

Knowing Aluminum Formwork System

(Specially for the initial user)

Summary:

Perhaps, someone ever heard something about aluminum formwork system and be attracted, but there are still many peoples are not familiar with that. What's more, lots of person want to use aluminum formwork, but there are not really know how to use and why to use aluminum formwork.

Here, I will list some advantages of aluminum formwork system and make a comparing with plywood. At last, we will tell you what kind of circumstances are suitable to use aluminum formwork system.



The sample of Aluminum formwork system on the construction site.

Core Advantages of Aluminum formwork

1. Long using age, the average lifetime of aluminum formwork arrived more than 300 times.
2. All of structures can be assembled by aluminum formwork. After assembled, it can be an entirety structure frame with staley performance and good bearing capacity.
3. Prop head panel and support system are designed integration, pre-dismantle technique suit to deck panel support system, it greatly improved using rate of aluminum formwork.
4. Less support props for aluminum formwork system, worksite operation space gets larger, workers and material movement are flexible, extremely improved efficiency of worksite
5. After dismantling aluminum formwork system, the quality of concrete surface is flat and smooth, clean to finishing and decoration fair-faced requirements.
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Aluminum formwork profiles

Specific Information

Raw Material: Aluminum alloy profile 6061-T6

Fabrication: Cutting, Welding, CNC, and Pressing



The finished-product for aluminum formwork panels

Aluminum Series Model: 6061-T6 (GB5237-2008 standard)

Aluminum Sheet Thickness: 4mm (More strengthen designed)

Steel support, Steel pins and other accessories Material: Q235 steel

Average Weight: 24KG/ square meter (Standard panels)

Surface Treatment: Hot light body

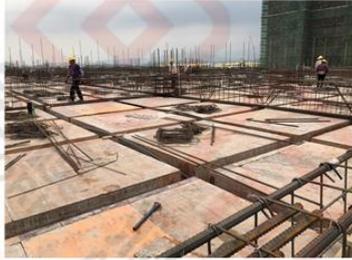
Data references

Reference 1: Comprehensive comparison of different types of Construction Formwork

Construction Formwork Comparison						
Item	Aluminum Formwork	Plywood Formwork	Combination Steel Formwork	Steel Formwork	Heavy Steel Frame x Plywood	Light Steel Frame x Plywood
Material of Panel	4mm Aluminum sheet	18mm film faced plywood	2.3~2.5mm Steel sheet	5~6mm Steel sheet	18mm Film face plywood	15mm Film face plywood
Rail Height of Formwork	65mm	15~18mm	55mm	86mm	120mm	120mm
Weight	24kg	23~27kg	35~40kg	80~85kg	56~68kg	40~42kg
Bearing capacity	60(KN/m ²)	30(KN/m ²)	50(KN/m ²)	60(KN/m ²)	60(KN/m ²)	50(KN/m ²)
Reused Time	300	8~15	100	250	200	150
Construction difficulty	Easy	Easy	Easier	Difficult	Difficult	Easy
Maintenance Charge	Low	Low	Lower	Expensive	Expensive	Expensive
Construction Efficiency	High	Low	Lower	Higher	Low	Heigher
Sharing Cost of each sqm	2.5 (RMB/ time)	6.25 (RMB/ time)	2.8 (RMB/ time)	2.8 (RMB/ time)	3.4 (RMB/ time)	3 (RMB/ time)
Create waste	No	More	Less	General	General	General
Application	Wall, Column, Beam, Slab	Wall, Column, Beam, Slab, Brigde	Wall, Column, Beam, Slab	Wall, Column, Beam, Slab, Brigde	Wall, Column, Beam, Slab	Wall, Column, Beam, Slab
Hoisting equipment	No	No	Yes	Yes	Yes	Yes
Concrete Surface Quality	Smooth and clean to finishing and decoration water requirements	Rough	Surface roughness, accuracy is not high	Smooth and clean to fulfill the requirments of ordinary fair-faced	Smooth and clean to finishing and decoration fair-faced requirements	Smooth and clean to finishing and decoration fair-faced requirements
Recyclable Value	High	Low	Moderate	Moderate	Low	Low

