

PICKING & STICKING

TROUBLESHOOTING TOOLING SERIES



PROBLEM & COURSE OF ACTION

Powder is adhering to upper punch face and not lower punch face, or it's adhering to both punch faces.

Two possible causes:

- 1. Compression Related (Picking)**
- 2. Negative Reaction Problem (Sticking)**

Compression Problem

Is defined as a Compression Problem due to:

- A restriction of air dissipation speed out of the die cavity.
- Or lack of force distribution across the cup formation.

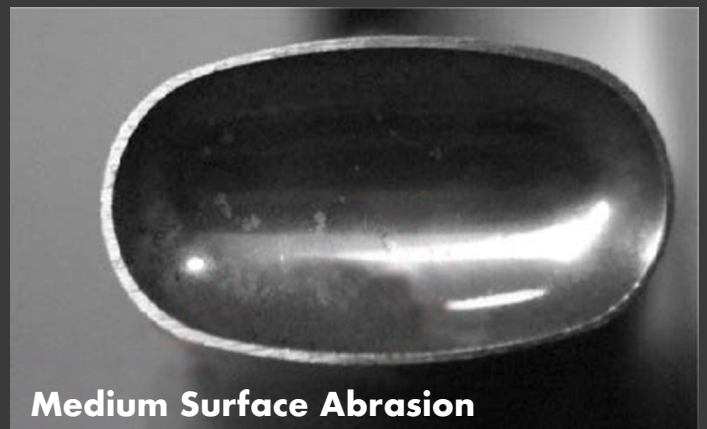
Negative Reaction Problem

Is defined as a Negative Reaction Problem due to:

- A chemical reaction between the punch steel and formulation.
- Change in punch face surface condition due to abrasion or corrosion.

Establish Course of Action

1. Can we modify existing tooling to solve the problem, or prove a theory?
2. Consider using a coating , a different coating or another coating process to solve a **Sticking** problem.
3. Change Tablet Design - **Picking**
4. Change Tooling Specifications - **Picking**



Medium Surface Abrasion

Chemical Reaction
Rust and pits on face

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COATING OPTIONS

-
- **Hard Chrome Plating**
 - **Teflon Nickel**
 - **White Graphite Nickel-"Dura Slick"**
 - **Chromium Nitride**
 - **Titanium Nitride**

All of the above coatings are applied at temperatures less than 400 degrees Fahrenheit, which is critical if applying to S-7 Steel.

Always consider the abrasiveness of the formulation as a factor when choosing a coating.

Always have coating vendor supply a few tool samples to evaluate coating performance before committing to having a full set of tools coated.

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PRODUCTION PROBLEMS WITH TABLET QUALITY

Tablet Picking

Letters and/or numbers on tablet not crisp and clear. Punch face has power adhering to the surface.

Possible causes :

- Excessive moisture in formulation.
- Pits on punch faces and/ or improper stroke angle on embossing.
- Insufficient compaction forces. Restriction of entrapped air speed out of die cavity.
- Inadequate lubrication of granulation.



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PRODUCTION PROBLEMS WITH TABLET QUALITY

Tablet Sticking

Similar in appearance to picking in regards to powder adhering.

Corrective Actions:

- Check all punch faces and die cavities for corrosion or abrasion surface conditions. May require changing steel type based on findings.
- Polish the punch face and examine if surface condition improves.
- If compression requirements rule out a steel change, consider chrome plating or coating for better wear characteristics.



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TROUBLESHOOTING TABLET PRODUCTION PROBLEMS

Problems encountered during tablet production may be caused by deficiencies in the tablets granulation size, the tablet press or the compaction tooling.

A third of all production problems are caused by ignoring three basic rules:

1. Keep compression pressure as low as possible
2. Clean and lubricate the machine properly
3. Keep punch and dies in good condition