PLATING PRODUCTS IND PVT LTD

Plot No.G 527, Phase 2, UPSIDC, M.G. Road, Industrial Area, Tehsil Dhaulana, Dist. Hapur, Uttarpradesh 201015.
CIN No.: U24303MH2021PTC371241
Gala No. 116, Saraf Udyog Bhavan, Chincholi Phatak, Malad (West), Mumbai – 400 064.
Phone: 9821340134/ 8104437477 Email: lab@platingproducts.in or info@platingproducts.in

Technical Data Sheet

LUMINO BRITE 621

Bright- copper bath for high brilliance , low _stressed and ductile deposits.

PROPERTIES :-

Excellent bright deposits for functional and decorative applications.
Low-stressed, ductile coatings,suited for plating on plastics .
High leveling and extra ordinary brightness even at low coating thickness.

CHEMICALS :-

LUMINO BRITE 621-MU

LUMINO BRITE 621-A

LUMINO BRITE 621-B

Copper Sulphate 5-hydrate

Sulphuric Acid , D 1.84 ,chem. Pure

Sodium chloride, chem.. pure

MAKE UP :

Make up of 100 liter bath volume	Kg	Liter
1.Water , demin .	Approx .88.0	Approx . 88.0
2. Copper sulphate- $5H_2O$	22.0	
3.Sulphuric Acid,D 1.84 , chem. Pure	6.5	3.5
4.Sodium Chloride , chem. Pure	0.0165	
5.LUMINO BRITE **621-MU**	4 -8ml/L	8ml/L
6.LUMINO BRITE **621-A**	0.4-0.6ml/L	0.6ml/L
7.LUMINO BRITE **621-B**	0.4-0.6ml/ L	0.6/L

Dissolve copper sulphate in a separate tank in approximately 50Lit of demin water.
Add approx 0.2 Kg of activated charcoal and stir for about 1 hour.
Filter carefully into the working tank and fill up almost to the end volume with demin water.

Add sulfuric acid and sodium chloride , which has been dissolved in a small quantity of water , to clear the solution under stirring. After cooling down to room temperature add organic additives . Stir well again
If basic chemicals of unknown quality are used , it is recommended to dummy-plate for 2-3 Ah/l at 1A/dm2 before adding organic additives.

Attention : after make-up analysis of chloride content should take place more frequently until a stable Anodefilm has been formed.

PROCESS AND EQUIPMENTS :

Tanks : Polypropylene , PVC , rubber lined steel .

Bath-agitation : air agitation required 10-20m3/h air per meter cathode-rod. The used oil should be oil and dust free. In addition a mechanical agitation is recommended

Filtration :continuous filtration , several bath volumes per hour . Porosity of filter as low as possible.

Exhaust : required .

Temperature : 20-30 C

pH :< 1.0 – supervision not necessary .

Anodes : all types anodes can be used if their purity is 99.9 % copper and if they contain 0.02-0.06% phosphorous

Current Density : Cathodic : 1.0 - 6.0 A/dm2 (rack)
1.0A/dm2 (barrel)
Anodic : 0.5 – 2.5 A/dm2

SUPERVISION AND CORRECTION :

For maintaince of the bath supervision of the following parameters is required

Copper : 56 (50-60) g/l
Sulfuric acid: 65(60-70) g/l
Chloride : 100 (100-120) mg/l

To increase the copper content 1g/l add 393 g of copper sulphate-5H_2O per 100 l bath volume. Copper sulphate should be dissolved in demin water and treated with activated carbon.At the same time LUMINO BRITE **621-MU** must be replenished(50ml/kg Copper sulfate-5H_2O)

To increase the sulfuric acid content by 1g/l add 100g of sulfuric acid , D1.84 , chem. Pure , per 100 l bath volume .A Sulfuric acid must be as clear as water .

To increase the chloride content by 1 mg/l add 165 mg of sodium chloride per 100 l bath volume.

LUMINO BRITE 621-A andLUMINO BRITE **621-B** have to be replenished at regular intervals :

Consumption per 10.000Ah	
LUMINO BRITE 621-A:	0.6 L (0.5-1.0 L)
LUMINO BRITE 621-B :	0.5 L (0.4-0.6 L)

The consumption depends on requested degree of brightness and the drag out.

