



enlabeling
SUSTAINABILITY

The Positive Program #2 Recycling Technologies and Legislation



What is happening? Legislation and Advocacy!

Recyclability of packaging: Consumers and retailers demand smart, ecological and recyclable packaging.

Huge differences in collection, sorting and reprocessing per country.

The Extended Producer Responsibility (EPR) systems in place in different countries, each with its own fees and specifics.

Specific national legislation and/or deposit systems in place.

Legislation in the EU



European Green Deal

Single-Use Plastic Directive

“Plastic Taxes” in several countries

Announcement of deposit and re-use schemes

Trend regarding returnable (bottle) systems in Europe

Good news for our EcoStream, EcoFloat, Stretch and WashOff labels



DEPOSIT IN EUROPE

Norway | 1999
Iceland | 1989

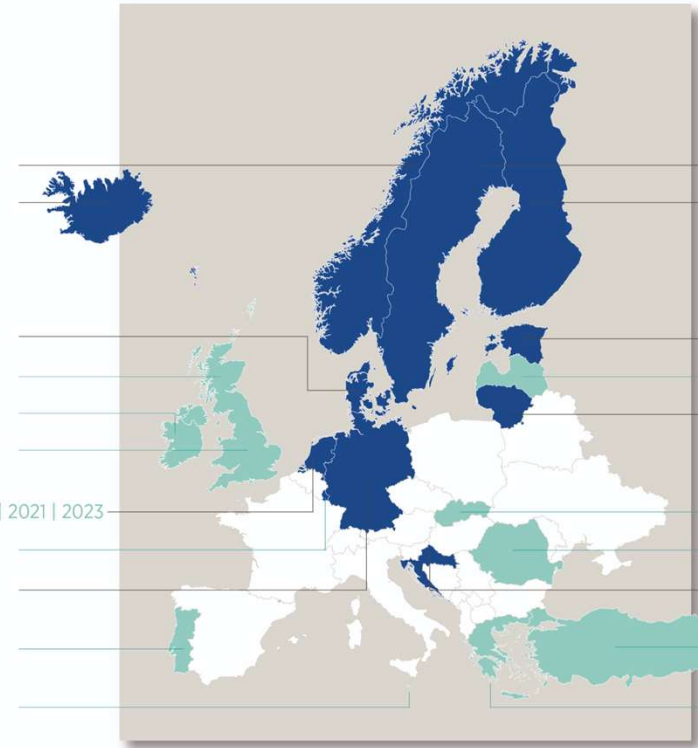
Denmark | 2002
Scotland | 2023
Ireland | 2022
England | 2024

Netherlands | 2005 | 2021 | 2023
Luxembourg | 2020
Germany | 2003
Portugal | 2023
Malta | 2022

Sweden | 1984
Finland | 1996

Estonia | 2005
Latvia | 2022
Lithuania | 2016

Slovakia | 2022
Romania | 2022
Croatia | 2006
Turkey | 2023
Greece | 2023



Stand 12/2021

Deposit system implemented/Political decision taken

US Legislation/Policy is in Motion

- **California** Governor Newsom signed into law a suite of state environmental bills aimed at plastics and recycling. Notable among these is SB 343, which expands the boundaries of current state law on untruthful, deceptive, or misleading environmental marketing claims (commonly referred to as "**greenwashing**") to reflect claims as to the recyclability of a product or packaging.
- Break Free from Plastic Pollution Act; Clean Future Act (**both include a national bottle bill, not passed**)
- EPR schemes to fund local recycling programs and boost supply of recycled content
- Bottle Bills in 10 States across the US, Maine being the state that includes most bottle types ~90% ; Oregon raised deposit to 10 cents



EPR Fees and „Ecomodulation“





















- Could be the key to more sustainable packaging designed according to the „Design for Design Guidelines“
- Would minimize marketing „greenwashing“
- CHALLENGE: EPR fees are not harmonized across Europe but there is a lot of (positive) lobbying going on to achieve this



Momentum toward greater sustainability and types of recycling regulations vary from region to region.

