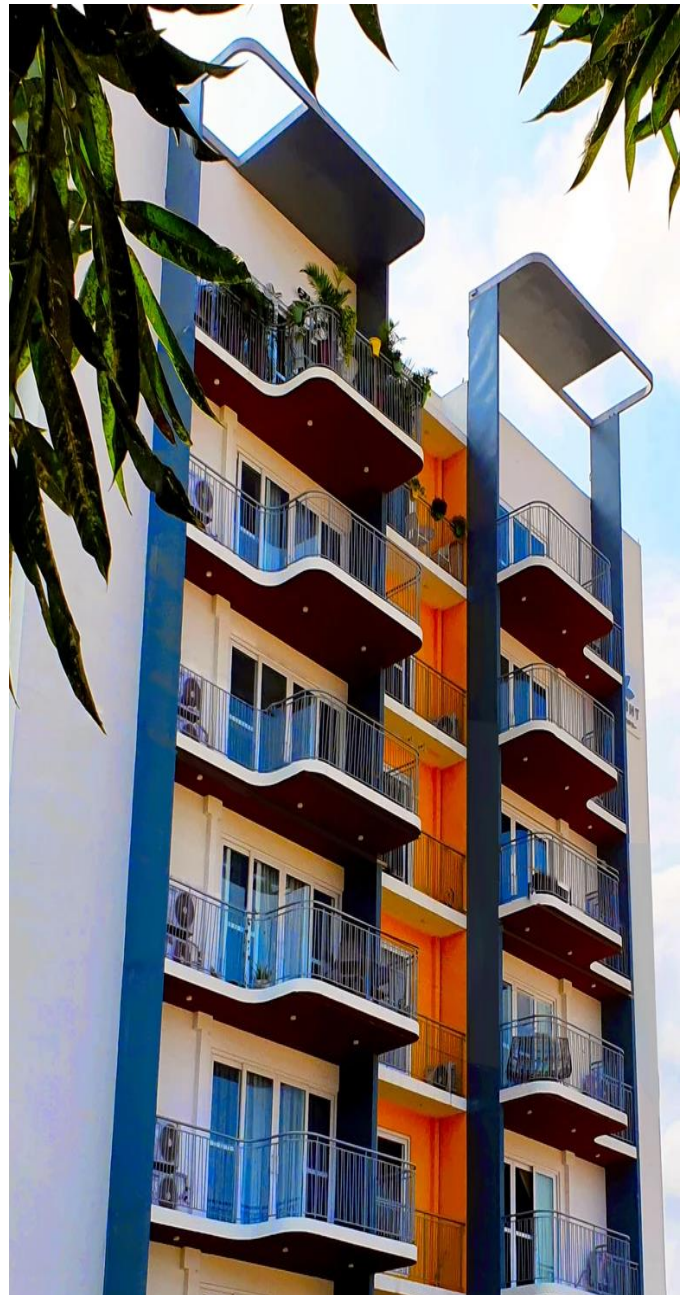
Project: Iguta Paradise Homes
Developer: [Arcoverde \(Kenya\) Ltd](#)
Location: Paradise Lost Road, Kiambu, Kenya
Number of units: 67 villas
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 3 sets (ground + 2): 1,335m² of aluminum formwork



Project: Unity Gardens
Developer: [Unity Homes](#)
Location: Eldoret, Kenya
Number of units: 165 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: One set (bungalow): 360m² of aluminum formwork



Project: The Ivy
Developer: [Denya Developers](#)
Location: Cotonou Street, East Legon, Accra, Ghana
Type of units: 1, 2 and 3 Bedroom Apartments
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 1 set of aluminum formwork



Project: 2,000 AADL social housing unit in Chlef
Developer: Dabladji Entreprise et Service
Location: Chlef, Algeria
Number of units: 2,000 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 6 set (apartment): 10,460m² of aluminum formwork



Project: 500 AADL social housing unit in Mostaganem
Developer: SARL Sotaribi Construction
Location: Mostaganem, Algeria
Number of units: 500 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 1 set (apartment): 2,405m² of aluminum formwork