Reference 2: Cost analysis contrast with Plywood Panel

Foshan Runding Metal Product Co., Ltd

FORMWORK SALES COST ANALYSIS OF USING 30 FLOORS

Aluminum Formwork					Plywood Formwork				
Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total	Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total
Alu-formwork	US\$130.00	2000	30	US\$260,000.00	Plywood Formwork	US\$2.21	2000	30	US\$132,600.00
labor	US\$4.10			US\$246,000.00	labor	US\$3.68			US\$220,800.00
plasterer	US\$0.00	0	0		Exterior wall plastering	US\$4.41	300		US\$39,690.00
					Interior wall plastering	US\$2.21	1700		US\$112,710.00
The total cost of a building				US\$506,000.00	The total cost of a building				US\$505,800.00
Average cost of 30 floors				US\$8.43	Average cost of 30 floors				US\$8.43

FORMWORK SALES COST ANALYSIS OF USING 60 FLOORS

Aluminum Formwork					Plywood Formwork				
Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total	Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total
Alu-formwork	US\$130.00	2000	60	US\$260,000.00	Plywood Formwork	US\$2.21	2000	60	US\$265,200.00
labor	US\$4.10			US\$492,000.00	labor	US\$3.68			US\$441,600.00
plasterer	US\$0.00	0	0		Exterior wall plastering	US\$4.41	300		US\$79,380.00
					Interior wall plastering	US\$2.21	1700		US\$225,420.00
The total cost of a building				US\$752,000.00	The total cost of a building				US\$1,011,600.00
Average cost of 60 floors				US\$6.27	Average cost of 60 floors				US\$8.43

FORMWORK SALES COST ANALYSIS OF USING 90 FLOORS

Aluminum Formwork					Plywood Formwork				
Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total	Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total
Alu-formwork	US\$130.00	2000	90	US\$260,000.00	Plywood Formwork	US\$2.21	2000	90	US\$397,800.00
labor	US\$4.10			US\$738,000.00	labor	US\$3.68			US\$662,400.00
plasterer	US\$0.00	0	0		Exterior wall plastering	US\$4.41	300		US\$119,070.00
					Interior wall plastering	US\$2.21	1700		US\$338,130.00
The total cost of a building				US\$998,000.00	The total cost of a building				US\$1,517,400.00
Average cost of 90 floors				US\$5.54	Average cost of 90 floors				US\$8.43

FORMWORK SALES COST ANALYSIS OF USING 200 FLOORS

Aluminum Formwork					Plywood Formwork				
Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total	Cost Item	Unit Price/ m ²	Extened area (m ²)	Buildin g storey	Total
Alu-formwork	US\$130.00	2000	200	US\$260,000.00	Plywood Formwork	US\$2.21	2000	200	US\$884,000.00
labor	US\$4.10			US\$1,640,000.00	labor	US\$3.68			US\$1,472,000.00
plasterer	US\$0.00	0	0		Exterior wall plastering	US\$4.41	300		US\$264,600.00
					Interior wall plastering	US\$2.21	1700		US\$751,400.00
The total cost of a building				US\$1,900,000.00	The total cost of a building				US\$3,372,000.00
Average cost of 200 floors				US\$4.75	Average cost of 200 floors				US\$8.43

Using circumstances at Construction site

- Less ocean freights

One x 40HQ container can be loaded in 500 m² of aluminum formwork. (Noted: These 500m² of alu-form are accurately quantities of the concrete areas, no existence of waste) In generally, one typical floor of residential building is about 1500 m², it just takes 3 x 40HQ containers could be finished loading all alu-formwork system.



Aluminum formwork were packed well and loading into 40 HQ container.

As we known, the estimated quantities of plywood panels should be more than construction areas, because it will come out lots of scraps of plywood by cutting. One x 40HQ container can be loaded in around 800 pieces of 17.5 thickness of film faced plywood. (You could estimate how many containers and how many pieces of plywood panel for 1500 m² of one typical floor.)



40HQ container just could be loaded 800~1000 pcs of plywood, even still have lots of room because of weight limit.

- **Less space usage**

When the plywood arrived the worksite, they would be placed on the ground and ready to be used by workers. About 8 times of reused later, the plywood was dismantled and couldn't be used any more. The finished plywood panels should be placed at somewhere and the passengers should stay far away from them.



Work site of using plywood project



The waste plywood panels in storage of work site

Once the aluminum formwork system arrived at storage on the work site, they would be used until to finish a whole tower of the building and then were sent to the next building. After aluminum formwork system finished all of buildings, they are easy to be packed and saved. There are 70% of formwork panels could be fixed to the next project.



Aluminum formwork in storage of work site.

- **Operation space**

They are too many scaffoldings and supports if used plywood formwork system, the man cannot walk very carefully and pass the materials are not easily. Even the vertical plywood was dismantled, it still leaves too many steel props to support the slab.



