

### PCB NEWS UPDATE

## Prices of Copper-Clad Laminates Continue to Rise

Source: I-Connect007 China Team

Forces within and outside the PCB industry have led to concerns over rising prices for raw materials of copper-clad laminates (CCL).

Prices have risen steadily in 2020, with leading CCL manufacturers announcing price increases of 20-30% recently. As the cost of raw materials such as electronic copper foil, resin and glass fiber have risen, the cost for manufacturing CCL has taken off as well.

The manufacture of printed circuit boards requires several raw materials, including copper-clad laminates, copper foils, copper balls and substrates, such as prepregs. Among the raw materials, copper-clad laminates are the key substrate for PCB manufacturing, taking the lion's share of the cost of PCB raw materials, as well as the most bargaining power in the PCB supply chain.

Note the cost of raw materials as a percentage of CCL:

- Copper foil: 30-50%
- Glass fiber: 24-40%
- Resin: 25-30%

### Facility Explosions, Fires Disrupt Supply Lines

Recently, two major explosions at epoxy resin plants in China had a great impact on domestic resin suppliers. The first explosion occurred at the Guodu Chemical Resin Plant. The second occurred at the Xingya plant in Suzhou. These two major explosions in such a short amount of time interrupted the supply of resin and caused prices to skyrocket.

On November 5, cracked equipment resulted in a fire at LG Chemical Yeosu plant in South Korea, interrupting the production of ethylene and propylene.

Several market insiders have predicted that the future price of bisphenol A (BPA) will be affected and the epoxy price will continue to rise in the short term.

Because of the accident, the epoxy supply has tightened up and prices have risen sharply, even doubling in less than two hours.

Materials suppliers around the world have felt the ramifications.

“Increased demand, static capacity, industrial accidents, and the global pandemic have all come together to cause longer lead times, reduced availability, and upward price pressure for key raw materials,” said Mark Goodwin, COO of EMEA & Americas for Ventec International Group. “One of the factory accidents occurred at a top 5 supplier of epoxy in China, with an immediate impact on prices and supply of epoxy resin globally. The situation is serious. Today more than ever, owning and controlling the complete supply chain of PCB materials including laminates, and prepregs from end to end, is a clear advantage by giving the flexibility to adapt to these unforeseen events outside normal control.”

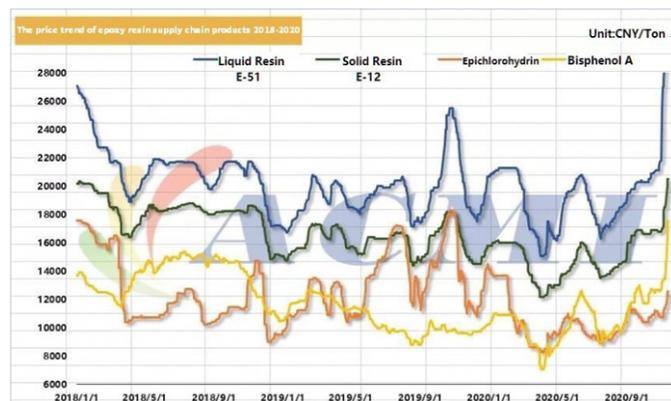


Figure 1: Resin prices have been particularly volatile over the 2018-2020 period, as this chart illustrates.

It is worth noting that after an explosion, local authorities conduct thorough audits on the safety of epoxy resin manufacturers and other raw material suppliers. Production of materials decreases, and supply may be tighter. On the other hand, due to the atmospheric emission reduction requirements, some epoxy resin companies cannot operate at full capacity.

To make things worse, some companies planned to conduct maintenance in November and December, so it was expected that there would be a major gap in epoxy resin supply for the short term.

Insiders believe that most factories are 80-90% capacity, with some even close to 100%. They want to reserve that last bit for their core customers, so they have adopted

measures to raise prices to control incoming orders. Some experts believe that a tanker truck full of resin may cost upwards of 30,000 CNY/ton.

