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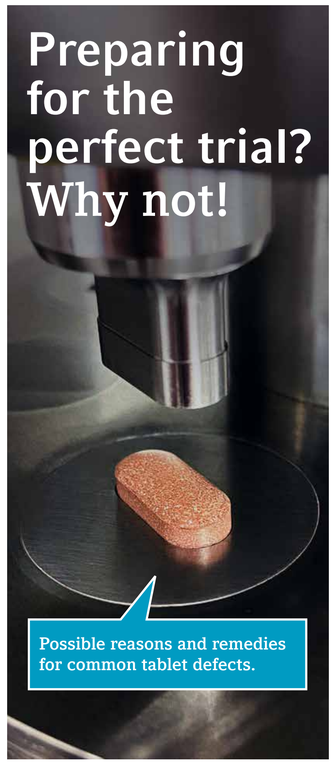
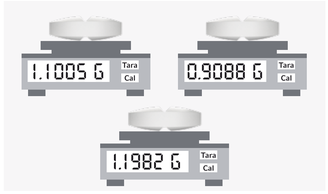
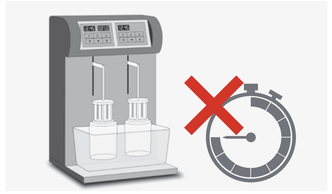
# Troubleshooting Guide Tableting




| Problem | Capping & Lamination | Sticking to punches | Cracking | Chipping | Binding |
|---|---|---|---|---|---|
| Description | **Horizontal splitting of tablet at the top (capping) or anywhere but the top (lamination)** | **Granulate of a formulation is sticking to the face of the press punch** | **Small, fine cracks observed on the upper and lower surface or on the sidewall** | **Occurs when the edges of the tablets break during the press process or during the handling and coating** | **The term is used when the tablets adhere, seize, or tear in the die** |
| | | | | | |
| Possible reason | - Too many fine particles in the granulate<br>- Separation of the granulate<br>- Too much of hydrophobic lubricant<br>- No suitable lubricant<br>- Not enough or not suitable binder<br>- Low moisture content<br>- API content too high<br>- Compression force too high<br>- Speed of the tablet press too high<br>- Too much air trapped in the pre-compression<br>- Tablet press tool defective | - The granulate was not completely dried<br>- Lubricant content too low<br>- Too much binder used<br>- Oily or waxy materials used<br>- Too soft or weak granulates<br>- Compression too high or too low<br>- The product became too warm<br>- Rough or scratched punch faces | - The granulate is too large<br>- The granulate is too dry<br>- Tablets expand<br>- Granulation too cold<br>- Tablet expands on ejection due to air entrapment | - Sticking on punch faces<br>- Too dry granulate<br>- Too much binding causes chipping at bottom<br>- Edge of punch face turned inside/inward<br>- Concavity too deep to compress properly | - Too much moisture in the granulate<br>- Too little lubricant in the granulate<br>- Granulate too hard for the lubricant to be effective<br>- Granulate material sticks to the die<br>- Punch is not suitable anymore |
| Remedy | - Change the quantities in the granulate<br>- Use enough and an efficient binding agent<br>- Adjust used lubricant<br>- Add adsorbent agent<br>- Moisturize or dry the granulates<br>- Reduce amount of API<br>- Adjust the pressure for compression (use pre-compression)<br>- Decrease speed of the tablet press<br>- Use more suitable punches (conical) | - Completely dry the granulate<br>- Use enough and an efficient lubricant<br>- Add suitable binder<br>- Modify mixing process and add an absorbent<br>- Adjust the compression force<br>- Produce a thinner tablet (height)<br>- Polish the surface of the punch | - Reduce granulate size by adding more fine particles<br>- Moisturize or dry the granulate and add binder<br>- Improve granulation, add dry binders<br>- Adjust ambient temperature<br>- Use conical die | - Use suitable binding agent or use dry binders<br>- Dry the granulate properly or increase lubricant<br>- Add hygroscopic substances<br>- Reduce concavity of punch faces<br>- Use flat punches<br>- Polish the punch edges | - Increase drying time of the granulate<br>- Use enough and an efficient lubricant<br>- If too warm, reduce temperature<br>- Increase space for ejection<br>- Replace punch |

| Problem | Weight variations | Tablet hardness | Friability | Mottling of tablet | Prolonged dissolution/disintegration |
|---|---|---|---|---|---|
| Description | **High variation of tablet weight** | **Tablet breaks during ejection or handling of the tablets** | **High degree of abrasion after mechanical stress** | **Is used to describe an inhomogeneous distribution of color in a tablet** | **API is not released within required time** |
| |  | | | |  |
| Possible reason | - High variation in granulate density<br>- Die not completely filled<br>- High variation of granulate particle size<br>- Flowability insufficient<br>- Press speed too high/filling time too short | - Variation in bulk density<br>- Inhomogeneity of granulate particle size<br>- Tablet hardness varies with the weight of the tablet<br>- The ejection blade is too old or damaged | - Too large particles in the granulate break apart at higher compression forces<br>- Entrapped air can cause the tablet to break apart<br>- Tablet breaks during ejection<br>- Lower compression may not be enough to bind particles together | - A colored drug used along with colorless or white-colored excipients<br>- A dye migrates to the surface of granulate while drying<br>- Improperly mixed dye, especially during direct compression<br>- Improper mixing of a colored binder solution | - Too much binder<br>- No disintegrant<br>- Too hard compression force used<br>- No water soluble excipients are used |
| Remedy | - Weight differences can be reduced by granulation and compaction<br>- Avoid free fall of the granulate (to prevent decomposition)<br>- Use flowing enhancers to optimize flowability of the granulate or powder blend<br>- Reduce press speed / increase filling time | - Achieve homogeneous bulk density<br>- Use enough and an efficient binding agent<br>- Control the tablet weight<br>- Use suitable ingredients for good compacting properties<br>- Increase the compression force<br>- The eject blade must be checked or replaced | - Powder should be more cohesive<br>- Use enough and an efficient binding agent<br>- Use suitable binders<br>- Control tablet weight<br>- Slowing the press will extend dwell time and give the air more time to escape<br>- Control settings on tableting machine<br>- Check tableting tool | - Use suitable colorants<br>- Change the solvent system & binder<br>- Reduce drying temperature and aim for smaller particle size for granulate<br>- Mix properly and reduce particle size to prevent decomposition<br>- Incorporate dry color additive during powder blending step, then add fine powdered adhesives and mix properly – finally add granulating liquid | - Use less binder<br>- Use disintegrant or superdisintegrant<br>- Decrease compression force<br>- Reformulate or use proper disintegrant |

= The problem can be solved by adjusting the machine settings.

## More support? Why not! Contact us.

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