Pledges and regulations on plastics, by region¹

Sustainability momentum Low    High

	Types of pledges and regulations			
	CPG ² commitments and focus	Taxes and extended producer responsibility (EPR)	Single-use plastics (SUP) regulation	Recycling regulations
China	 Recycled content	 EPR in implementation	 Requires biodegradable for bags and food-service plastics	 Waste import ban
North America	 Packaging recyclability, recycled content	 CA: Province-level EPR US: State-level EPR in process	 CA: 2022 ban US: State-level bag bans	 CA: RB ⁵ 100% by 2030 US: State-level regulations
Developed Asia and Australia	 PET ³ bottles, waste reduction	 EPR schemes widespread	 Bag ban in Japan, parts of Australia	 JP and KR: RR ⁶ 60–70% by 2030 AU: RC ⁷ 20%, RR 70%, and RB 100% by 2025
Europe	 Recycled content, reducing virgin plastics	 EU: Plastic tax (€800 per metric ton), ⁴ carbon taxes, EPR	 EU: SUP ban on 10 items	 EU: RC 30%, RR 55%, and RB 100% for plastic packaging by 2030
Rest of world	 Varies	 EPR schemes	 India: State-level regulations	 Turkey: RR targets Brazil: RC 75% (proposed) Indonesia: 70% reduction in marine plastic by 2025

What will have to change?

Global harmonization of legislation regarding recycling and collection

Global harmonization of definition and availability of recycled content

Simplification and harmonization of messages to the customers...what should be recycled and what not

Regulatory Framework to reward scalable innovation in waste management

Recycling Technologies and Latest Investments

Europe's plastic recycling volume is growing

- Plastics Recyclers Europe (PRE): the plastic recycling industry in the European Union (EU) is continuing “fast-paced efforts toward reaching the EU targets,” with “new figures for installed plastics recycling capacities” revealing a **13 percent growth rate**
- Polyethylene terephthalate (PET), flexible polyolefin (PO), rigid high-density polyethylene (HDPE) and polypropylene (PP) retain the biggest share of the overall plastics recycling capacity, **representing nearly 80 percent.**
- **Quality is increasing**

<https://www.recyclingtoday.com/article/pre-plastic-recycling-europe-growth-circular-economy/>



Recycling Technology

- Investments in chemical and mechanical recycling; APR welcomes a combination of both to boost supply of recycled content
- Mechanical Recycling: Opening of Polymer Recycling Center in Las Vegas to sort more PET, PP and HDPE
- Chemical Recycling: Large investments by Exxon Mobile, Eastman and smaller companies
- APR estimates that to be able to use 30% recycled content in plastic packaging about 150 new recycling facilities would have to be built.



Mechanical Recycling 90% of recycling volume today



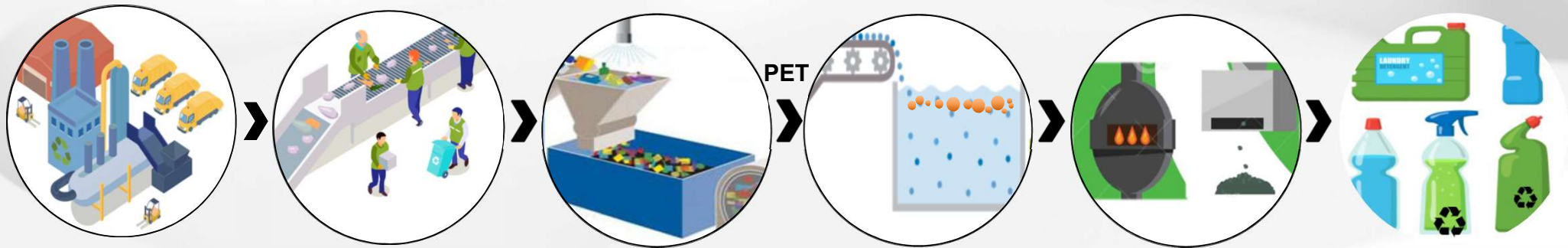
Chemical/Advanced Recycling (requires further investment)

