ANNEX 1: enlarged scenarios addressed by Versalis Novel Technology

NOVEL TECHNOLOGY:
VERSALIS RECYCLED POLYSTYRENE (r-PS) DECONTAMINATION TECHNOLOGY

SUMMARY

1. SCOPE

Versalis SpA has developed a Novel Technology for the decontamination of post-consumer polystyrene (PS).

Versalis has inscribed the developed Novel Technology named “Versalis Recycled Polystyrene (r-PS) Decontamination technology” in the EU register on 07/12/2023, with the identification protocol ID:0ed755ba-ceec-4170-b9e2-942e549ed528.

Aim of the present Annex 1 and ATTACHMENT 2, is to enlarge the scenarios evaluated to be addressable with the Versalis Decontamination technology.

The **process parameters, design of equipment** and **process scheme** form part of Versalis intellectual property, therefore, they should be kept **confidential**.

This document has been written following the requirements for the development of a novel technology as reported in Regulation 2022/1616 with reference to Article 10.

Versalis points out that the present document contains confidential information owned by Versalis. This information must be not disclosed, and they are included between red marked sentences.

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2. ENLARGED SCENARIOS OF RECYCLATE APPLICATION

In the 07/12/2023 study it has been pointed that following scenarios can be considered as safe up to 100% of rPS recyclate produced by means of Versalis Novel Technology:

- Scenario 1: pot for cold filled yogurt, 250 g yogurt per day for a toddler, storage for 40 d at 6 °C
- Scenario 2: pot for hot filled yogurt, 250 g yogurt per day for a toddler, 2 h 70 °C followed by 40 d at 6 °C
- Scenario 3: tray for meat, fish or cheese, 150 g meat, fish or cheese per day for a toddler, 30 d at 6 °C
- Scenario 4: tray for fruit or vegetables, 500 g fruit or vegetables per day for a toddler, 30 d at 25 °C
- Scenario 5: cup for cold drinks, 750 ml cold drinks per day for a toddler, 1 d at 25 °C (cold drinks)
- Scenario 6: cup for hot drinks, 750 ml hot drinks per day for a toddler, 2 h at 70 °C (hot drinks)

In the present document we enlarge the investigation to wider scenarios:

- Scenario 7: packaging for solid and liquid food, 150 g per day for a toddler, hot filling at 95 °C for 10 min, stored 18 months (540 d) at 25 °C
- Scenario 8: packaging for solid and liquid food, 150 g per day for a toddler, 12 months (365 d) at 25 °C
- Scenario 9: packaging for solid and liquid food, 150 g per day for a toddler, 6 months (180 d) at 25 °C
- Scenario 10: packaging for solid and liquid food, 500 g per day for a toddler, 10 d at 40 °C
- Scenario 11: packaging for solid and liquid food, 250 g per day for a toddler, 80 d at 8 °C
- Scenario 12: packaging for solid and liquid food, 250 g per day for a toddler, 10 d at 40 °C
- Scenario 13: packaging for solid and liquid food, 250 g per day for a toddler, 12 months (365 d) at 25 °C
- Scenario 14: packaging for solid and liquid food, 500 g per day for a toddler, 12 months (365 d) at 25 °C
- Scenario 15: packaging for solid and liquid food, 1000 g per day for a toddler, 10 d at 40 °C
- Scenario 16: packaging for solid and liquid food, 250 g per day for a toddler, hot filling at 95 °C for 10 min, stored 18 months (540 d) at 25 °C
- Scenario 17: packaging for solid and liquid food, 500 g per day for a toddler, hot filling at 95 °C for 10 min, stored 18 months (540 d) at 25 °C

As per Attachment 2 “Fraunhofer IVV 08/05/2025 test report” all the above scenarios analyzed can be considered safe up to 100% of recyclate.

a) Food Daily assumption

Daily assumption is connected to the specific typology of food.
As a general approach we may refer to 95th percentile consumption as per EFSA Food Consumption Database (available online: https://www.efsa.europa.eu/en/data-report/food-consumption-data).
Such database is constantly updated with new surveys; as reference, in the below Table 1 we report the updated data for some food typology

For the selection of the proper scenario to be used, here below the suggested procedure:

1) Choose the food typology: for example, meat,
2) Choose the storage conditions: for example, 365 d at 25 °C,
3) Extract from *Food consumption data* the maximum daily consumption for toddler (95° percentile): in the example of meat is 140gr as per table 1.
4) Following to the above actions, the proper scenario to be considered is *Scenario 8: packaging for solid and liquid food, 150 g per day for a toddler, 12 months (365 d) at 25 °C*

Chronic Food Consumption Grams per day (g/day) - Consumers only EFSA Food Consumption Database (1)		Toddlers (2)
Milk and dairy products	Dairy dessert and similar	200 gr/day
Milk and dairy products	Fermented milk or cream	337 gr/day
Milk and dairy products	Cheese	166 gr/day
Coffee, cocoa, tea and infusions	Hot drinks and similar (coffee, cocoa, tea and herbal infusions)	354 gr/day
Meat and meat products		140 gr/day
Fruit and fruit products	Processed fruit products	151 gr/day

Table 1

1) EFSA Food Consumption Database. Available online: https://www.efsa.europa.eu/en/data-report/food-consumption-data.

2) Food consumption considered: the maximum of 95th percentile with regards to the following Countries: Italy (survey 2017, 2018), Germany (survey 2006,2007), France (survey 2014), Spain (survey 2012, 2013), Belgium (survey 2002), Netherland (survey 2012), Portugal (survey 2015).

ATTACHMENT 1: FRAUNHOFER IVV TEST REPORT

ATTACHMENT 2: FRAUNHOFER IVV 08.05.2025 TEST REPORT