

CCS for Coin Minting Dies

Custom Coating Solution for Coin Minting Dies

When coating stamps, punches and coin minting dies, ensuring surface quality is essential. These surfaces require smooth, dustless coatings with excellent adhesion to accurately replicate highly detailed relief structures. The requirements increase when minting dies are used to produce proof coins, where temperature-sensitive materials are often used. They have narrow tolerances and can only be coated within a certain temperature range.

For coin minting dies, PLATIT has developed a Custom Coating Solution for high-quality coatings with a strong amorphous structure as well as high density, surface quality and reproduction accuracy.

Highlights:

- Built for the highest demands towards the surface of proof coins
- Full temperature control for temperature sensitive substrates
- Specific holders developed for various stamp sizes and geometries or customized upon request
- Guaranteed smooth dust-free coatings, since the surface to be coated faces downwards; the target is placed on the bottom of the coating chamber
- SPUTTER technology from PLATIT, supported by LGD® (Lateral Glow Discharge) ensures very good adhesion; thus, there are no droplets and no layer defects



Specifications_Sample Custom Coating Solution S-MPuls

Technologies applied:

- 1 × DC-pulsed magnetron SPUTTER cathode with a rotating magnetic field
- SPUTTER source arranged at the bottom of the chamber

Etching technologies applied:

- LGD®
- Plasma etching with argon, glow discharge, with auxiliary anode

Load and cycle times:

- Batch time of 3–4.5 h
- Coating diameter with defined coating thickness: \varnothing 70–250 [mm]
- Substrate holder: \varnothing 300 mm, varying customer-specific versions possible
- Load up to 20 kg



CCS
S-MPuls

Software:

- Simple use and maintenance
- PLATIT SmartSoftware (PC and PLC system)
- Modern control system with touch screen
- Statistics and help function via user interface
- Data recording and real-time display of process parameters and flow
- Manual and automatic process control
- Remote diagnostics and maintenance

Machine dimensions:

- Footprint (coating unit with electrical cabinet):
W 945 × D 1,403 × H 2,068 +
W 608 × D 1,369 × H 2,068 [mm]



Targets
1



Cycle
≥ 3 h



Max. Load
20 kg



Solution
Turnkey



Service
Custom



Ceramicoin

Dedicated PVD coating for coin minting dies

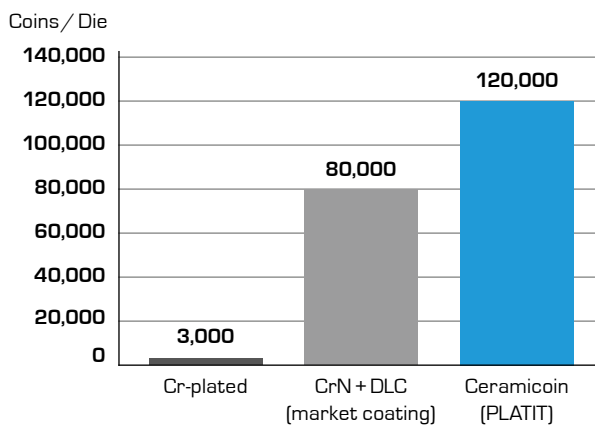
Ceramicoin, deposited with S-MPuls, replicates every detail of the surface and is thus a significant advantage for coin appearance and design features.

Quality features of Ceramicoin:

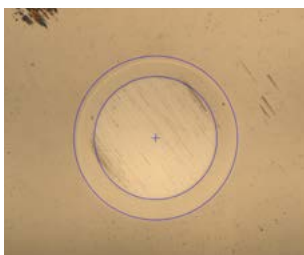
- Surface quality
- Durability
- Smoothness
- Coating adhesion
- Replication of every detail
- Extended die life

Advantages of PVD technology compared to Cr-plating:

- No hexavalent chromium
- No noise
- No chemicals
- No contamination
- No fumes
- No toxic waste
- No risk for your health

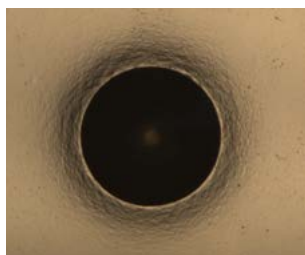


Grinding image



Thickness total: 1.05 µm

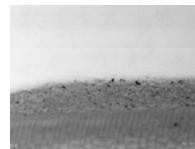
Rockwell image



Adhesion class: HF 1

Highlights:

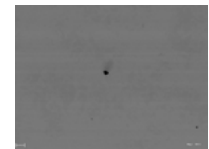
- Coin minting dies ready to use
- No post-polishing needed
- No post-cleaning needed
- Fast cycle times: < 4 h
 - Pumping, heating: ~ 60 min
 - Etching: ~ 35 min
 - Coating: ~ 40 min
 - Cooling, venting: 30 – 60 min



Residues from engraving (oxides)



Residues from polishing



Material inhomogeneities (pores or carbides)

Specifications

Color	satin silver
Nano-hardness [GPa]	32
Coefficient of friction [µ] PoD (at RT, 50% humidity)	0.4
Coating thickness [µm]	1
Max. service temperature [°C]	600
Coating temperature [°C]	200

View inside the coating chamber with up to 40 coin minting dies per batch:



PLATIT AG

Headquarters
Eichholzstrasse 9
CH-2545 Selzach
info@platit.com
+41 32 544 62 00

PLATIT AG

Custom Coating Solutions (CCS)
Champ-Paccot 21
CH-1627 Vaulruz
info@platit.com
+41 32 544 62 00

PLATIT a.s.

Production, R&D, Service, CEC
Průmyslová 3020/3
CZ-78701 Šumperk
info@platit.com
+420 583 241 588

PLATIT Advanced Coating Systems (Shanghai) Co., Ltd

Sales, Service, CEC
No. 161 Rijjing Road (Shanghai) PFTZ
CN-200131 Pudong Shanghai
china@platit.com
+86 2158 6739 76

PLATIT Inc.

Sales, Service, CEC
1840 Industrial Drive, Suite 220
Libertyville, IL 60048, US
usa@platit.com
+1 847 680 5270
Fax: +1 847 680 5271

PLATIT Scandinavia ApS

Sales
Rabalderstraede 7
DK-4000 Roskilde
scandinavia@platit.com
+45 46 74 02 38

COMPENDIUM



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Advanced Coating Systems
SWISS  QUALITY