

SPTek

ECLIPSE™

BIO-ASSIMILATION

PATENT PENDING

BIO-ASSIMILATION

THE FINAL STAGE OF BIODEGRADATION

Definitively, "bio-assimilation" means that the plastic has degraded to a molecular weight that can be consumed by living organisms.

NO TRACE LEFT BEHIND

This represents the final and conclusive stage of plastic biodegradation, leaving behind no microplastics, in both marine and terrestrial environments.



FREE RADICAL PROCESS STABILIZERS

BREAKS BONDS

Causes the break of the carbon-to-carbon bonds within the polymer molecules.

NEW COMPOUNDS

Electrons break free and attach to other molecules to create new compounds.



FREE RADICAL PROCESS STABILIZERS

PRODUCTION STABILIZER

Stabilizes the material during production.

FUNCTIONAL STABILIZER

Maintains functionality of the product for the required period of time.



CONDITIONAL TIMELINE

6 MONTHS

- HUMID
- HIGH TEMP
- EXPOSED

IDEAL CONDITIONS

High UV exposure, heat, humidity and availability of microorganisms.

42 MONTHS

- DRY
- LOW TEMP
- SUBTERRANEAN

POOR CONDITIONS

Low UV exposure, heat, humidity and availability of microorganisms.

450+ YEARS

PP & PE WITHOUT ECLIPSE



THE PROCESS

200,000 Da

40,000 Da

5,000 Da

0 Da

BEGINNING OF THE END

The functional stabilizer is used up, initiating the bio-assimilation process.

MEASURE OF MASS

The dalton (Da) is a unit of molecular mass used in physics and chemistry.