Supports for plywood formwork system

Aluminum formwork system used early-stripping props devices and the distance of each props about 1200mm. Movement and operation of workers are flexible.



Supports for aluminum formwork system

The early-stripping devices should be kept till to 15 days later since dismantled all of alu-formwork. In this situation, workers can walk smoothly and not afraid to be hit by the complicated scaffoldings.



After 24~48 hours could remove all of alu-formwork panels, stayed supports only.

- Structures are built by once

There are no doubt that to build walls, beams, columns and staircases by one concrete pouring, regardless of whether to use wooden formwork or aluminum formwork.



Plywood project



Binding the steel bars on the slab in plywood project



Waiting for the second concrete pouring



Steel bars reservation are waiting to be bound and made second concrete pouring, in plywood project.

But, the **protruding structures** like Bay windows (with dripping lines), Balconies, Air-conditional boards, sunkens and even elevator shafts also are finished as monolithic structure of each typical floor while using aluminum formwork system. It can save the work time for doing second concrete casting at the same time.



Protruding structure of external wall, aluminum formwork project.



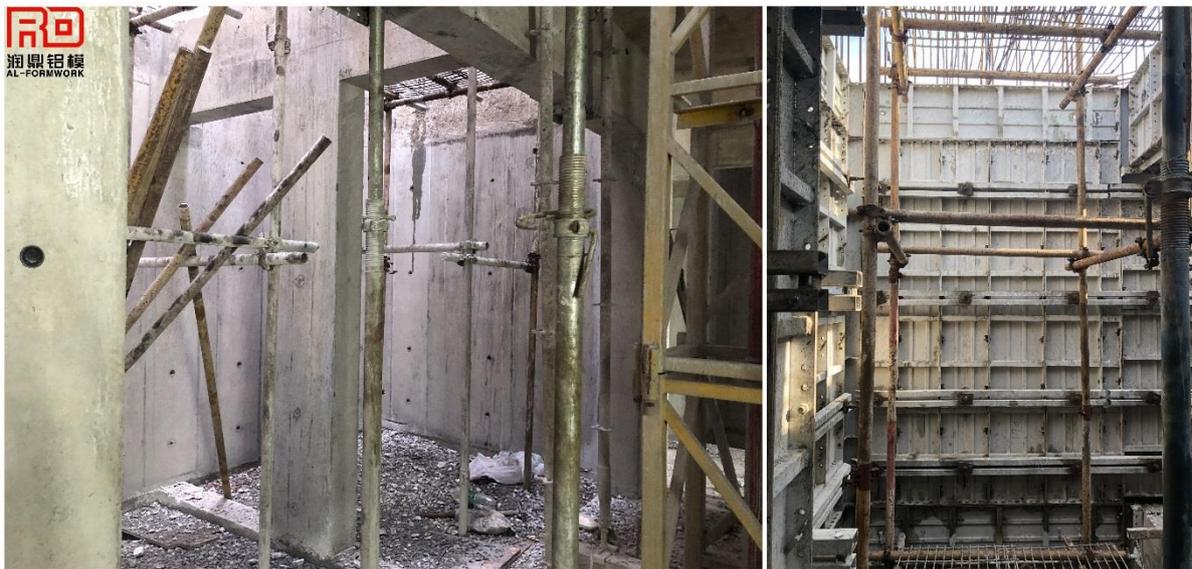
Steel bars of Bay window could be bound and built by once time in the aluminum formwork project.



Dripping line of bay window



Aluminum formwork system could be set up all of structures



Elevator shaft, the right side before pouring.

- **Shorten construction period**

In generally, 5 days for finishing a typical floor by one set of aluminum formwork system, if your construction team with rich experience, the construction period will be shorter.



- **Safety construction environment**

Plywood formwork are connected and fixed by iron nails. Iron nails still left on the concrete surface or dropped on the ground when dismantle the plywood panels, the workers are easy to get hurt carelessly.



Plywood are fixed by iron nails with little wooden sheets



Iron nails stayed on the concrete surface.

Aluminum formwork panels are fastened by steel dowels and wedge pins, which are could be reused and with no sharps to hit people. It won't stayed anything on concrete surface and is very easy to take off by hammer.



Steel wedge pins are locked on each aluminum panels.



They are no sharp things leave on the concrete surface.