LUMINO BRITE 621-MU will be consumed in general by drag-out. With every addition of copper sulfate add 50 ml of LUMINO BRITE 621-MU per Kg copper sulfate-$5H_2O$

Supervision of the organic additive is done by hull-cell testing.

ANALYTICAL INSTRUCTIONS :

Determination of copper content :

Reagents:
- EDTA-standard solution , 0.05M .
- Ammonia solution(300g Ammonia,25%/L)
- Indicator: Murexid, 1:100grinded with sodium chloride

Instruction :
- Put 10.0 ml of copper bath into a 250ml volumetric flask.
- Fill up with demin water to the mark and stir well.
- put 25.0ml of this solution(1.0ml bath solution) into a 500 ml Erlenmeyer flask
- add 250 ml of demin water
- carefully add diluted ammonia until solution turns deep-blue.
- add a pinch of indicator
- titrate with 0.05 M EDTA-standard solution until the color changes from reddish-yellow to deep-violet.
- The consumed EDTA-standard solution in ml multiplied by 3.117 gives the copper content in g/l.

Determination of sulfuric acid content :

Reagents :
- 0.1 N NaOH standard solution.
- Methylorange indicator , 0.1%.

Instruction:
- put 10.0ml of copper bath into a 250ml-volumetric flask.
- fill up with demin water to the mark and mix well.
- put 25.0ml of this solution into a 250ml-Erlenmeyer flask
- add 100 ml of demin water.

- add 5 drops of indicator.

-Titrate with 0.1 N NaOH standard solution until the color changes from red to yellow

-The consumed NaOH standard solution in ml multiplied by 4.9 gives the sulfuric acid content in g/l

Determination of Chloride content :

Reagents: -0.01 N Mercuric(ll)-nitrate-standard solution.

-0.1N Silver nitrate solution

-diluted nitric acid (1:1)

Instructions: - put 25.0 ml of copper bath in 250 ml-Erlenmeyer flask.

- add 30ml of demin water and 30ml of diluted nitric acid.

- Add 3-5 drops of 0.1N Silver nitrate solution a staying turbidity.

- titrate immediately under a strong stirring with 0.01 N Mercuric(ll)nitrate-standard solution until turbidity clarifies.

The consumed Mercuric(ll)-nitrate-standard solution in ml multiplied by 14.2 gives the chloride content in mg/l.

Hull-cell Instructions :

Before testing in the hull-cell make sure that the contents of copper , sulfuric acid and chloride are adjusted within the prescribed limits.

Equipments : -Hull-cell 250ml with or without air agitation .

-magnetic stirrer or mechanical agitation with wiper motor.

-rectifier 0-6V/0-5A

-test sheets of brass or copper.

-scotch brite and abrasive powder .

Instructions: -put 250ml of bath solution into the cell.

-clean test sheet with abrasive powder and scotch brite.

-Rinse well under flowing water.

-dip into 10% sulfuric acid -

rinse again.

-insert test sheet in hull cell.

-turn on air agitation or mechanical stirrer.

-adjust 2.0A.
-after 10 mins switch of current and remove test panel from the cell.

-rinse the test panel well and dry carefully.

Interpretations: With normal concentration of the constituents the test panel shows bright deposits from 0-100mm .Backside totally covered.

Influence of LUMINO BRITE 621-A and LUMINO BRITE 621-B :

Shortage of both
brighteners: poor leveling at all current densities.
Hazyness at low current density from 85-100mm.

Excess of both
Brighteners: strong excess(>2-fold conc.) shows a sharp demarcated not leveled area at low current density.

Influence of LUMINO BRITE 621-A:
Shortage : poor leveling at all current densities.

Excess : sharp demarcated not leveled area at low current density.

Influence of LUMINO BRITE 621-B :

Shortage : Burning at high current densities .

Excess **:** strong hazyness or dull deposits at low current densities.

<u>Influence of LUMINO</u> BRITE 621-MU:

Shortage **:** relief deposits at high and medium current densities

Excess **:** low current densities hazy

IMPORTANT NOTICE : for industrial use only.

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