

## NIKEL AND CHROMIUM DECORATIVE PLATING

This picture has been taken by means of an optical metallographic microscope, it shows a polished section perpendicularly cut to the processed surface. The nickel coating is homogeneous and plane and perfectly adherent on the steel support (pale pinkish grey). The thickness of the coating is 31 micron.

The coating of this picture (flash of chrome on coat of bright nickel) has a surface adhesion of 13.9 Newton (critical charge) and Vickers hardness as high as 789 HV (measured according to UNI EN ISO 6507-1).

		Concentration (%)						
		S	Cl	C	Ca	Cr	O	Ni
Profondità / Depth (nm)	<b>0</b>	2,5	0,6	31,9	2,1	25,2	37,6	
	<b>0,3</b>	2,3	0,8	21,7	1,3	31	42,9	
	<b>1</b>	2,9	1	16,2	1,6	34,9	43,5	
	<b>2</b>	2,4	0	7		42,8	47,8	
	<b>3</b>	2	0,4	5,2		46,3	46	
	<b>6</b>	1,2		7		70,4	21,5	
	<b>12</b>			4,4		85,9	9,8	
	<b>24</b>			3,4		91,7	4,9	
	<b>42</b>			3,2		90,6	6,3	
	<b>60</b>			3,5		91	5,5	
	<b>78</b>			3,2		75,6	5,4	15,9
	<b>102</b>			5,6		15,5	5,2	73,7
	<b>168</b>			3,9			4,7	91,4
	<b>240</b>						4,2	95,8
	<b>360</b>						4,3	95,7
	<b>600</b>						4,5	95,5
<b>840</b>						4	96	
<b>1000</b>						5,6	87,5	

AES (Auger Electron Spectroscopy) is a sophisticated analytic technology that allows to get precise analyses of the composition of materials by means of ion beam erosion progressively carried out starting from the surface.

AES measures recorded in the table show the changes of the composition as percent (%) of the bright chrome coating till the depth of 1 mm (as nanometres 1nm = 1/1000 mm) from the surface. Chromium is the main component till the depth of 70 nm and it corresponds to the flash of chrome.

From 70 nm inwards, chromium is substituted by nickel that makes the coat of nickel plating. Carbon and oxygen occur in the surface. They quickly decrease with increasing of depth.