- **Excellent concrete surface quality**

Demoulding agent should be used together for protection aluminum formwork panels. Because there are some chemical things will happen when concrete stick with aluminum alloy material, so it should be coated water-base demoulding agents on before set up alu-forms. Concrete surface quality are flat and smooth, could achieve clean to finishing and decoration fair-faced requirements. Saving charge of plastering.



Coating the demoulding agent.



Concrete surface



Concrete effect

- **High recycled value**

Due to the formwork panels are made by aluminum alloy material, the waste formwork and steel accessories still have a pretty good residual value to be recycled. For example, the recycled price arrived \$35/m². (Recycle price should be referred to local situation)

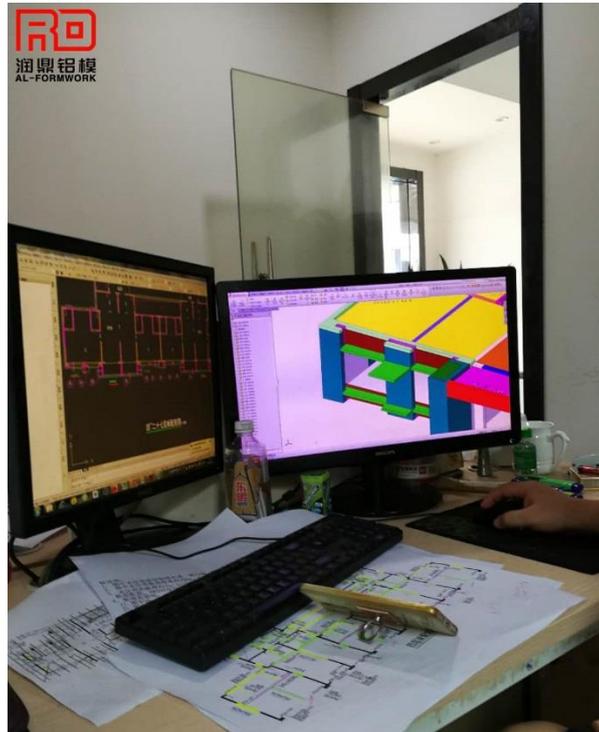


Recycled aluminum formwork standard panels from our domestic building project.

