e fixuar	entropa 1	Page No.:  Page No.:  YOUVA	
18/11	METHODS OF CLEANING THE METAL (SU	REACE	
02.13	Physical / Solvent Cleaning: To dix	olve oils	_
modelle	and onegus Fq: CC), CH2C12, ChC	- 60/2	_
24:400	Chemical Alkali Cleaning: 10 herro	ve minuse	_
	organic residues, removal of them.	m oma oxide	_
sect	hems eg Na OH Na CO2 No 2 PO 3.	60 G7WG J	
•	Mechanical Cleaning: Removal of	oxide layer	4
	on run and other imorganic depor	its Eg impo	uct
male ions	tools like sandpaper, knife scrap	ens, wire	
user.	and becushes get a shower of months and		_
Polle.	Pickling: Removal of orude fil	ms by mean	25
	of an acid eg 10=30% MgSO	be chanced	,
	Electropolishing: The metal to is made as anode in a suitable		
	w man w w w w w w w w w w w w w w w w w w w	was some	
	ELECTROPLATING LIOF CHROMIUMA &	· Deliver	
chtainea	whom as current of deposit thickness		
	Decorative Chromium: A thin depo	mt of Cy	
areso	applied over either Cu-Nion Ni	undercoat.	
retedi	0.25-0.75 jum g soppose all took	e March	
	nowing nower is commitmed good.	His HA	
anchien	Mard Chromium- Involves deposition	on of a thick	
7777	2.5-300 jum.	the substrate	<u></u>
			_
			_
			_

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			-2		
	1	Decorative	Mard		
	Bath composition.	Chromic acid (250) 9+	Chromic acid (250g) =:		
	makel in alter	H2504 (2.5g)+	H250, (2.5g) +		
	in Ozi inica candi	Trivalent (r (1g)	Touvalent (x(1g)		
	a aritudas Sa	a trobled charact	Day ed I		
	operating temp.	313-3281	313-328K		
de	Anode	Insoluble Pb-5n	Insoluble Po-Sn_		
	Aim	alloy	alloy		
lee .	Cathode	diffice to be	destide to be		
pact		coated	Coated.		
	Current dennity	20-40 mA/cm2	30-40 mA/cm2		
		1037 10-15 whole ?	0.017-21		
ens	Cathode efficiency	Decorative cyplm	(Rating of		
	applications	with corrosion	industrial		
d	acod Fill so H	resistance finish	components like		
	A ON SORI MAR	inselace.	gauges, dies etc		
	12 - 2 + 1/9	POLY + POLY	2 " " '   '   '		
	4117516	i control on year	157		
	e cy in cont	used as amode be	caux it		
	18	hannic acid wille	41)		
<del>-</del> -	1 = 1 allecte	no. coalang.			
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
			' '		
k	- 1:	m camous eyear			
te.		1 4 10000 80 100 100			
	course more	ce affect the choice	mic acrd conc		
		the state of the s			
	- 1 monthown	time in necessant	cus Cy is		
Cu-Ni undercoating is present cus Cy is microporous and it does not have good ru					
	and incommendable and	70 0 000	Q .		
	sustistance.	exercitors lesse ac	99- (9)		
	in the last of the	20 37123 213171717			

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	ELECTROLESS PLATING.
does to	Bush companion Churani and (250) + Chromic as
+ (62	Meshod of depositing a metal on alloy over
(pD0)	a substrate (conductor on non conductor)
	by controlled chemical reduction of the
8 8	metal ions by a suitable reducing agent
1 Ph-5n	without using electorical everyy.
	The state of the s
lo be	Metal ions + Reducing agent
	Metal + oscidized peroduct
	Tunnerst derivity SC-40 mA from 30-40
	Proces of electroless Plating:
5	Carlifoliana Decaratives captus - Carlina
. ( <del> </del> )	Preparation of active surface.
-112 VEG	theatment with Shall and Palle on the
لادة داد	platic surface.
	SnC12 + PdC12 Pd + SnC14
	Pd is coated on plastic
۱ ۵	Person Cor in mot used as another leconors it
Tig	Pouparation of plating both (composition of the both
has the said	ingle it along the centing and due to L.
	a) Metal to be coated in the journ of respective solt
O. Correct	1 180/n para in property of the service of the
0 33.1	b) Reducing agents like Journaldehyde and socium
	ny pophorphale and some
	c) Complexing agents like EDTA tartarates,
5	citerates to josem metal comperces to prevent
	d) Atabia
	d) Stabilizers like Phiourea, Ca jons to prevent
	e) decomp of the bath
	e) Accelerators like succinates, glycimates be increase plating eate.
	municipaling erate.