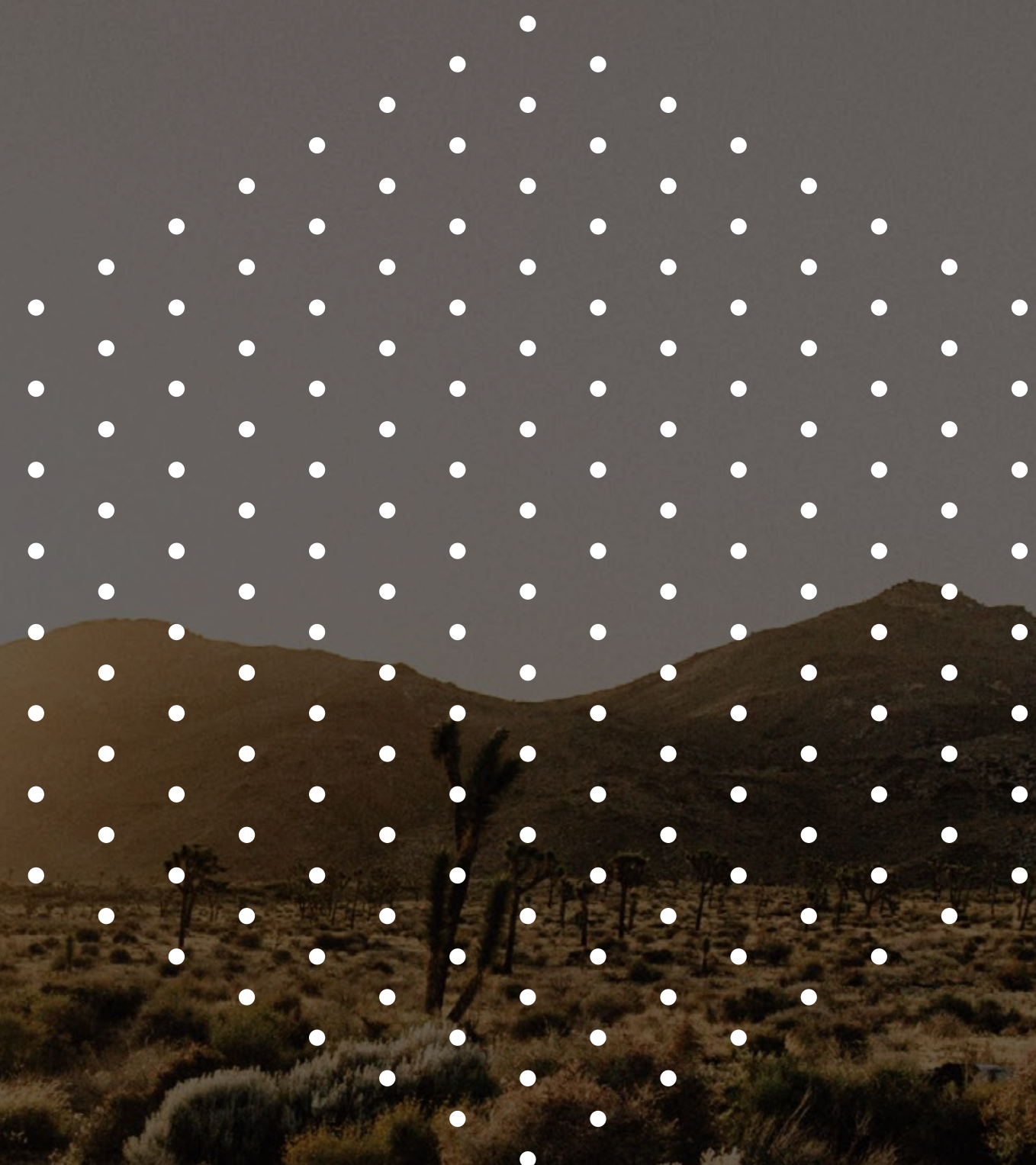
THE PROCESS

200,000 Da

40,000 Da

5,000 Da

0 Da



FULLY INTACT MATERIAL

Material is at the end of its programmed useful life performance prior to 100% natural bio-assimilation.



THE PROCESS

200,000 Da

40,000 Da

5,000 Da

0 Da



MATERIAL TRANSFORMATION

Hydrophobic material becomes hydrophilic.



THE PROCESS

200,000 Da

40,000 Da

5,000 Da

0 Da



NO MICROPLASTICS

Carbon-to-carbon bonds are exposed to microorganisms.