Project: 800 AADL social housing unit in Biskra
Developer: Omrane ETPBH
Location: Biskra, Algeria
Number of units: 800 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 2 set (apartment): 4,415m² of aluminum formwork



Project: 80 LPA social housing unit in Oued-Rhiou
Developer: Dabladji Entreprise et Service
Location: Oued-Rhiou, Algeria
Number of units: 80 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 1 set (apartment): 2,430m² of aluminum formwork



Project: 50,000 social housing project in Libya
Location: Tripoli, Libya
Number of units: 50,000 units
Scope: Technical engineering and supply of Kumkang Aluminum Formwork



Project: Kabete Palms
Developer: Homex Housing Ltd
Location: Lower Kabete, Nairobi, Kenya
Number of units: 47 villas
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 3 sets (ground + 1st floor): 2,140m² of aluminum formwork



Project: Kitisuru Gardens
Developer: Homex Housing Ltd
Location: Kitisuru, Nairobi, Kenya
Number of units: 500 villas
Scope: Technical engineering and supply of Kumkang Aluminum Formwork
Quantity supplied: 4 sets (ground + 1st floor): 2,340m² of aluminum formwork



KUMKANG ALUMINIUM FORMWORK COMPONENTS



1. Wall panel

W x L (mm)	Weight (kg)	Weight combined with Rocker (kg)
600 x 2300	25.940	26.590
600 x 2450	26.645	27.300
450 x 2300	19.730	20.200
450 x 2450	20.250	20.730

Standard panel

W x L (mm)	Weight (kg)	Weight combined with Rocker (kg)
400 x 2300	17.590	18.010
400 x 2450	18.060	18.480
300 x 2300	14.730	15.040
300 x 2450	15.120	15.440



2. Slab panel

Size	Weight (kg)
600 x 1200	13.5
450 x 1200	10.8
400 x 1200	9.9
300 x 1200	8.1

The Slab panel will be used to support the concrete weight during concrete pouring and casting



3. Beam bottom slab panel

Size	Dependent upon each structure
Weight (kg)	38.4

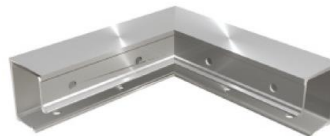
Soffit Panel will be used to cover the bottom of the beam



4. Slab corner

Size	Weight (kg/m)
150H	6.581

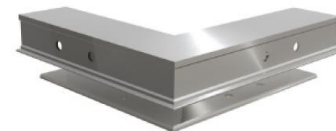
Connection between Wall panel & Slab panel



5. Slab incorner

Dependent upon each structure

Connection between Wall panel & Slab panel (inside)



6. Slab outcorner

Dependent upon each structure

Connection between Wall panel & Slab panel (outside)



7. Prop head [PH]

Size	150 x 300	Weight (kg)	2.5
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Used to joint the beams together (Middle beam and/or End beam), the pipe support will be placed under the prop head



8. Middle beam [MB]

Size	150 x 900	Weight (kg)	7.6
	150 x 1050		8.7

Used to joint the prop heads, the middle beam supports the slab panels



9. End beam [EB]

Size	150 x 600	Weight (kg)	5
	150 x 900		7.2
	150 x 1050		8.3

Used to joint the prop head and slab corner, the end beam supports the slab panels



10. Joint bar

Weight (kg)	0.68
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Used to joint the prop heads with the beams (Middle beam and/or End beam)



11. Special prop head

Dependent upon each structure

Used to joint the beams together (Middle beam and/or End beam), this special prop head will be placed where a normal prop head cannot be installed



12. AL - (A/G) Release

Size	63.5 x 63.5	Weight (kg/m)	1.931
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Used to join panels together around the corners



13. Wedge & Round pin or Long pin

Weight (kg)	0.085
The Round pin and Wedge pin will be used to joint the Wall or Slab panels together.	

