

surface fixing

requirements

additional explanations !

--> the definition of the film thickness is only according to the selected position. (see XXXXXX marking on the piece part drawing)
 --> herewith all existing surface-agreements will be replaced.
 --> the text fo order (IFAX) is binding for the declaration of the film thickness and the procedure.
 --> the drawing has to contain measuring points and the declaration (mm²)
 --> if there are minimum values required it has explicit be named

Ni (ductile) = flexible / ductile

pa = passivated /
 good glide characteristic but
 soldering and also the
 electrical characteristics
 should not be affected

P = Phosphor

type of surface	operation Code	structure of the film	key numbers IMS	ability of flanging / ductile	solderable	adhesion	non magnetic	salt spray test			
Gold	2.1	Cu Flash + 2ym Ni (ductile) + Au		X	X	X					
		tolerances see attachment	0.2 ym	1							
			0.8 ym	1							
			1.3 ym	2							
			2.0 ym	2							
	2.3	Cu Flash + 4ym Ni + Au				X	X				
		tolerances see attachment	0.2 ym	1							
			0.8 ym	1							
			1.3 ym	2							
			2.0 ym	2							
2.6	0.3ym Cu + 3ym chem. Ni. + 0.2ym Au		1	X	X	X					

2.1 is the allowed alternative for the old instruction 2.2

(able to flange)

2.3 is the allowed alternative for old instruction 2.4

(not able to flange)

White-bronze	10.1	Cu + CuZnSn	5	X	(X)	X	X					
		Flash 2 - 4 ym										
		Ag underlayer is also allowed										
	10.2	Cu + CuZnSn + Au	5		X	X	X					zinc diecasting housing
		8-12 ym 2 - 4 ym min. 0.2 ym										
	10.3	Cu + CuZnSn + Au	5	X	X	X	X					
Flash 2 - 4 ym min. 0.2 ym												
NEW	10.4	Cu + CuZnSn		X	(X)	X	X					
		min.0,5 ym + min.2,0 ym										
White-bronze +Paladium	11.1	Cu + CuZnSn + Paladium	8	X	X	X	X					
		Flash 2 - 4 ym Flash										
Silver + White-bronze	12.1	Ag + CuZnSn	5	X	(X)	X	X					
		3 - 5 ym Flash										
NEW	12.2	Cu + Ag + CuZnSn		X	(X)	X	X					
		min.0,5 ym + min.2 ym + min. 0,5 ym										
Silver + White-bronze + Paladium	13.1	Ag + CuZnSn + Paladium	8	X	X	X	X					
		3 - 5 ym Flash Flash										
Chrome	14.1	Schwarzchrom				X						
		0.5ym 10 - 12 ym 1 - 1,5 ym										
14.2	Cu + Ni + Cr					X						
	0,5 ym 4 - 6 ym 0.2 - 0.4 ym											
selective + Special	15	see drawing: film thickness and possibly selective area									general fo selective surfaces and special surfaces	

Tolerances

Nominal values:		film thickness	tolerances	
	nominal allegation	min.	max.	
Gold	Flash	0.05	0.20	—
	0.15 ym	0,13	0,35	
	0,2 ym	0,18	0,40	
	0,4 ym	0,30	0,80	
	0,8 ym	0,70	1,20	
	1,3 ym	1,15	1,80	
Ni Ni-P	2 ym	1,60	5,00	
	4 ym	3,20	7,20	

Minimum values:		film thickness	tolerances	
	min. allegation	min.	max.	
Gold	min. 0,2 ym	0,20	0,45	<p>min. values have to be mentioned explicit on drawing and in IFAX (text according to the order). No details or statements automatically stand for nominal values.</p>
	min. 0,4 ym	0,40	0,85	
	min. 0,8 ym	0,80	1,30	
	min. 1,3 ym	1,30	2,00	
Ni / Ni-P CuZnSn Ag	min. 2 ym	2,00	5,00	
	min. 4 ym	4,00	8,00	
Cu	min. 0,5 ym	0,50	2,00	
	min. 3,0 ym	3,00	5,00	

Inspection methods

Standards for inspection (defined on the drawings or mentioned in our order) (NEW)

Inspection

Inspection	standard
Thickness of layers (Method: X-Ray or micro polishing)	X
Thickness of Cu- Layer (Method: micro polishing)	
Content of Phosphorous in case of Ni-P is requested	
Support IMS with report / each production lot	X

high

X

X

X

X

external if
needed

thicknesses
plus picture




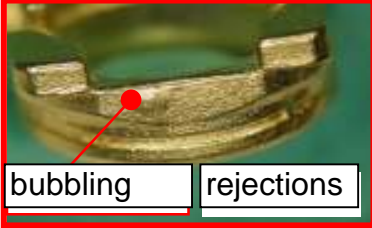


Deviations to this guideline have to be discussed with IMS and fixed in an additional QS- Agreement

Chemical composition / hardness

Oberfläche	Eigenschaften	Bemerkung
Au	Hard gold (alloyed with Co or Ni) microhardness HV 160 -230	acc. ASTM B-488-01
Ni	Ni 99,9% microhardness HV 300-400	
Ni-P	Ni-P min.12 % Phosphor microhardness HV 600-1000	
Cu	Cu 99,9% microhardness HV 180-200	
silver	Ag 99.9% microhardness ca. HV 130	
tin	Sn 99,9 % or SnPb 90 10	

Test methods

standard	test methods / brief description	picture	criterion of decision
ability to flange	Deformation of the part using "flat nose pliers"		surface may not be broken
Haftung	1) 90° bending acc. ISO 4524/5 2) or heat-shock acc. ISO 4524/5 3) or 180° bending		surface may not be bursted
	4) at zinc diecasting parts test for blaining: 10h with 120°	 	no bubbling on the surface! bubble = surface will lift
solder-ability	acc. IEC 600 68-2-54 (dipping method)		

Advices for manufacturing

commendation: thread deviation

	surfaces	kind of thread		note	
		US-thread	metric thread		
	all of them with the exception of zinc diecasting housing 9,3 / 10,2	outside	inside		
		-0.04	+0.04	6e 7G	before surface treatment
		0	0	6g 6H	after surface treatment
	zinc diecasting housing 9.3 / 10.2				
		-0.08	+0.08		before surface treatment
		0	0		after surface treatment
	example	1/4"-36UNS -0.04		M29 * 1.5 6e	before surface treatment
		1/4"-36 UNS		M29 * 1.5 6g	after surface treatment
	additional explication	the deviation before surface treatment should compensate the film from the electroplating. So the threads after the treatment are in accordance with the standardised nominal size and the function of the part is warranted.			

History of changes

description of change:					
status	description		operated	Responsible	Note
	New specification of the passivation because description of change is added				
status 08	surface 6.1 will be released again		08.05.2006	RBg	
status 09	2.8 b	Oberfläche 2.8 b Ni-P released	01.04.2007	RBg	
	3.2	Note: "non magnetic" attached			
	4.6	New surface			
	10.1	Note: "Ag as sublayer released" attached			
status 10	3.3	new platings defined	20.01.2010	RBg	
	4.7				
	10.4				
	12.2				
	High level	Inspection Standards defined			
status 11	High level nom.Tol. min.Tol.	QS-Agreement allowed 2ym Ni: 3.6ym changed to 5.0 ym add min. Tolerances for Cu	11.06.2010	RBg	