PU HB 3500

Description:

This cathodic clear coat system based on polyurethane resin is specially developed to coat electrophoretically decorative surfaces and can be applied from 5 microns to 30 microns. This cathodic clear coat system is an excellent protection for high gloss metals and metal plated surfaces of Gold, Chromium, Copper, Silver, Nickel, Aluminum, Stainless steel and other alloys from atmospheric influences as well as from every day wear and tear. This product imparts gloss, clarity, hardness, smoothness, scratch resistance, solvent resistance, chemicals / salt resistance and UV resistance to prolong the life of substrate beyond imagination.

Supply Material Data:

Test	**Specification**	**Unit**
Colour	Light Yellow	
Viscosity	10 – 20	Pa.s
Density as per DIN 53217	1.0 – 1.1	g/cm^3
Solid content (120 ^{0}C / 1 hr)	58 - 62	%
MEQ value (100 % solids)	38 - 42	mMol
Flash point as per DIN 53213	> 21	^{o}C
Shelf life (Storage at 4^{o}C to 40^{o}C)	Maximum 6 months	
Hazard category as per VbF	Not applicable	

A) Procedure for Bath Preparation:

Formula (For 8 % solids)

Part A - DM water => 867 grams / ml
Part B - PU HB 3500 **=>** 133 grams

Total - Bath volume => 1000 grams

Weigh exactly 867 grams (or mL) of DM water (Part A) in cleaned 1.5 liter of container. Weigh 133 grams of **PU HB 3500** in another small container (Part B). Add Part B to Part A under gentle stirring. Rate of addition should be such that entire addition should be finished not before 15 minutes. As the entire quantity is transferred to DM water, continue stirring for another 20 minutes. Care to be taken to avoid generation of foaming in large quantity.

Allow foam to settle down before bath is taken for coating. It is highly desirable to filter the bath material through 600 – 800 mesh to remove any impurities in the bath coming from DM water or apparatus used for making the bath.
After complete homogenization bath may be filtered through filters ranging from 0.2 to 1.0 micron.

Note:

1) It is recommended to give aging of 24 hours before bath is taken for coating & circulate UF unit for 2 hours.
2) For jewellery items (low DFT), it is recommended to make bath with lower solids of 6 to 8 %.
3) For lacquer addition into the running bath, it is recommended to take 10 liters of bath solution for mixing of 1 kgs of lacquer.

B) Procedure for Rinses Preparation:

Formula (1000 mL)

Part A - DM water	=>	990 mL
Part B - Solvent A	**=>**	10 mL
Total - Bath volume	=>	1000 mL

Mixing Procedure:

Measure exactly 10 mL of Solvent A (Part B). Measure 990 mL of DM water in 1.5 liter container (Part A). Add Solvent A (Part B) to DM water (Part A) under stirring in 5 minutes. Ensure complete mixing before stirring is stopped.

Important Note:

1) Ensure proper cleaning of all the apparatus used before making the bath with Solvent -A followed by rinsing with DM water.
2) Use SS / Plastic / Glass apparatus for mixing.

C. Procedure for use of Dye:

Any RRR approved dye (water based / solvent based) or dye solution may be used to impart any specific color to lacquer film as required by customer. But care to be taken to add required quantity of dye to supply resin material and then bath be made.

Important Note:

No dye solution should be added directly in the bath as it may not give satisfactory results.

D. Preparation of rinse aid baths

Add 1 mL of rinse aid concentrate for 1 liter of rinse bath

E) Bath conditioning (For Dye baths only)

1) For hardware items where DFT of 10 – 20 microns is required, bath may be aged for 12 - 16 hours before taking for production
2) For jewelry items where DFT required is less than 10 microns, bath may be given overnight aging or 40 to 70 % of UF discarding is recommended.
3) In specific cases, bath pH may be brought down to 4.2 – 4.5 for uniformity in color.
4) **For every litre discarding permiate add 7 ml of PM solvent and 2 ml of Flow Additive.**

F) Bath Processing Parameters:

Test	**Specification**	**Unit**
Substrate	Surfaces with any kind of plating or pure metal / alloy	
pH value @ 25 ^{0}C	4.4 – 4.8	
Specific Conductivity @ 25 deg.C	Maximum 1100	Micro.S/cm
Bath solids (120 ^{0}C / 1 hour)	8 – 10*	%
MEQ value (100 % solids)	38 – 42	mMol
Deposition equivalent	35 – 45	As / grams
Density of solids	1.0 – 1.15	g/ cm^3
Theoretical coverage @10 micron DFT	19 grams of supply material	Meter^2
Deposition time	30 – 60	seconds
Coating voltage	30 – 120	Volts
Ramp time	5 - 10	seconds
Bath temperature	24 – 26	^{0}C
Coating thickness	5 - 30	Microns
Baking time	160 ^{0}C/ 25 min. EMT	
Flash off / Predrying zone	Hot air blow (if possible)	

*__Higher or lower values of bath solids are possible for any specific application__

G) Mechanical Characteristics of Dry Film:

Test	**Specification**	**Unit**
Substrate	Surfaces with any kind of plating or pure metal / alloy	

Colour	colourless	
Gloss / clarity *	High gloss and clarity	
Adhesion (1 mm * 1 mm)	Passes 100 %	
Pencil hardness (Mitsubishi)	2H – 4H	
Cupping Test (DIN –ISO 1520)	> 6	mm
Mandrel bend test (DIN –ISO 1520)	Passes 6.0	mm
Impact resistance 980 g / 20 cm / 2 inch	Passes Direct / Indirect	

Note:

1) It is recommended to check hardness and perspiration cycle test after 72 hours of coating of surface.

H) Chemical Characteristics of Dry Film:

Test	**Specification**	**Unit**
Substrate	Surfaces with any kind of plating or pure metal / alloy	
Acetone rub	Passes Min. 3000 rubs	
Acid resistance (N / 10 HCl)	Passes Min. 60 dip	Hours
Alkali resistance (N / 10 NaOH)	Passes Min. 60 dip	Hours
Perspiration Test	4 – 5 cycle passes	
Hypochloride Test (70 Deg C)	Passes	

I. Corrosion Protection of Dry Film:

Test	**Specification**	**Unit**
Substrate	Surfaces with any kind of plating or pure metal / alloy	
Salt spray test (ASTMB 117)	Passes Min. 60	Hours
Water resistance (IS 101)	Passes Min. 100	Hours
Humidity resistance (IS 101)	Passes Min. 100	Hours

Note:

Lacquer film DFT = min. 15 microns

J) Outdoor Durability of Dry Film:

Test	**Specification**	**Unit**
Substrate	Surfaces with any kind of plating or pure metal / alloy	
Weather –o-meter sunshine	Min. 1000	Hours

Xenotest 150	Min. 1000	Hours

Note:

1) Performance of lacquer is dependent upon quality of electroplating and substrate processing parameters.
2) This is general procedure for bath commissioning. RRR technical person should be consulted before commissioning for possible variations in this procedure for specific application.

Warranty: The above information has been given in good faith and based on our knowldege, information and experience. RRR has no control over the goods once it leaves our premises. All chemicals, including those which are not classified as hazardous, must be treated with proper care and all necessary precautions for handling and disposing of chemicals must be followed. No liability arises out of handling or use.

RANE RAO RESHAMIA LABORATORIES PVT. LTD.
Plot 80, Sector 23, CIDCO Industrial Area
Turbhe Naka, Navi Mumbai – 400 705 INDIA
Tel. +91 22 2768 3175 & 2768 4646
Fax +91 22 2783 4814
rrrlabs@rrrlabs.com; www.rrrlabs.com

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