f) Brighteners like this sulphate to give a lustrous
appearance.
g) Buffors like bossic acid to maintain pH.
La delinate de la consensa del la consensa de la co
Reduction step: Active surface is dipped in the
bath and deposition is carried out.
The grate of deposition is controlled by the
amount of reclucing agent
And to good and at the total
ELECTROLESS PLATING OF CO
- lost per mait quicht a the deponited in a
Composition of bath:
- Coaring soln: CuSO, soln (129/1)
· Redui agent: HCMO & (8g/e)
· Buffer: Na OH (15 g/e) and Rochelle Salt (4918)
· Complering agent: EDTA disodium salt (20912)
Ophmem pH: 11
· Optimum temp: 25°C
ev2+ + 2e -> Cu (meduction) TANIAGA
2HCHO + 40H -> 2H(00 +2H20+H2+2e (oxd)
the set to be an in the set of th
$C\omega^{2+}$ + 2 HCHO+ OH $\rightarrow$ 2HCOO+2n20+ H2+ CW
and the second of the second o
ADVANTAGES MAINTENANT CON CONTINUE AND
More unisprom coating with better TP than
electroplating
No electrical energy required.
Superior quality deposits.
additives, levelors on complex filtration not required
Simple equipment.

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and when the	Plating on auticles made of insulat	oers and			
	Semi conductors.	oppe			
- N	Costing is boarded & better wear	resistan	ce.		
	Coating por possesses unique mech	anical	and		
. %:	chemical properties.	Reducts	1		
	The britains in declaration has	o did			
	DISAPVANTAGES	MAN			
	work of medicing again	0.000			
,	Cost of waste treatment high				
	Forequency of duraping electroless	oath is	high		
	Cost per unit weight of the depor	rited me	talare		
	more.	Ecompos			_
	Needs pivie chemicals	- (00)			_
-	Chemical meductants expensive.	· Roc			_
StraDay	Metal saers and reductants are	Thermode	momical		_
20012)	not Mable 1 1703 many missing				
3	Impurities dux or colloidal part	icles pro	mote		_
	decomp of bath components.	MO.			
					_
	APPLICATION CAMERON W <- 98+	T = 00			_
( 1 pos)	O + HCH = SHIOU + SHE OIN + SE				_
	Used Jos metalizing PCBs				_
	For producing through-hole conne	chian			_
	necessary when double sided PCBs	are jai	bricated		_
	For plating on non conductors.				_
	1 0	' '			_
	migrim coaling with better It them	Moses !			_
	faring to the second				_
	ctruicale energy seconisad.		,		_
	on aucelia deposits				_
i se me	in since on example a laboration co	delete			_
	a coerig procession				_
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	COMPARISON OF	F ELECTROPLATING AN	ND ELECTROLESS
		Electroplating	Flating Flating
	Deriving Force	Electrical energy	pecreasing in free energy of the redox no
	Cathodic Rxn	$M^{n_{\tau}} + ne^{-} \rightarrow M$	$M^{n+} + ne^- \rightarrow M$
	Name of deposit	Seperate anode Pure metal or	Reducing agent in so Metal with reducing
0	Thickney (um)	1-100	moducts as impusition
	Thickness (pm) Applicability	To conductors	To conductors and
colg	Throwing Power. GP)	Les TP: (annot be used Jos isrug	More TP: can be un
		integular shapes 8 intricate objects	objects.
12d			
	,		
		-	