#1 Purification/Solvation Based Technology, washing

#2 Decomposition/Depolymerization Technology (biological or thermal methods) > suitable for textile

**#3 Conversion Technologies – pyrolysis
Breaks bonds into hydrocarbon**

Very established PET Recycling Process



1

COLLECTION

Packaging is consumed and properly discharged.

2

SORTING

Detection of underlying PET, PP and HDPE material with full-body Sleeve



3

GRINDING & WASHING

Bottles are ground and washed in COLD WASH water to remove any residue, dirt and glue.

4

FLOATING

EcoFloat is a low density polyolefine that floats and can easily separated from other flakes.

5

MELTING EXTRUSION PELLETIZING

6

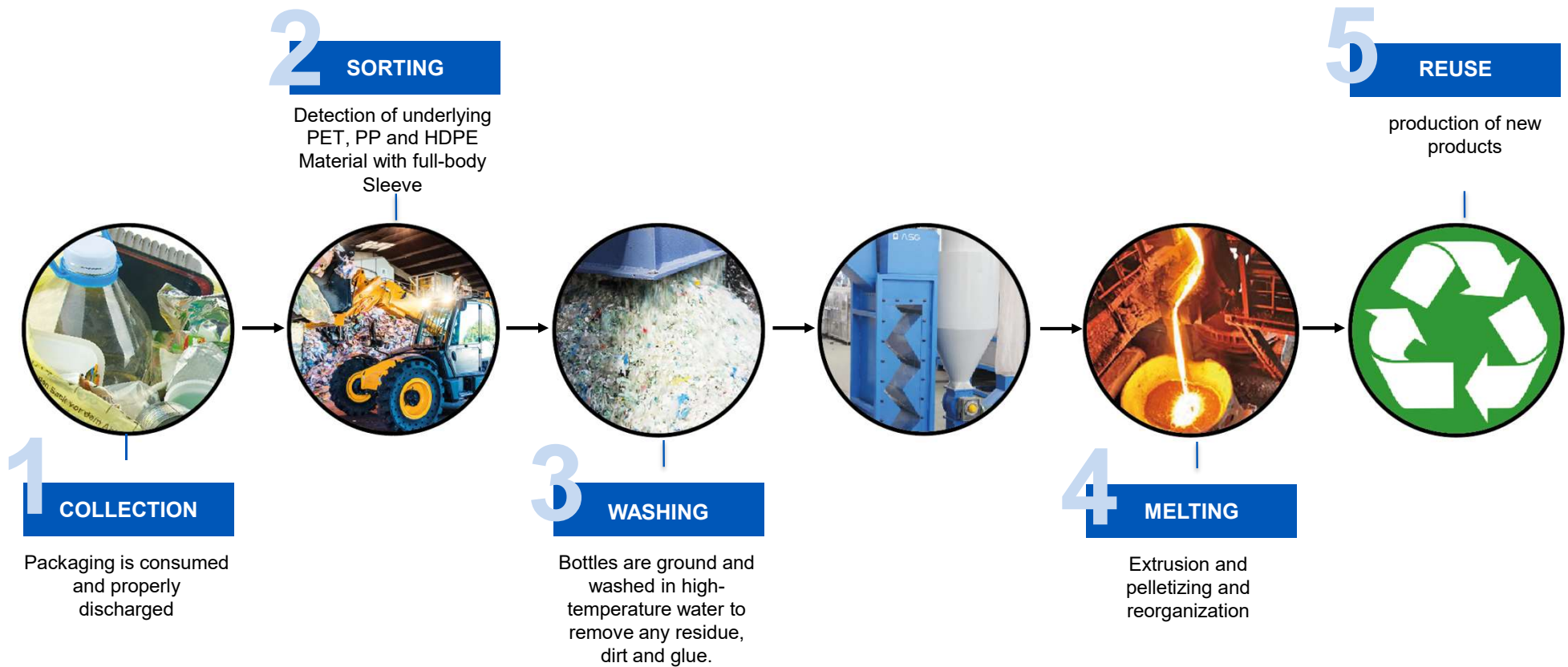
REUSE

PET Recycling

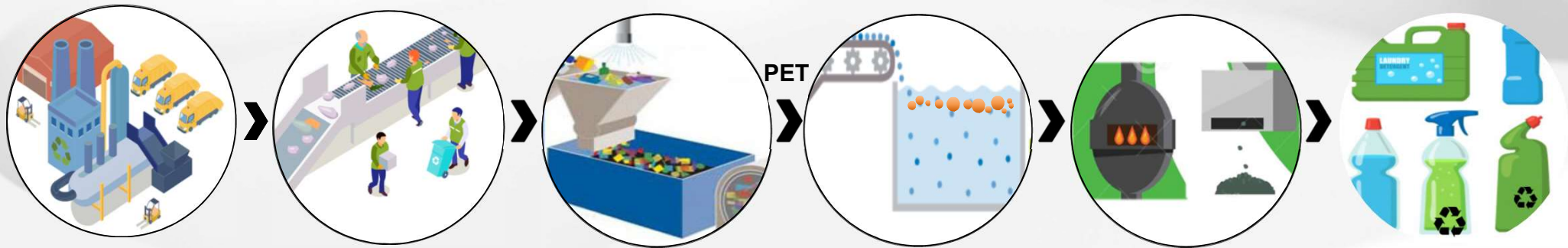
94 % of PET
bottles are
collected in
Germany – only
37% get recycled
back into bottles

*30 percent are collected in the
USA

PP (Polypropylene) Recycling Process



HDPE Recycling Process in a nutshell



1

COLLECTION

Packaging is consumed and properly discharged.

2

SORTING

Detection of underlying PET, PP and HDPE material with full-body Sleeve



3

GRINDING & WASHING & De-Sleeving

Bottles are ground and washed in COLD WASH (40C/104F)

4

FLOATING

EcoFloat is a low density polyolefine that floats and can easily separated from other flakes. Here the sink/float could work vice versa than PET

