

# PLASTICS CIRCULAR ECONOMY ASSURANCE SOLUTIONS

Helping you to close the loop





## Plastics circular economy assurance, testing and certification - helping companies advance recycled polymer development

Climate change, energy use, resource availability, pervasive waste in our environment, changing consumer preferences and pressures from investors or governments are driving us to rethink wasteful models of production and consumption. Bringing quality, safety and sustainability to life, our risk-based quality assurance program, **CIRCULARASSURE**, provides testing, auditing, certification, and unique insight-enabling analytical technologies that help you to purposefully move towards a circular economy for plastic.

Across all sectors, businesses face pressures from consumers, governments, investors and environmental bodies to rethink wasteful models of production and consumption, reduce their environmental impact and justify their green claims. Many are designing materials, product or processes to ensure that they are kept in productive use for as long as possible and then can be re-used or recycled.

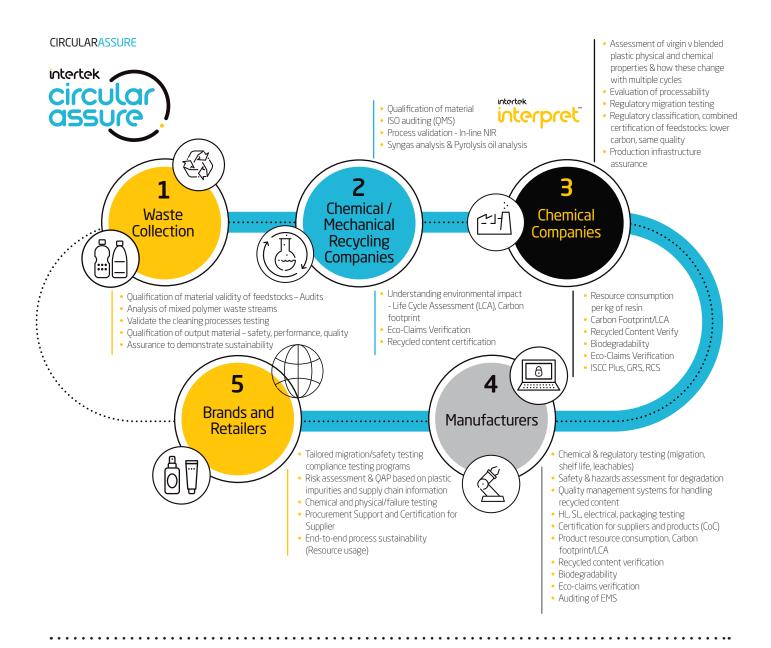
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Legislative developments, including the European Green Deal, EU Directives on waste or single-use plastics, and the UK Plastics Packaging Tax, are driving companies throughout the polymers/plastics value chain to rethink wasteful production and consider what happens after consumption of their

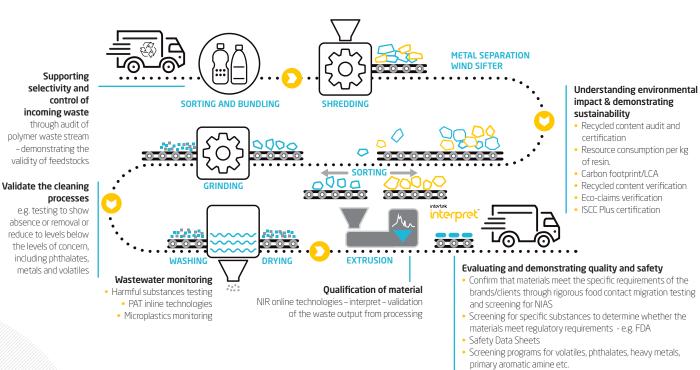
products. Companies are also looking to accelerate innovation processes that are driven by sustainability goals to achieve safe, well-performing products that are differentiated in the marketplace.