THE PROCESS

200,000 Da

40,000 Da

5,000 Da

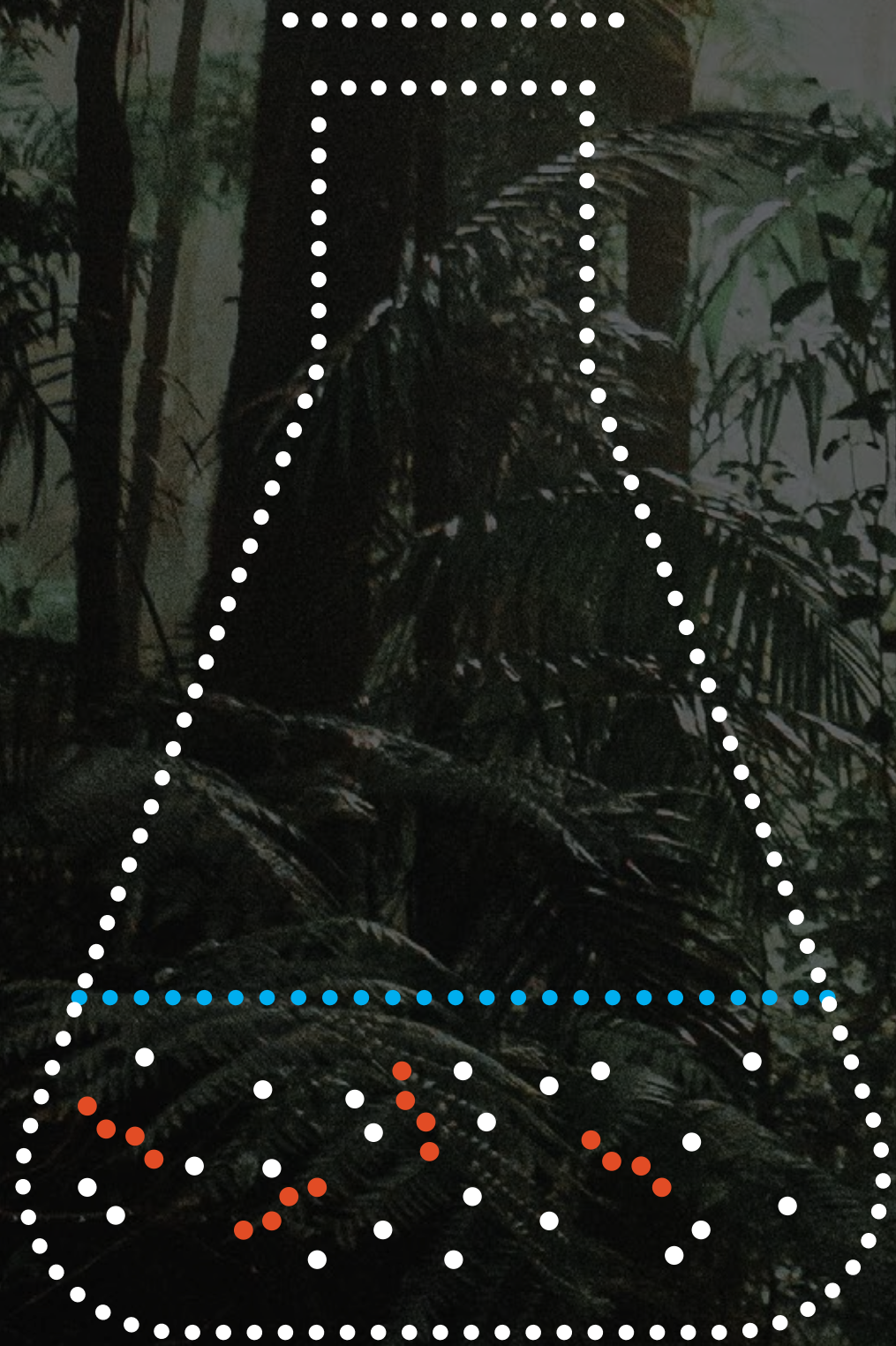
0 Da

COMPLETE BIO-ASSIMILATION

Nothing left but CO₂, water and biomass.



PROOF OF EFFICACY



C-13 TEST

Bio-assimilation test that conclusively tracks the origin of carbon within a closed environment using Carbon-13.

STANDARD TEST

A controlled test measuring the CO₂ within a closed environment containing a colony of microorganisms.

EXPEDITED TEST

A process that detects carbonyl groups to prove that the molecules have reached <5000 daltons.



LANDFILL MANAGEMENT

Proven Technology

It is conclusively proven that ECLIPSE™ will bio-assimilate as demonstrated by ASTM testing and C-13 carbon labelling.

When it comes to disposal in landfill, **ASTM D5526 compliance confirms biodegradation in an anaerobic environment.**

LANDFILL MANAGEMENT

Rapid Bio-assimilation

Any packaging, bags or sacks will rapidly lose their mechanical properties, permitting putrescible waste to rapidly biodegrade.

The plastic itself will quickly decrease in molecular mass, dropping from a typical 200,000 Da to sub-5000 Da. The decreased molecular mass significantly increases surface area, encouraging a close knit, dense agglomeration of material.

LANDFILL MANAGEMENT

Efficient Utilization

Landfill operators want an efficient utilization of any landfill site, without any 'caverns' or spaces wasting valuable cubic capacity. If all biodegradable waste is encouraged to process in the anaerobic zone, methane is an inevitable by-product. **In properly managed landfills, methane collection is a benefit both environmentally and financially.** ECLIPSE™ will condense voluminous materials, enabling landfills to utilize space 50–80% more efficiently.

ECLIPSE™ MESSAGING GUIDELINES

Recyclability First

First and foremost, all ECLIPSE™ enabled materials are intended to be recycled. The ability to bio-assimilate is by no means designed to encourage incorrect disposal, as all waste is potentially harmful to the environment. **ECLIPSE™ represents a critical safety net in case a product evades the recycling system.**

ECLIPSE™ MESSAGING GUIDELINES

Responsible Communication

While ECLIPSE™ enabled products will completely bio-assimilate, **we don't want our customers labelling their products as "biodegradable".** This term will inherently encourage consumers to dispose of products, washing them of any guilt. Additionally, state-by-state legislation is in place to discourage labelling plastic products as "biodegradable" for this very reason.