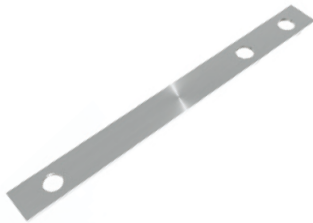
Weight (kg)	0.33
The Long pin and Wedge pin will be used to fix the Joint pin with the prop head and beams (Middle beam or End beam) together.	



16. Pipe support

Type	Length	Weight (kg)
V-1	1,800mm ~ 3,200mm	10.9
V-2	2,000mm ~ 3,400mm	11.5
V-3	2,400mm ~ 3,800mm	12.5
V-4	2,600mm ~ 4,000mm	13.0

The pipe support is used to support the weight of the slab during concrete pouring and casting. It will remain under the prop head until 2 levels of casting.



14. Flat tie

Weight (kg)	0.125
The Flat tie is used to joint the wall panel to the opposite side's wall panel. Depending on the wall panel's height, the number of flat tie used will vary.	



15. PVC sleeve

Weight (g/m)	0.76
Made of PVC material, the PVC sleeve will be installed between the Wall panel and the opposite side's wall panel. The flat tie will be inserted inside this item in order to protect the flat tie to be casted within the concrete.	



17. Wall platform, Slab platform and Elevator platform

Weight (kg)	15	Weight (kg)	9	Weight (kg)	10
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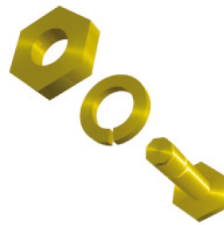
As a substitute of a scaffolding system, these wall platform, slab platform and elevator platform will be fixed on the concrete. [Wall/Slab/Elevator] and used as working platform for workers.



18. Waller-bracket & Square pipe

Weight (kg)	0.67
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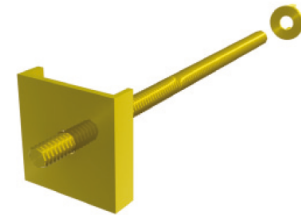
The Waller-bracket and Square pipe are used to allow the horizontal straightness of wall panels and a flat wall surface (especially at the bottom) after concrete casting.



19. Bolt, Nut & Washer

Weight (kg)	0.11
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This set of accessories will be used as an embedded anchor in order to fix panels on the concrete surface during its installation.



20. Tie rod

Weight (kg)	0.8
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This accessory will be used as an embedded anchor in order to fix the Bracket on the concrete surface during its installation.



Staircase landing panel



Components (mm)	Weight (kg)	Article No.
Staircase landing panel	11.43	36000000

Staircase wall panel(up)



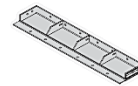
Components (mm)	Weight (kg)	Article No.
Staircase wall panel(up)	3.37	36000000

Staircase landing post panel 2



Components (mm)	Weight (kg)	Article No.
Staircase landing post panel 2	1.47	36510000

Staircase step panel



Components (mm)	Weight (kg)	Article No.
Staircase step panel	5.05	36510000

Staircase wall panel(dw)



Components (mm)	Weight (kg)	Article No.
Staircase wall panel(dw)	3.37	36000000

Gun panel



Components (mm)	Weight (kg)	Article No.
Gun panel	17.34	36510000

Staircase riser panel



Components (mm)	Weight (kg)	Article No.
Staircase riser panel	6.24	36510000

Staircase landing post panel 1



Components (mm)	Weight (kg)	Article No.
Staircase landing post panel 1	0.55	36510000

Staircase side panel



Components (mm)	Weight (kg)	Article No.
Staircase side panel	14.9	36510000

ALUMINIUM FORMWORK SETTING PROCESS

➤ Structural line



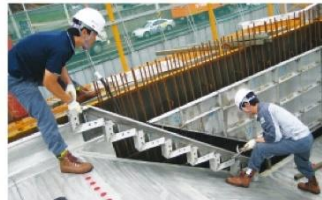
➤ Wall panel positioning (I/C + WALL)



➤ Beam panel setup (Beam + SC)