5

MELTING EXTRUSION PELLETIZING

6

REUSE

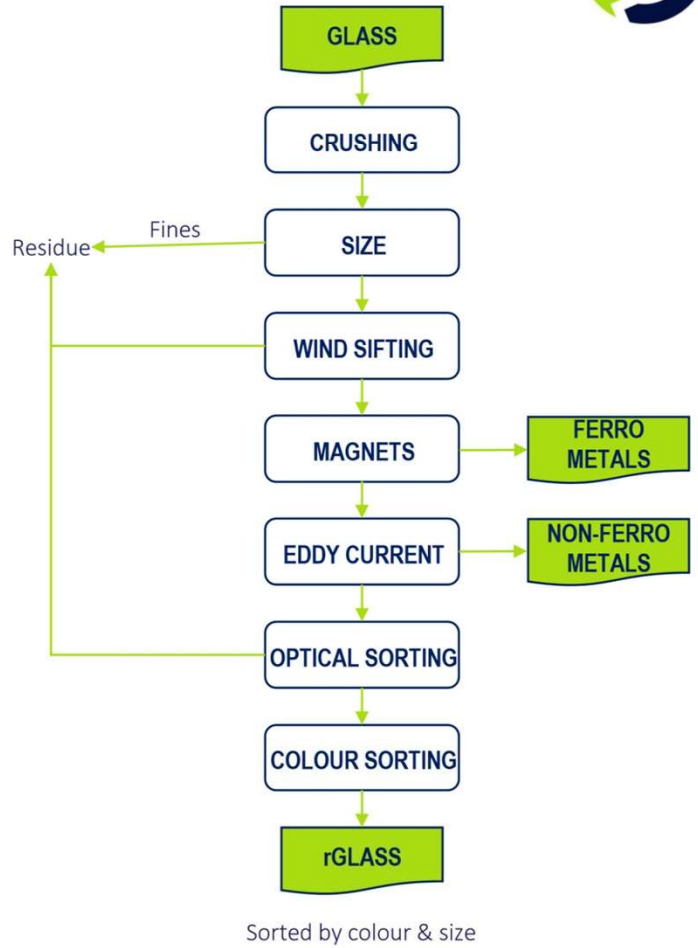
Technologies in place

Glass sorting

- Different sorting technologies in place
- Magnet, wind sifting, color sorting, etc.
- Plastics do NOT get recycled



<https://www.youtube.com/watch?v=jE4cxE4Ai9U>
3.03 min



Digital Developments – HolyGrail 2.0 et al



[Welcome](#) [About](#) [Membership](#) [Timeline](#) [Governance](#) [Open Houses](#) [News & Insights](#) [Contact](#) [Member Area](#)

All Posts



Mar 30

Significant milestone achieved with the semi-industrial validation of detection sorting unit

sorting unit

Liner Recycling – New Map by CELAB listing recyclers



Lenzing Papier GmbH
Country(ies): Austria
Activity: Circularity partners
Material: Paper liner
Adresse: Werkstraße 2, 4860 Lenzing – Austria
Email: office@lenzingpapier.com
Web: <http://www.lenzingpapier.com/en/Recycling-en#0>
End product(s): Recycled Paper

ECOR Global
Country(ies): Netherlands, Serbia
Activity: Circularity partners
Material: Paper liner
Contact: Steven Mueller
Phone: +31-77-850-0954 (NL) or +381 36 58 57 801 (Serbia) or +1 619 277 4644 (USA)
Email: smueller@ecorglobal.com
Web: <https://ecorglobal.com>
Pre-requisites: Subject to prior sample shipments of typical liner paper sources, ECOR can receive unspooled, boxed Paper liner materials (typically 200kg/box).
End product(s): Solid panels (1020x3040x2.5mm) Replaces MDF, HDF, particleboard and triple corrugate
Other Informations: Cellulosic waste upcycling into solid panel products for advertising displays, interior walls, furniture

End product(s): Recycled Paper

PAPREC
Country(ies): France, Switzerland, Belgium, Spain
Activity: Collection partner

LES RECYCLADES
Country(ies): France
Activity: Collection partner
Material: Paper liner
Contact: Denis Audouin, Issam Benali
Phone: +33 7 89 21 05 31
Email: direction@mp2environnement.com, i.benali@lesrecyclades.com
Web: <https://www.mp2environnement.com>
Pre-requisites: - Provision of containers with

LES RECYCLADES
Country(ies): France
Activity: Collection partner
Material: Paper liner
Contact: Denis Audouin, Issam Benali
Phone: +33 7 89 21 05 31
Email: direction@mp2environnement.com, i.benali@lesrecyclades.com
Web: <https://www.mp2environnement.com>
Pre-requisites: - Provision of containers with

Building more knowledge: Three great podcasts



Apple Podcasts Preview



18 episodes

Recycled Content is a podcast from the Association of Plastic Recyclers.

Recycled Content

Association of Plastic Recyclers

Business
★★★★★ 5.0 • 6 Ratings

[Listen on Apple Podcasts](#)

MAR 22, 2022

Takeaways from the 2022 Plastics Recycling Conference with Dan Leif o...

