

BioDeg Corn VPP Materials: Reported Bio-Based Content and a Defined End-of-Life Pre-Treatment Pathway

Service-phase material selection and the evidence required before making biodegradability or compostability claims

Dr. Juan Segurolo, founder and Scientific Director · 3Dresyns by Resyner Technologies S.L. · General Etxague 15B, 20003 Donostia / San Sebastián, Gipuzkoa, Spain · info@3dresyns.com · www.3Dresyns.com

Highlights

- Three grades provide different service-phase mechanical envelopes; end-of-life evidence is a separate selection axis.
- The 85% figure remains a reported claim until its exact metric and analytical report are recorded.
- The day-60 result after Liquefier treatment is reported conditionally and is not called ready biodegradable.
- OECD 301F does not establish industrial/home compostability, soil, marine or wastewater behaviour.
- Regulated-use and disposal acceptance belong to the finished article and local route.

Abstract

The BioDeg Corn portfolio contains three VPP grades with different mechanical envelopes and a manufacturer-defined end-of-life pre-treatment. Current documentation reports 85% bio-based content and more than 80% biodegradation after 60 days following Liquefier treatment; release requires the exact metric, test item, laboratory report and conditions.

The 60-day endpoint must not be presented as proof of ready biodegradability unless the complete OECD pass criteria are demonstrated. It also does not establish compostability, soil or marine degradation, wastewater acceptance or environmental superiority.

Selection is therefore split into service-phase performance and evidence-based end-of-life routing. Users must validate the complete printed formulation, additives, processing and the acceptance of the intended waste facility.

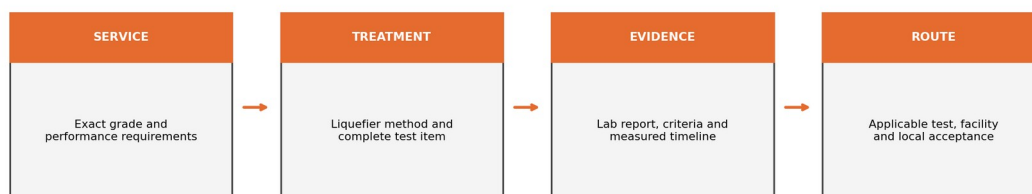
Keywords BioDeg Corn · bio-based content · biodegradation · Liquefier · OECD 301F · end of life

Source use. Product and laboratory evidence is controlled in [1]; biodegradation, content and composting methods in [2–5]; sustainability context in [6].

1. Service-phase grade selection

BioDeg Corn E, F and H are retained as three catalogue grades with different manufacturer-positioned mechanical envelopes. Exact hardness, thermal and other product values are published only from current controlled TDS and test records.

- Select by application requirements, not biodegradation wording.
- Record additives and any formulation change.
- Validate the finished article during its intended service life.



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

Figure 1. WP-17 evidence gates from controlled material description to final acceptance.

2. Interpretation of the reported result

The release record must state the exact percentage, test day, test item, Liquefier preparation, laboratory, report, inoculum, controls and validity criteria. Without that record, the paper preserves the claim only as manufacturer-reported and evidence-held.

- Do not create an OECD 301F-extended label.
- Do not equate day 60 with the official ready criterion.
- Keep pre-treated and untreated articles distinct.

3. Conditional end-of-life route

An intended route requires relevant test evidence, facility acceptance, local rules and assessment of Liquefier and the resulting mixture. Medical, dental, food-contact and agricultural use or disposal requires separate finished-article validation.

4. Minimum controlled evidence before release

Control field	Required record	Release interpretation
Service	Exact grade and performance requirements	Catalogue description only until evidence is linked
Treatment	Liquefier method and complete test item	Control process variables and change triggers
Evidence	Lab report, criteria and measured timeline	Report method, result, uncertainty and limits
Route	Applicable test, facility and local acceptance	Apply final acceptance and responsibility boundary

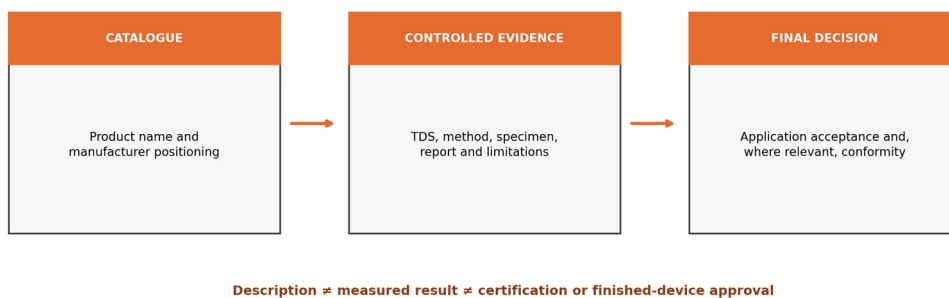


Figure 2. WP-17 separates catalogue positioning, measured evidence and final application decisions.

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

- Ready biodegradability is not established by a day-60 endpoint alone.
- No compostability, wastewater, soil, marine or littering claim is made.
- Treated test material is not equivalent to an untreated printed article.
- Bio-based content and biodegradation are separate attributes.
- Regulated uses require finished-article evidence.

6. Conclusions

- Three grades provide different service-phase mechanical envelopes; end-of-life evidence is a separate selection axis.
- The 85% figure remains a reported claim until its exact metric and analytical report are recorded.
- Regulated-use and disposal acceptance belong to the finished article and local route.
- This corrected candidate remains local and on HOLD until series-wide scientific, metadata and visual release checks are complete.

Revision note

Version 5.3 removes ready-biodegradable, compostability and circular-carbon-loop conclusions, repairs the evidence hierarchy and retains the reported day-60 result only with an explicit source-report hold.

Acknowledgements. The author acknowledges the 3Dresyns technical team and users whose manufacturing experience informed this correction.

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

References

- [1] 3Dresyns. BioDeg Corn E/F/H current TDS and controlled bio-based-content and biodegradation reports.
- [2] OECD. Test No. 301F: Manometric Respirometry Test, within Test No. 301 Ready Biodegradability.
- [3] ISO 16620-2:2019. Plastics—Biobased content—Part 2.
- [4] ASTM D6866. Radiocarbon determination of biobased content; current controlled edition to be confirmed at release.
- [5] ISO 14855-1:2012. Determination of ultimate aerobic biodegradability of plastic materials under controlled composting conditions—Part 1.
- [6] Maturi, M. et al. (2025). Sustainable approaches in vat photopolymerization. <https://doi.org/10.1039/D5GC02299A>