

MILITARY PLATING SPECIFICATIONS

<u>PROCESS</u>	<u>MIL. SPEC.</u>	<u>THICKNESS</u>	<u>COMMENTS</u>
CHROME			
QQC-320b			
<p>Excellent hardness(Rc 68-74) Wear resistance, and erosion Resistance. Has low coefficient Of friction, and is resistant to Heat. In addition to above Properties, can be rendered Pourous for lubrication purposes.</p> <p>Post bake at 375 deg +/- 25 deg F for 3 hrs or as specified.</p> <p>Shot peening and post baking Not required.</p> <p>Shot peen per MIL-S-13165</p> <p>Post bake at 375 deg +/- 25 deg F for 3 hrs.</p> <p>Shot peen before plating. Post bake at 375 deg +/- 25 deg F for 3 hrs.</p>	Type 1.....	<p>Bright Satin Decorative plating. (usually over copper and nickel undercoats.) Engineering plating.</p> <p>Plated to specified dimensions or Processed to specified Dimensions after plating.</p> <p>Parts below Rockwell C40 and And subject to static loads or Designed for limited life under Dynamic loads.</p> <p>Parts below Rockwell C40 and Designed for unlimited life under Dynamic loads.</p> <p>Parts have hardness of Rockwell C40 or above and subject to static Loads or designed for limited life Under dynamic loads</p> <p>Parts have hardness of Rockwell C40 or above and are designed for unlimited life under dynamic Loads.</p>
	Type 11.....	.....
	Class 1.....	.00001-.00002” ..	
	Class 2.....	as specified on on drawing.	
	Class 2a.....	.....
Class 2b.....	.....	
Class 2c.....	.....	
Class 2d.....	.....	
Class 2e.....	.....	
ELECTROLESS NICKEL Mil-C-26074B			
<p>Similar to stainless steel in color. Plates uniformly in recesses and Cavities (does not build up on Edges. Corrosion resistance is good for Coatings over .001” thickness. Electroless nickel is used extens- Ively in salvage of mis-machined Parts. Also, for inside dimensions And irregular shapes (where assy Tolerances need uniformity pro- Vided by “electroless” process.)</p>	Class 1.....	Unless otherwise	<p>As coated Steel, copper, nickel, and cobalt base alloys. Heat treated after Plating. Aluminum alloys other than Alloy 7075. Heat treated after plating. Minimum thickness. For iron and aluminum based alloys. Minimum thickness. For copper, nickel, and cobalt based alloys.</p>
	Class 2.....	Specified.....	
	Class 3.....	.....
	Grade A.....	.001”.....	
	Grade B.....	.0005”.....	

NICKEL

QQ-N-290A

Class 1 plating is used to protect iron, copper, or zinc Alloys against corrosive attack. Used as undercoat for chromium Or precious metals; or for decorative. Forms of nickel deposition: SB-Single layer coating. Fully Bright finish: SD-single layer in A dull or semi bright finish. (Contains less than .005 % sulfur) M-Multi-layer coating. See spec.

Class 1.....	.....
Grade A.....	.0016”.....
Grade B.....	.0012”.....
Grade C.....	.0010”.....
Grade D.....	.0008”.....
Grade E.....	.0006”.....
Grade F.....	.0004”.....
Grade G.....	.0002”.....

Corrosion protective plating.
Steel, Zinc & Copper and
Zinc alloys. Copper alloys

SD, and M	.....
SD, and M	SB, and M
M	SB,SD, and M
SB, SD & M1	SD & M
SB, SD, & M1	SB, SD, & M1
SB, SD, & M1	SB, SD, & M1
.....	SB, SD, & M1

Class 2 Plating. Resistance and Abrasion resistance: for build up Of worn or undersized parts: Protection against corrosive Chemical environments.

Class 2.....	.....
	Nickel plated to spec thickness.

Note: 1; SD or M may be substituted for SB in mild or moderate service condition.
Engineering Plating
Type of nickel process should be Called out. For salvage and great Hardness & corrosion required.