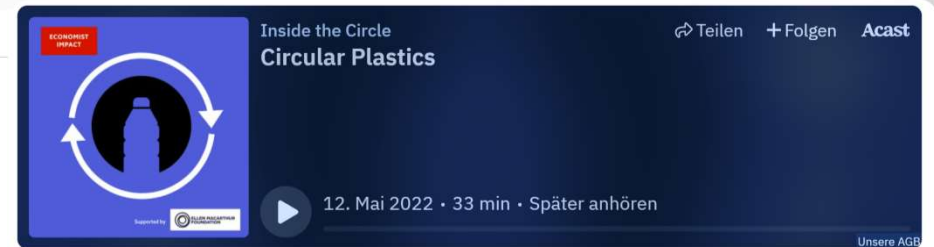
APR was glad to be back, and in person, for the 2022 Plastics Recycling Conference. The event brought together a record number of industry decision-makers to tackle some of the most pressing issues facing the industry. In this episode of Recycled Content, we are joined by Dan Leif, the...

[▶ PLAY](#) 36 min

JAN 25, 2022

The Problematic and Unnecessary Materials List with Emily Típaldo of U...

On January 25th the U.S. Plastics Pact released its Problematic and Unnecessary Materials List as a first step in accelerating progress toward a circular economy for plastic packaging in the United States. On this episode of Recycled Content, hosts Steve Alexander and Kara Pochiro went straight t...



Package Design Unboxd

Your ears are about to unbox the best damn packaging design podcast.

Learn everything from the basics of packaging concept development to what is required to recycle packaging. My goal is to teach you the ins and outs of packaging design and how to build a brand, an agency, or a department that focuses on sustainability and delivering memorable consumer experiences.

Our guests are leaders in their industries. They're eager to teach, explore, and discover the future of packaging design.

If you are interested in appearing or advertising on the podcast please contact us. We'd love to hear from you.



LATEST EPISODE

Package Design En Español con Hernan Braberman | Ep 88

Package Design Unboxd - with Evelio Mattos



Coming Up Next:

Sustainability

#1 Explained: Our Sustainable Product Family

May 5, 2pm CET

#2 Update: Recycling Technologies and Legislation

May 19, 2pm CET

#3 The Holistic View: Material LCA's, Carbon Net Zero and Emission Targets

June 10, 2pm CET

#4 Sustainability Trends

July 14, 2pm CET

Marketing

#1 Marketing Toolbox Explained

June 24, 2pm

CET

Basics

#1 Basics: Inks and Adhesives tbd

#2 Basics: Printing Technologies tbd

#3 Basics: Materials - Plastics

Explained tbd

**THE END -
Thanks!**



BUY THE BREW FOR UKRAINE

Ukrainian brewery Pravda shared five of their brewing recipes and invited breweries from around the world to brew for the Ukrainian cause. Puck Futin is a feisty Red Ale, strong like the Ukrainian resistance. **Proceeds from this beer will be donated to support the people of Ukraine.**

Made in Australia for Ukraine



10c REFUNDED AT COLLECTION DEPOTS POINTS IN PARTICIPATING STATE TERRITORY OF PURCHASE

PREGNANCY WARNING
Alcohol can cause lifelong harm to your baby



9 347511 0024 15

BREWED FOR UKRAINE

ЧЕРВОНИ
ОЧІ

RED ALE

5.8%
ABV

375
ML



South Australian trio, Barossa Valley Brewing, Prancing Pony Brewery, and Route 9 Distillery, have joined forces to collaboratively brew their Red Eye Ale 'Puck Futin'.
Supported by Black Squid Design and CCL Label



BEER RECIPE OF UKRAINE



Some film is shipped to the site on plastic pallets with cardboard cradles. The pallets and cradles are accumulated and returned to the film supplier for reuse.



Incoming Film on plastic pallet and cradles

Plastic Pallets



Cardboard Cradles





Core plugs inserted into finished product rolls for shipment to the customer. The plugs are returned from the customer to the site for reuse.



Core plugs from film supplier are accumulated and returned to supplier for reuse.



Plastic Tote

Plastic folding totes and inserts (cardboard dividers) are used to ship finished product to the customer. Both are returned from the customer to the site for reuse.



Cardboard Dividers