➤ Stair and elev-pit setup



➤ Slab panel setup



➤ Completion of slab panel setup



➤ Installation of electrical, plumbing components and steel reinforcing bar



INCORPORATION OF BURIED SERVICES AND DUCTS

Electrical Components

In most cases, the electrical components will be attached to the formwork panels:

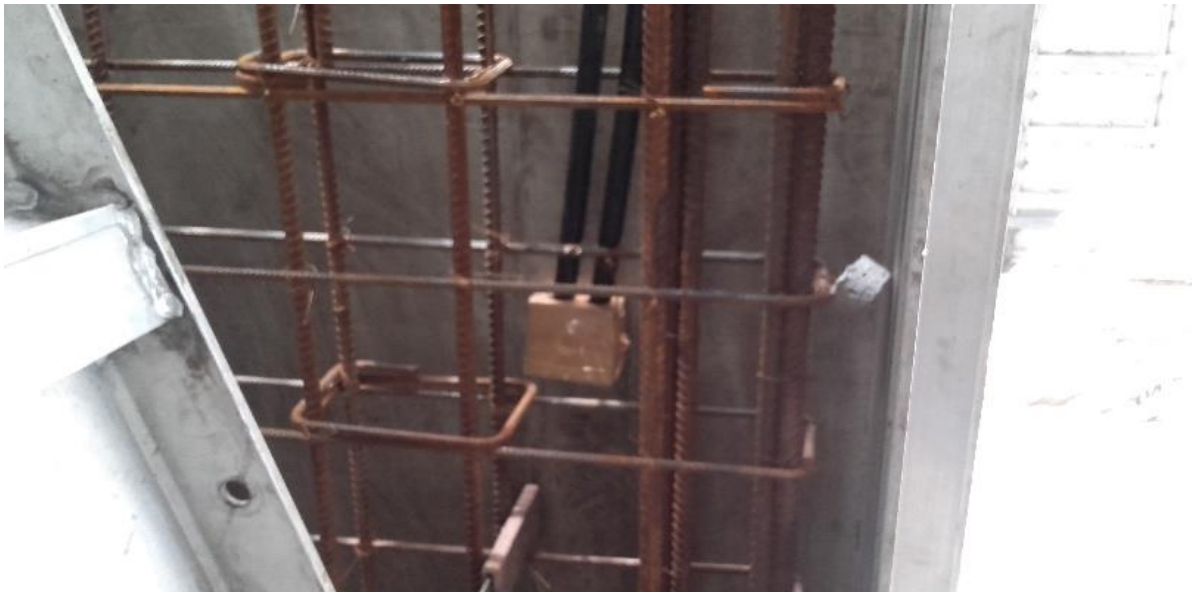
- i. Using bolts, fix the electrical boxes with the steel plate.



* Long bolt for electrical box fixing

* Short bolt for steel plate fixing

- ii. Once the steel re-bars have been installed, install the formwork panels and the wires on the electrical boxes.



iii. Upon dismantlement of the formwork panel, dismantle the electrical box bolting.



In case the electrical box cannot be installed because it is located in the middle of two formwork panels, the electrical box will be attached or welded on the steel re-bar.



Plumbing Components

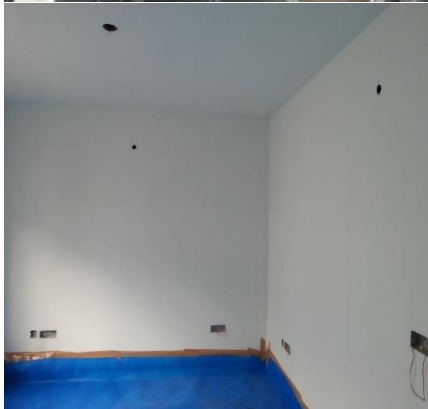
Similar with the electric components, the plumbing will be buried along with the steel rebar. However, based on the requirement of the client, we may provide grooves and bolts (available in various sizes) to shall be fixed on the formwork panels according to the location of the plumbing. *Optional**



Painting finish (Case Reference)*

In case of India (our 2nd largest export country), below is the painting specification:

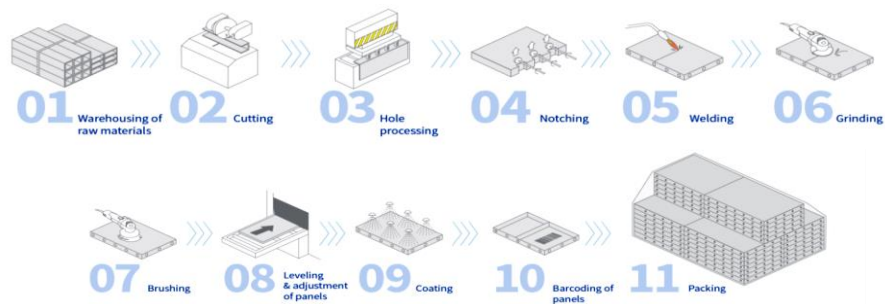
Painting Finish with aluminum formwork Concrete Surface			
#	Description	Internal Wall & Ceiling	External Wall
1	Surface Treatment	Form panel joint touch up grinding	Form panel joint touch up grinding
2	Putty Work	Skim Coating 3mm	Putty Material
3	Base Coat	Water Base Paint	Water Base Paint
4	Putty Work	Putty material	Putty Material
5	2nd Coat	Water Base Paint	Texture Paint or External water base
6	Final Coat & Touch up	Water Base Paint	Texture Paint or External water base



MANUFACTURING AND DELIVERY PROCESS

The following 16-week schedule is an estimated average based on the final design and quantity required for each individual project:

- 1 week for verification of drawings and creation of shell drawing.
- 3 weeks for manufacturing drawings.
- 4 weeks for production



- 1 week for issuance of Certificate of Conformity (CoC).
The main reason a CoC is required at customs is to prove a product that the product being imported meets the required standard(s). Sometimes called Certificate of Conformance or Certificate of Compliance, the CoC is issued by an authorized party (such as SGS S.A. or Intertek Group PLC), and could be a mandatory requirement as stated by country regulations and law for certain products.
- 6 weeks (39~42 days) for shipment (Korea – Mombasa / Nairobi Port, Kenya).



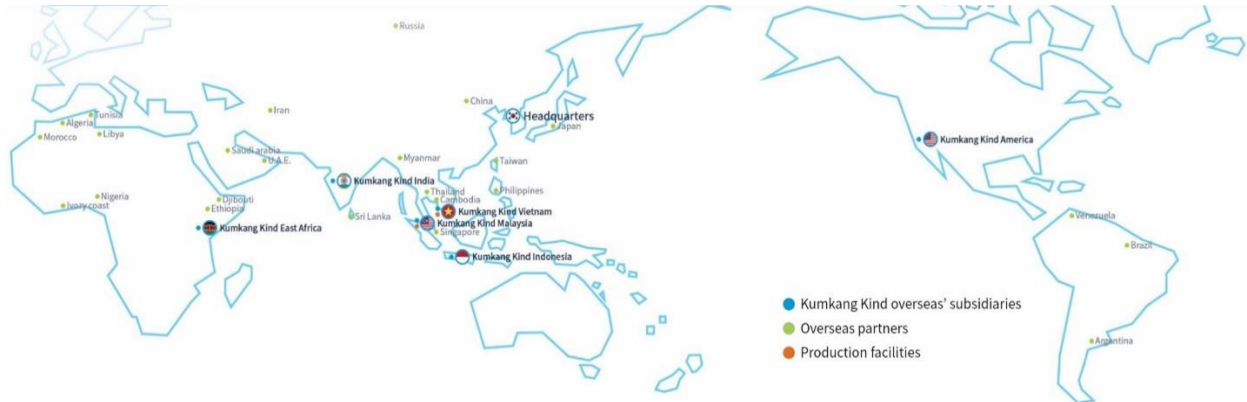
- 1 week for custom clearance & delivery to site.
As the incoterm is CIF, this stage is the responsibility of the client's appointed forwarding agent.