CADMIUM

QQ-P-416-F

Bright silvery white. Supplementary treatments for Type 11 Can be golden, iridescent, amber Black, olive drab. Corrosion resistance is very good especially With Type 11 finish. Type11 Shall show no surface corrosion Products after 96 hrs (20%) salt Spray exposure. Parts with hardness greater than Rc-40 shall be Stress relieved before cleaning And plating. Parts subject to Flexure (springs, etc) over Rc-40 Hardness shall be given a 375 deg +/- 25 deg F post bake.

Type 1.....	.....
Type 11.....	.....
Type 111.....	.....
Class 1.....	.0005” min.....
Class 2.....	.0003” min.....
Class 3.....	.0002” min.....

No supplementary treatment.
Supplementary chromite treatment
Supplementary phosphate treatment
Type 11 best for corrosion resist.
Type 111 is used as paint base . Excellent for plating Stainless steels that are to be used in conjunction with aluminum to prevent galvanic corrosion.

GOLD

MIL-C-45204b

Yellow to orange color depending on proprietary process used. Will range from matte to bright Finish depending on basis metal. Good corrosion resistance, and Has high tarnish resistance. Provides a low contact resistance, And a great conductor. Has excellent solderability.

Amendment 2	unless otherwise specified
Type 1.....	.....
Type 11.....	.....
Type 111.....	.....
Class 00.....	.00002”.....
Class 0.....	.00003”.....
Class 1.....	.00005”.....
Class 2.....	.00010”.....
Class 3.....	.00020”.....
Class 4.....	.00030”.....
Class 5.....	.00050”.....
Class 6.....	.00150”.....

99.7% gold min.
99.0% gold min.
99.9% gold min.
Grade A 90 Knoop max.
Grade B 91-129 Knoop
Grade C 130-200 Knoop
Grade D 201 Knoop and over
Type 1 (grades A, B, or C)
Type 11 (grades A, B or C)
Type111 (grade A only)

SILVER

QQ-S-365a

White matte to very bright in appearance. Good corrosion resistance, depending on base metal. Will tarnish easily. Hardness varies from about 90 Brinell to about 135 Brinell depending on process and plating conditions. Solderability is excellent, but decreases with age. Best electrical conductor. Has excellent lubricity and smear characteristics for anti-galling uses on static seals, bushings, etc.

Type 1.....	.....
Type 11.....	.....
Type 111....	.....
Grade A.....	.....
Grade B.....	.....

.0005" min. unless otherwise specified.

Increasing use in both decorative and engineering fields including Electrical and electronic fields.
Matte.
Semi-bright
Bright
Chromate post treatment to increase tarnish resistance.
No chromate treatment.

SULFAMATE NICKEL

MIL-P-27418

The plating conforming to this Specification is intended to facilitate the formation of a seal between two metallic surfaces. Plating hardness: Not to exceed 150 Knoop hardness (500 gm. Load) After annealing (or 300 Knoop Before annealing)

Unless otherwise specified:
0.0020"
+/- 0.0003" on all surfaces that can be touched by .0625" dia. Ball.

The nickel plating shall have a columnar crystalline structure before annealing.

LUBRICANT, SOLID FILM

MIL-L-46010D

Used to prevent galling and seizure of metals. Lubricant covered by this specification is intended for use on aluminum, copper, steel and stainless steel titanium, and chromium and nickel surfaces. Useful where conventional lubricants are difficult to apply or retain or where other lubricants may be easily contaminated. Cured lubricant film is highly resistant to conventional fluid lubricants.

Type 1.....	(302 deg F cure)
Type 11.....	(400 deg F cure)

Unless otherwise specified.
0.0002 – 0.0005"

For sliding motion applications such as plain and spherical bearings, flap tracks, hinges, threads, cam surfaces, etc. Do not use on materials adversely affected by exposure to temperatures of 300 deg F for 1 hr. – on bearings containing rolling elements – or where there is potential contact with liquid oxygen. Pretreatment of metals such as anodizing, passivation, phosphating, etc. required Prior to the solid film process.