SPI ENGINEERING APPROVAL ASSET

P20 to H13 Mold Steel Upgrade Approval Sheet

Use this form before steel cut to screen whether a mold should remain P20, use localized H13 wear inserts, or move to a broader H13 strategy.

A. Project Identification

Complete what is known; blanks are acceptable.

Customer / Project

Part / Mold ID

Prepared By

Review Date

B. Resin and Production Inputs

Resin Grade

Filler Type / %

Annual Volume

Lifetime Shot Target

Current / Proposed Steel

Design Stage (T0/T1/etc.)

C. Wear and Duty Screening

Tick all conditions that apply.

- [ ] Abrasive gate / runner erosion
- [ ] Tight shut-off / sealing-edge wear
- [ ] Slider / lifter repeated contact
- [ ] Broad cavity / core abrasion
- [ ] Repeated thermal loading
- [ ] Corrosion / aggressive additive risk
- [ ] High downtime consequence
- [ ] Cosmetic / polish stability critical

D. Serviceability and Design Maturity

- [ ] Design is frozen enough for hardened sections
- [ ] Wear area can be isolated into a replaceable insert
- [ ] Spare insert can be prepared before production
- [ ] Maintenance access is practical without major mold teardown

Decision principle

Do not upgrade to H13 because of shot count alone. The strongest justification is a documented combination of abrasion, contact stress, thermal loading, downtime exposure, or a known wear zone that P20 is unlikely to manage economically.

BUYER VALIDATION

Wear-Zone Mapping and Supplier Evidence

Record where the risk actually occurs, then verify the material and treatment evidence that supports the proposed steel strategy.

E. Wear-Zone Map / Mold-Area Assessment

Mold Area	Observed / Expected Risk	Proposed Material	Action / Notes
Gate / Runner			
Shut-Off / Parting Line			
Slider / Lifter			
Core / Cavity Surface			
Other Critical Area			

F. Supplier Evidence Required Before Approval

- ☐ Steel certificate / mill or supplier traceability
- ☐ Actual grade and delivery condition confirmed
- ☐ Drawing / BOM identifies steel by mold area
- ☐ Resin TDS and filler % reviewed
- ☐ Hardness verification available
- ☐ Heat-treatment record available where applicable
- ☐ Steelmaker datasheet reviewed for purchased grade
- ☐ Spare insert and replacement-control plan defined

G. No-Go Flags

Resolve any applicable flag before steel release.

- ☐ Filler % unknown while abrasion is used to justify H13
- ☐ Supplier states 'P20/H13 equivalent' without traceable certification
- ☐ Full H13 proposed without identified failure mechanism or wear location
- ☐ Heat treatment planned without final hardness verification
- ☐ Replaceable insert proposed without spare / replacement plan
- ☐ Corrosion dominates but only P20 vs H13 is being considered

Authority and verification note

- Verify the purchased commercial grade against the original steelmaker datasheet and the actual steel certificate.
- Regional 'equivalent' designations may differ in chemistry, hardness, cleanliness, and delivery condition.
- This sheet is for engineering screening and does not replace steelmaker technical data, heat-treatment specifications, or buyer-approved drawings.

DECISION AND SIGN-OFF

Steel Upgrade Recommendation

Select the smallest upgrade that addresses the documented failure mechanism and record the conditions required before steel cut.

H. Recommended Steel Strategy

☐ **Stay with P20**
Use when wear remains manageable and correction flexibility is valuable.

☐ **Localized H13 Inserts**
Use when wear is concentrated at replaceable gates, shut-offs, sliders, lifters, or similar zones.

☐ **Full H13 Review**
Use when severe abrasion, thermal loading, or repeated contact is widespread across major working surfaces.

☐ Alternative steel-selection route required (e.g., corrosion / optical polish / cosmetic stability dominates).

I. Approval Conditions and Actions Before Steel Cut

Approved Steel Strategy / Grade(s)

Critical Mold Areas / Insert Locations

Actions Required Before Release

J. Technical Review and Approval

Technical Reviewer	Role / Department	Review Date

Buyer / Project Approval	Supplier Confirmation	Release Date

Technical review basis

- Actual resin specification and filler content
- Wear-zone geometry and expected failure mechanism
- Production duty, downtime exposure, and maintenance access
- Steel certification, final hardness condition, and heat-treatment evidence
- Replaceable insert strategy and design maturity

Use with the SPI P20 vs H13 Mold Steel decision guide

This sheet is intended to document the engineering basis for a steel upgrade decision before tool steel is cut.

Final approval remains subject to buyer specifications, actual mold geometry, supplier certificates, steelmaker data, and agreed heat-treatment requirements.

Article: https://super-ingenuity.cn/p20-vs-h13-mold-steel/