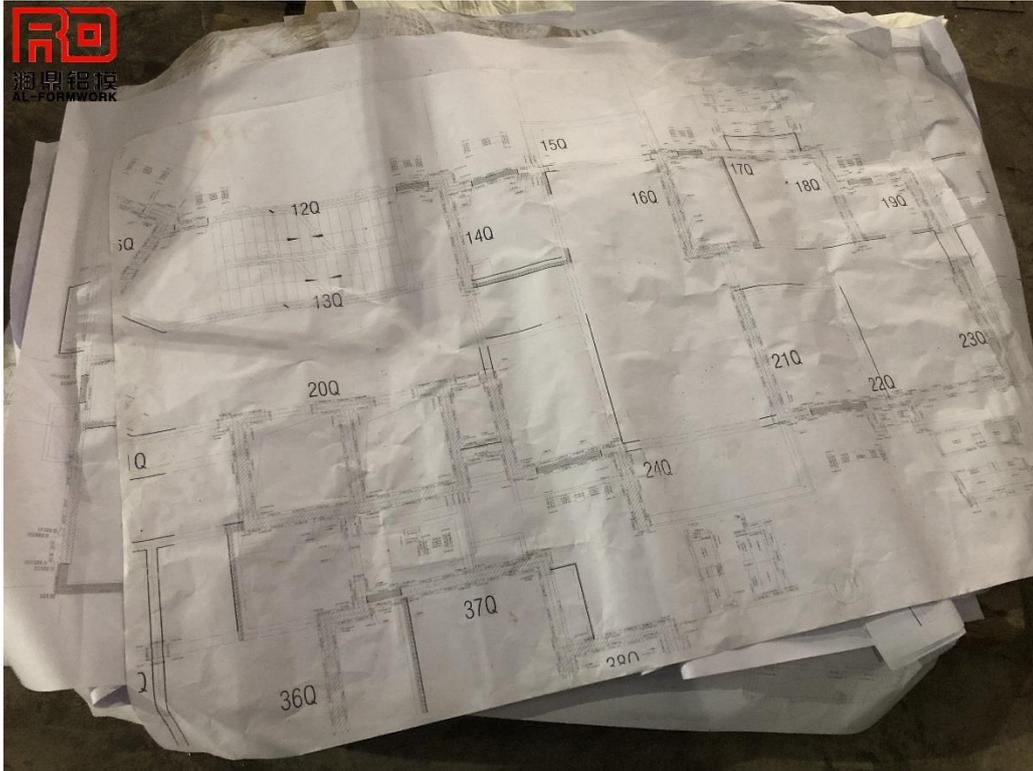


Real situation of the aluminum formwork after using by 250 times

Even though the aluminum formwork system had finished the current projects, there were still 60% ~80% of standardized al-formwork panels could be reused into the future projects. If you bought al-formwork system from same factory like us, we could produce the new panels to fix with the old panels according to next project designs. Will help customer extend the max of optimization using for aluminum formwork.



Aluminum formwork allocation drawing design



Aluminum formwork diagrams

Regardless of whether you are the first time to use aluminum formwork system or you are skilled technicians, RD factory welcome construction staff to learn how to install and dismantle al-formwork system once you purchased our RD Al-Formwork system. Any problems, it will be solved at once in our workshop. Clients don't worry about the troubles, even you are an initial user.



Pre-assemble the a whole set of alu-formwork system



100% Mock-up Installation in workshop

Application projects

The most important point of Aluminum formwork system is it has an excellent feature of **sharing the cost of construction formwork** because of **number of reused times**.

So, what style of architecture projects are suitable to be used aluminum formwork system?

- **Multi-story hotel, Tower**



- High-rise commercial, residential and apartment buildings



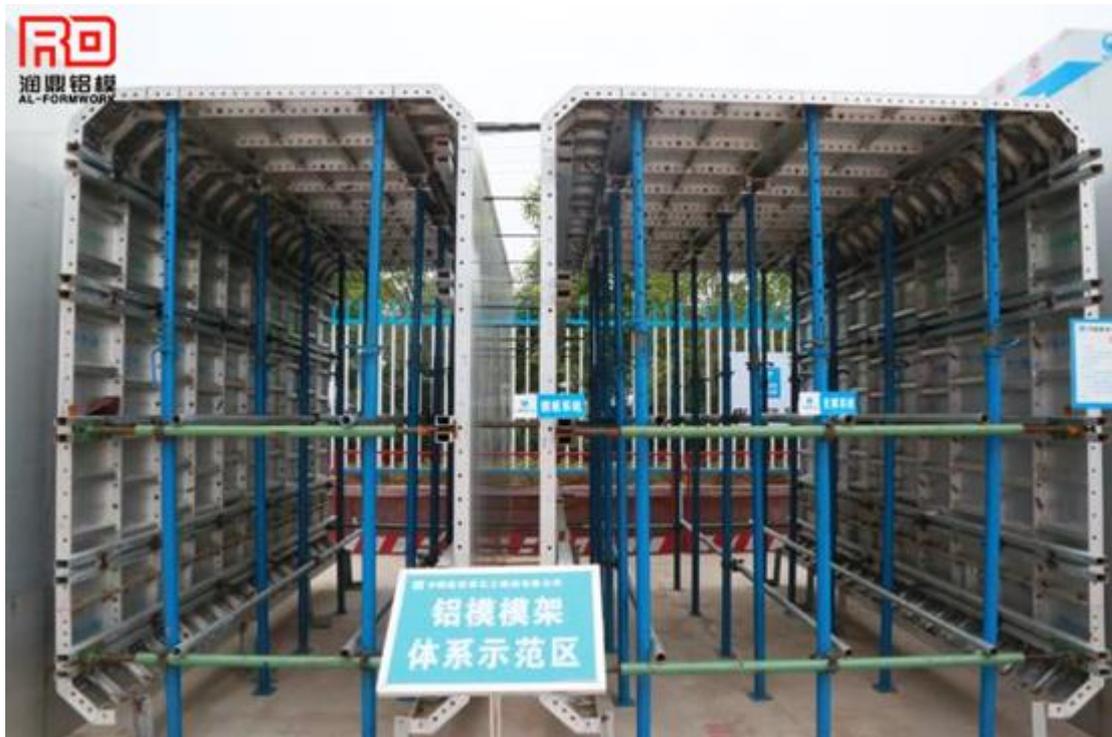
- Affordable housing



- Large scale villas



- Tunnels and Underground pipe gallery



After reading this article, I think you have certain understanding with aluminum formwork system. If you are the first time to get in touch with aluminum formwork and be good ready to adopt aluminum formwork system for the coming projects, please try to contact us directly.

Thank You

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