### Copper Foil

The cost of copper foil is crucial to the price of copper-clad laminates.

The COVID-19 pandemic has had a major impact on countries that produce minerals, such as the U.S., Chile, Canada, and Zambia, which has raised a bit of a concern about production and supply in the market, and another reason the price of copper price continues to rise.

Within China, as part of the post-pandemic recovery, the price of non-ferrous metals—one of the basic industrial raw materials—has been rising along with demand. Government infrastructure construction expenditures also increased in 2020, thus new infrastructure construction and new urbanization construction has continued to raise the demand for the industrial metal.

In the second half of 2020, the price of electrolytic copper passed 50,000 CNY per ton. By November, the average price for electrolytic copper was 52,000 CNY per ton.

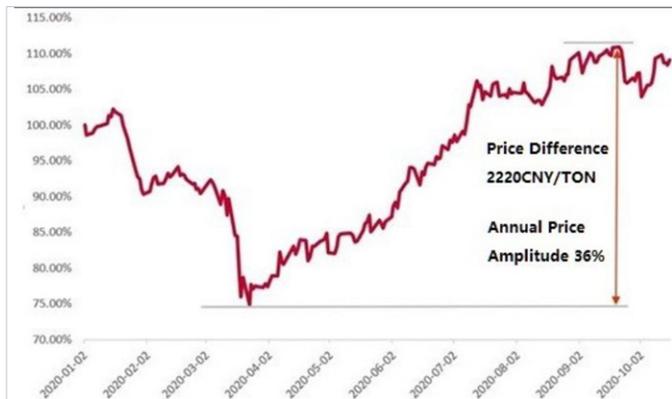


Figure 2: LME copper prices continue to rise (Source: Prismatic, ZhongTai Securities).

### Glass Fiber

The demand for glass fiber typically follows a cycle, and demand has grown steadily along with the economic recovery in the second half of 2020. On the supply side, there has been little growth since 2019, but constant demand from the wind power sector and infrastructure companies has allowed the glass fiber market to rebound. According to Hithink Flush Financial Report, the three leading Chinese glass fiber companies have raised prices since September, which may signal a bull market for them.

The compiled data is for informational purposes only.

In general, the rise in CCL prices follows the same reasoning. First, the cost of raw materials is passed downstream. Second, new policies implemented by the Chinese government have helped the automobile market to rebound strongly. With more consumers buying cars and home appliances, the demand for copper-clad laminates has increased.

A price increase for CCL raw materials in the second half of the year is not uncommon, analysts say, but this year, costs have risen significantly compared to previous years.

As China recovers financially from the pandemic, the availability of consumer products has been delayed. There have been shortages and price increases in consumer electronics, such as laptops, home appliances, etc. Some analysts believe that this increased demand has led to a rise in the price of copper-clad laminates as fabricators are under pressure to mine raw materials and meet the market demand.

Under these circumstances, some CCL manufacturers are trying to manage by only taking orders from existing orders; new clients who haven't paid will see their orders canceled. Some manufacturers worry that they might eventually be unable to secure the needed raw materials, even at a higher cost.

Suppliers continues to react. On November 18, Guangdong Kingboard Laminates announced price increases for the following products:

- FR-4 (40\*8) up 10CNY/sheet
- CEM-1/22F (40\*48) up 5CNY/sheet
- VO/HB (1030\*1230) up 5CNY/sheet
- PP (150 meters) up 200CNY/roll

### Will Prices Continue to Rise?

According to an analysis by industry experts, the price of resin in the future depends on the extent of the price increase in raw materials and the strength of demand. In the short term, most of the price increases are in low-end and mid-end materials. The high-end product category has been more profitable by using qualified materials, so the price increase may be delayed. If the communication sector recovers, prices will most likely increase.

Compiled from ESMC China, Gelonghui, ACMI, Semiconductor Investment Alliance, and Zhongtai Securities