

Perfect Cast Portfolio for SLA, DLP and LCD Investment-Casting Workflows

Five grades organised by removal route and printer compatibility, with complete casting-workflow validation

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Highlights

- Five current grades are organised by intended removal route: burnout, heat melt-and-flow or aqueous removal.
- Printer compatibility, investment chemistry, geometry and removal conditions must be validated as one workflow.
- A product or Bio/MF designation does not certify the casting, final article or finished device.
- Product names, removal routes and printer mappings remain subject to current product-specific TDS/IFU control.
- The WP-08 cross-reference now points to the corrected MF formulation-and-device evidence framework.

Abstract

Investment casting with photopolymer patterns requires coordinated selection of the pattern material, printer, investment system and removal route. The Perfect Cast portfolio contains five grades positioned for burnout, heat melt-and-flow or aqueous removal workflows.

Removal-route selection is an engineering starting point rather than a guarantee of casting quality. Pattern dimensions, investment permeability and strength, heating or washing profile, residue, alloy, atmosphere and final acceptance criteria determine the validated operating window.

HS2 MF Bio is described as a monomer-free liquid option only to the extent supported by current controlled formulation documentation. That material attribute does not replace application-specific validation and does not constitute certification or regulatory approval of the cast part or finished device.

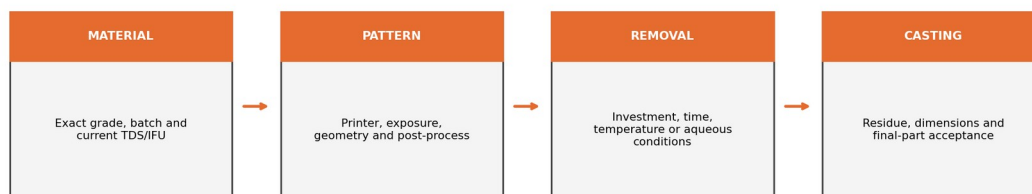
Keywords Perfect Cast · investment casting · sacrificial pattern · burnout · melt-and-flow · water removal · VPP

Source use. Current product evidence is controlled in [1]; casting and photopolymer background in [2–3]; terminology and related workflow boundaries in [4–6].

1. Portfolio and route selection

The controlled portfolio comprises Perfect Cast LPP and HPP for printer-specific burnout routes, Perfect Cast HS1 Bio and HS2 MF Bio for heat melt-and-flow routes, and Perfect Cast WS1 for aqueous removal. The current product document must confirm every name, printer class and permitted removal condition before release.

- Select the removal route before exposure calibration.
- Record exact grade, batch and document revision.
- Treat cross-family substitutions as process changes requiring revalidation.



Release requires traceable evidence at every gate; a catalogue label cannot bypass the chain.

Figure 1. WP-11 evidence gates from controlled material description to final acceptance.

2. Complete casting-process window

Pattern performance cannot be isolated from the investment and casting cycle. The validation record includes feature geometry, build orientation, exposure, cleaning, drying, investment mixing and cure, thermal or aqueous removal, residue inspection, alloy and casting conditions.

- Define residue and dimensional acceptance criteria.

- Challenge thick sections, enclosed cavities and fine details.
- Verify final casting rather than inferring it from pattern printability.

3. Product and regulatory boundaries

Bio-based, Bio-designated or monomer-free wording describes a controlled material attribute only. It does not establish biological safety, workplace safety, casting quality or finished-device conformity. Dental or medical casting uses require evidence for the final manufacturing route and finished article.

4. Minimum controlled evidence before release

Control field	Required record	Release interpretation
Material	Exact grade, batch and current TDS/IFU	Catalogue description only until evidence is linked
Pattern	Printer, exposure, geometry and post-process	Control process variables and change triggers
Removal	Investment, time, temperature or aqueous conditions	Report method, result, uncertainty and limits
Casting	Residue, dimensions and final-part acceptance	Apply final acceptance and responsibility boundary

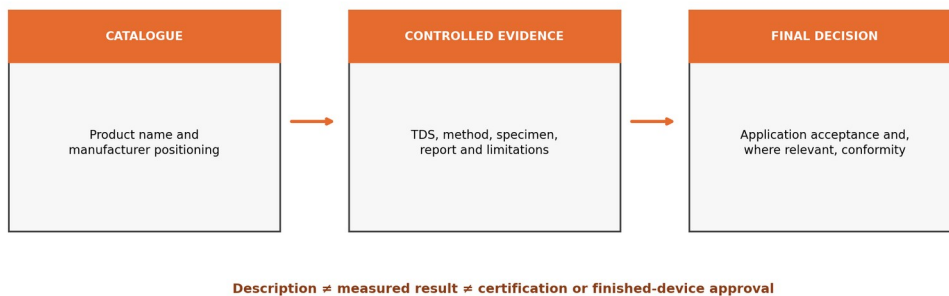


Figure 2. WP-11 separates catalogue positioning, measured evidence and final application decisions.

KEY INSIGHT

Precise product or application language is retained only when the exact formulation, method, processed specimen and controlled evidence can be traced.

5. Limitations

- No grade guarantees ash-free, residue-free or defect-free casting for every geometry and investment.
- Removal routes and printer compatibility must match current controlled product documents.
- Monomer-free or Bio designators do not establish finished-device biological safety or conformity.
- A successful pattern print is not a validated casting process.

6. Conclusions

- Five current grades are organised by intended removal route: burnout, heat melt-and-flow or aqueous removal.
- Printer compatibility, investment chemistry, geometry and removal conditions must be validated as one workflow.
- The WP-08 cross-reference now points to the corrected MF formulation-and-device evidence framework.
- This corrected candidate remains local and on HOLD until series-wide scientific, metadata and visual release checks are complete.

Revision note

Version 5.6 updates the WP-08 cross-reference, preserves the five-grade route structure, and strengthens product-document, process-validation and finished-device boundaries without adding unsupported comparative claims.

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Disclosure. Dr. Juan Segurola is founder and Scientific Director of 3Dresyns by Resyner Technologies S.L., the supplier of the materials discussed.

References

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