

### PUNCHES AND DIES

Punches and dies are the key elements of the tableting process. They are responsible for the final appearance and shape of the manufactured tablets. Therefore they must be designed and produced with high precision and accuracy. During use, the tooling is exposed to high compression forces and they often compress powders of abrasive and corrosive properties. Such products always require the tooling to be made of high quality steel, an appropriately selected heat treatment process and sometimes the application of a special coating which can prevent some common tableting problems such as sticking, corrosion or abrasion. On extreme cases materials such as sintered carbides have to be used.

Certain product applications (e.g. household chemicals or effervescent tablets) require the use of Polymer inserts such as Teflon (PTFE) or Vulkolan which, additionally protect the punch pressing part and create a wear part which can be replaced. ADAMUS S.A. designs and manufactures punches and dies for tablet presses of all types according to EU (ISO), IPT (TSM) standards or specific standards of tablet presses manufacturers, following customer's needs. Besides classical single tipped tooling, we are experienced in manufacturing all forms of composite multi-tipped tooling. We also have all the machining capability to machine monoblock multi-tipped tooling with the specialist machining technology all under one roof. These tooling solutions can be supplied for the customers to produce all different designs of round and shaped tablets.

ADAMUS S.A. tools are delivered in special plastic boxes which are also adapted for their storage. Each batch is provided with a full measurement report.



## TOOLING COATINGS

ADAMUS S.A. continually implements the world class coating solutions in order to solve tablet compression problems with different product. We always look for improvements in the tooling's performance and lifetime by testing the new coatings, materials and design modifications to benefit our customers.

### GALVANIC CHROME PLATING

One of the most commonly used of surface treatments is galvanic chrome plating which is perfect for a number of standard applications. The coating is applied by an electrolytic method which produces a surface coating up to 5-microns thick. Galvanic hard chrome increases abrasion resistance and prevents the powder from sticking to the surface of the punch. It also provides an effective anticorrosive cover. This coating solution can also be applied to die bores.

### PVD COATINGS

There are created by physical metal deposition process. Compared to the galvanic coating, the benefits of PVD coatings are as follows:

- better edge stability
- better wear protection
- contour preservation
- better wear protection

### CrN - CHROMIUM NITRIDE

A grey coloured coating of CrN give:

- excellent anti-stick performance
- superb corrosion resistance
- an exceptionally homogenous coating structure
- a very good price-quality ratio

### TiN OR TiAl (TITANIUM NITRIDE OR TITANIUM ALUMINIUM NITRIDE)

Gold coloured coating which has:

- high tear and wear protection
- a smooth layer of low roughness
- very high hardness
- low thermal conductivity

### DLC (DIAMOND LIKE CARBON)

A black DLC coating which has:

- great wear resistance performance
- good long-term non-stick solution
- corrosive resistant coating

Except for popular type of coatings described above, a full range of PVD coatings being their modifications are in use.