ECLIPSE™ MESSAGING GUIDELINES

We are a sustainability company

Smart Plastic is a sustainability company, full-stop. We believe in doing what's best for the environment, and that includes messaging that encourages sustainable behavior. **We are here to support our customers on their sustainability journey,** and that includes crafting a message that adheres to legislation and our values as a sustainably driven company.

PRODUCTION MASTERBATCH INFUSE BATCH ECLIPSE ENABLED

ANALYZE PRODUCTION

Detailed look at the production methods and limitations involved (shear temperature, frictional heat, etc).

CUSTOMIZE MASTERBATCH

Select and formulate the catalysts and stabilizer package within the masterbatch to match production.



PRODUCTION
MASTERBATCH
INFUSE BATCH
ECLIPSE ENABLED

STABILIZERS & CATALYSTS

The means of delivering the active ingredients.



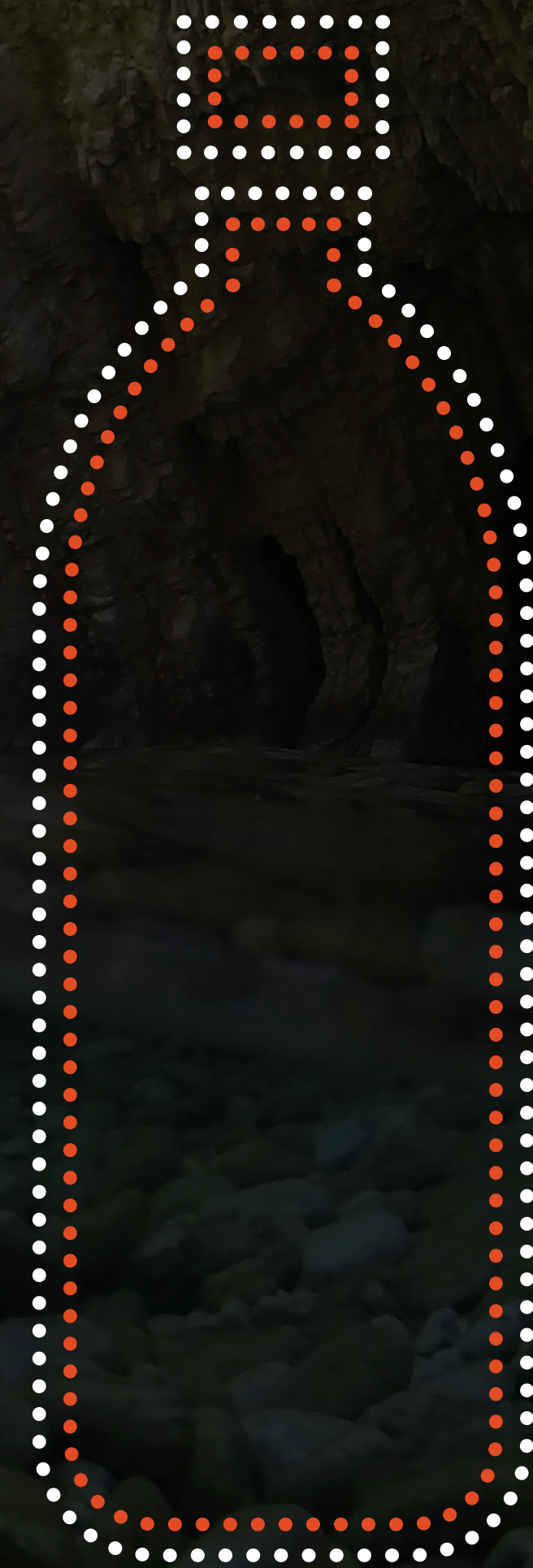
PRODUCTION
MASTERBATCH
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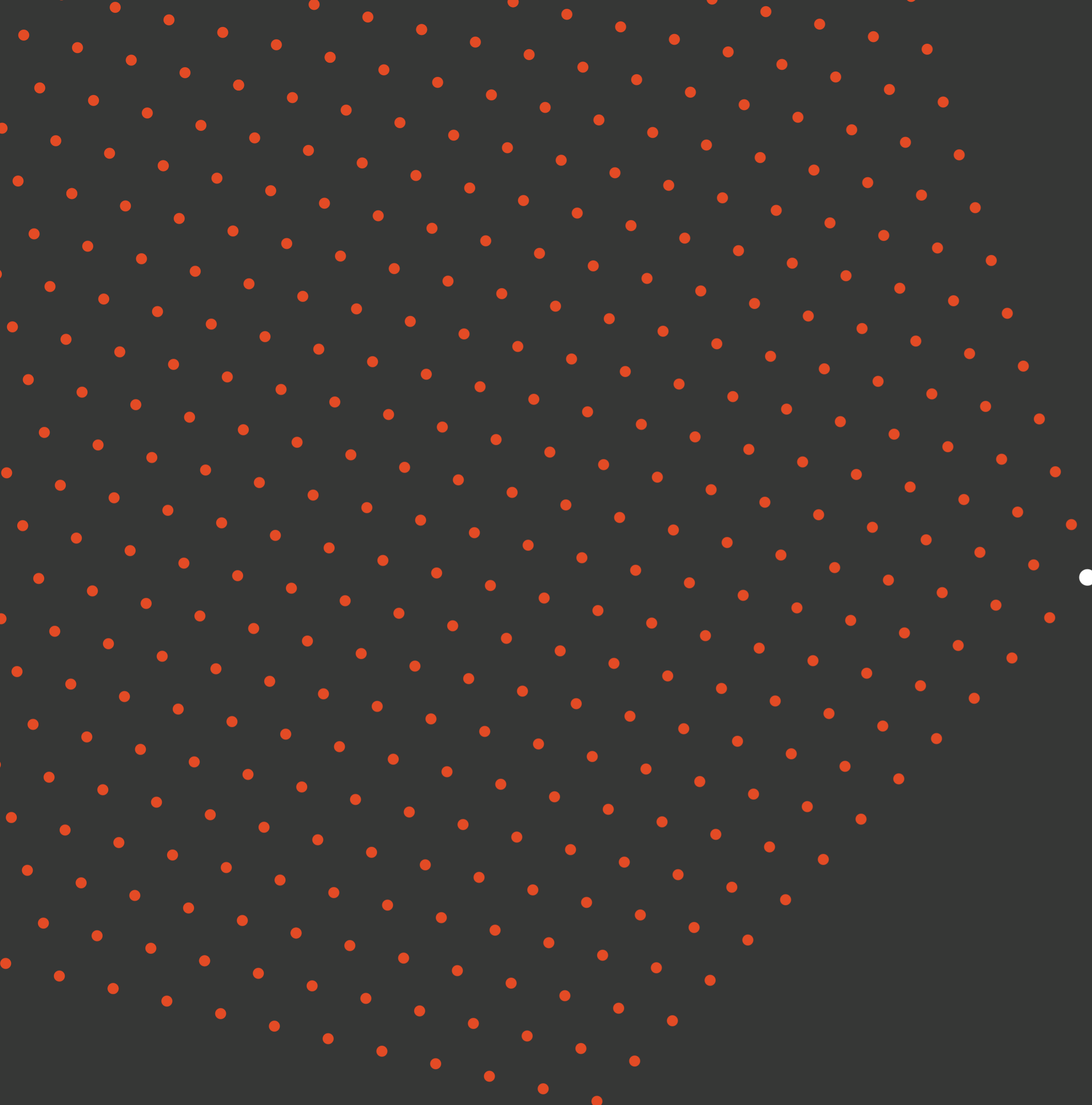
SPECIFIC DOSAGE

Introduce it at the advised letdown ratio (1%).



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