Please note that the aluminum formwork is duty-free (0%). HS Code: 8480.60 or 7910.90

TRAINING AND SUPERVISION PROPOSAL

- 2~3 days before delivery of containers, Kumkang Kind's supervisor(s) shall arrive at jobsite and start preliminary training to all formwork foremen.
- The training shall consist of (through PowerPoint presentation):
 - ✓ visualization of 3D animation of Kumkang Aluminium Formwork
 - ✓ explanation of type of panels
 - ✓ method of installation and dismantlement of panels
 - ✓ maintenance of panels in order to increase the lifetime of panels
 - ✓ do's and don'ts while using aluminium formwork, and etc.
- Furthermore, Kumkang Kind's supervisor(s) shall verify the status of the ground slab and request modification/rectification, if required. Furthermore, they shall verify the structural line in accordance to the formwork layout drawing and request modification/rectification, if required.
- Meanwhile, Kumkang Kind's supervisor(s) and the client project manager shall jointly study the jobsite's condition to maximize the construction of the jobsite:
 - ✓ Storage of aluminium formwork
 - ✓ Organization of jobsite workers
 - ✓ Planning
 - ✓ Equipment required, etc.
 - ✓ Construction schedule
- Upon arrival of containers, Kumkang Kind's supervisor(s) shall start the supervision:
 - ✓ Removal of formwork from containers
 - ✓ Organization of packing pallet
 - ✓ Set-up procedure
 - ✓ Supervise the installation and dismantlement of aluminium formwork
 - ✓ Formwork movement to next level upon completion of concrete casting
 - ✓ Cleaning/touch-up of panels upon dismantling

OVERSEAS BRANCH OFFICES



- Kumkang Kind India**
Office no.105, 1st floor, Sky Vista BLDG, near Town Square Dorabjee,
Viman Nagar, Pune-411014, Maharashtra, India
- Kumkang Kind Malaysia**
B-9-01, Block B, Oasis Square No.2, Jalan PJU 1A/7A
Ara Damansara 47301 Petaling Jaya Selangor Darul Ehsan, Malaysia
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Ho Chi Mihn City, Vietnam
- Kumkang Kind East Africa**
Office 5, 4th Floor, Tower 1, The Mirage, Chiromo Rds., Westlands,
Nairobi, Kenya
- Kumkang Kind Indonesia**
Gedung Wisma Slipi Unit 801, Jl..Let. Jend. S. Parman Kav. 12
Jakarta, Indonesia
- Kumkang America**
1215 W. Imperial HWY., Ste 216 Brea,
CA 92812 USA

PRODUCTION PLANTS

- **Eumseong #1 Factory** (*Production of aluminum formwork – 1,100,000m²/year*)
505, Yonggwang-ro, Eumseong-eup, Eumseong-gun,
Chungcheongbuk-do, Korea
- **Eumseong #2 Factory** (*Aluminum Recycling and Extruding – 26,000ton/year*)
1994, Daegeum-ro, Saenggeuk-myeon, Eumseong-gun,
Chungcheongbuk-do, Korea
- **Jincheon #1 Factory** (*Production of aluminum formwork – 155,000m²/year*)
515, Jingwang-ro, Iwol-myeon, Jincheon-gun,
Chungcheongbuk-do, Korea
- **Jincheon #2 Factory** (*Production of aluminum formwork – 550,000m²/year*)
27-29, Sincheokseo-gil, Iwol-myeon, Jincheon-gun,
Chungcheongbuk-do, Korea
- **Nilai Factory in Malaysia** (*Production of aluminum formwork – 130,000m²/year*)
Lot 119-120, Jalan Permata 1/4, Arab Malaysian Industrial Park, 71800 Nilai,
Negeri Sembilan Darul Khusus, Malaysia
- **Changnyeong Factory** (*Production of climbing formwork and infrastructure*)
149-16, Gwanggyemaoul-gil, Gyeseong-myeon, Changnyeong-gun,
Gyeongsangnam-do, Korea
- **Eonyang Factory** (*Production of steel pipe*)
359, Bangudae-ro, Samnam-myeon, Ulju-gun, Ulsan, Korea