**CIRCULARASSURE** comprises a programme of assurance, testing and certification services that can be applied across the recycled plastic value chain from waste collectors and recycling companies to polymer producers and brands, enabling each stakeholder to ensure quality, safety, and optimise the value of products within the plastics/polymer circular economy.





#### CIRCULARASSURE FOR WASTE COLLECTORS, SORTERS & MECHANICAL RECYCLING



#### CIRCULARASSURE FOR CHEMICAL RECYCLING

#### Supporting selectivity and control of incoming waste through auditing mixed

polymer waste stream - demonstrating the validity of feedstocks

#### **Process Validation** In-line scanning powered by NIR testing for ongoing quality

**Product Quality** · Quality control testing of pyrolysis oil (physico-chem,

ongoing use as fuel)

#### **Regulatory Compliance**

REACH Regulatory guidance & documentation coupled with testing

#### Hvdrocarbon **Analysis**

Crude Oil, Petroleum & Refined Products, Fuels, Chemicals, Gas (Propane, Butane)



IETAL SEPARATION **WIND SIFTER** SHREDDING

interpret

GRINDING WASHING

0

processing

## interpret CRACKER **PYROLYSIS**

## **OUTPUT: SYNGAS / HYDROCARBONS**

interek interpret

impurities, etc.) Syngas analysis (for

**CRACKER** 



MONOMER

FEEDSTOC

unwanted substances of concern to disrupt crackers e.g., chlorine, oxygen and silicon

#### **Product Quality**

QC of incoming material for the polymerisation process

PRODUCT MANUFACTURING

#### **Processing Infrastructure Assurance**

OLYMER

- Risk-based asset management Aware<sup>™</sup> • Corrosion Inspection, Materials corrosion engineering
- Turnarounds/shutdowns

interpret

#### **Environmental Testing Solutions**

- Emission Testing Technologies
- Waste water analysis
- Microplastics in waste water

#### **Materials Quality and Safety**

- Screening for specific substances to determine whether the materials meet regulatory requirements - e.g. FDA
- · Processability Evaluation of Circular materials
- Application-based consulting and testing e.g. food contact or substance that poses a risk to health e.g. heavy metals, PFAS

#### through cycles of recycling? Processability evaluation (lab scale compounding, extrusion and testing) ISO auditing (QMS)

properties - how do these change

Commercial viability - From process

Contamination testing / screening /

Comparison of recycled material vs virgin

material to assess physical & chemical

Laboratory testing solutions - advanced R&D support or standardized testing (e.g. ISO and ASTM), comparison of

protype to scale-up

materials on scale-up

investigations

#### Qualification of material - NIR

online technologies - interpret validation of the waste output from

#### Understanding environmental impact & demonstrating sustainability:

- Recycled content audit and certification
- Resource consumption per kg of resin
- Carbon footprint/LCA / Eco-claims verification
- ISCC Plus certification

#### CIRCULARASSURE FOR PRODUCTION

- · Global market regulatory assurance
  - Biodegradability Eco-Claims verification
  - · Laboratory testing advanced R&D support,
- standardized testing Contamination resolution
- Comparison of recycled material to virgin material to assess properties
- Chemical safety testing Processability evaluation (lab-scale compounding,
- extrusion and testing)

#### **Processing production** assurance solutions

- Product testing for properties and performance
  - · Environmental quality
  - ISCC Plus certification
  - physical and chemical Failure or contamination investigations
  - and safety audit and certifications

  - Physical testing, impact testing, electrical safety mechanical properties, adhesion, surface chemistry Manufacturing specification testing

 Supplier inspections Supplier risk mapping **MATERIALS SOURCING** MATERIALS R&D

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APPLICATIONS

Global regulatory guidance dossier stewardship

GMP compliance inspections for food contact

Migration NIAS testing physical properties

#### Raw materials testing

- Carbon Footprint/LCA
- · Recycled Content Verification
- · Comparison of recycled material to virgin material or batch to batch
- Processability evaluation (lab-scale compounding, extrusion and testing)
- · Chemical safety testing
- ISCC Plus certification

MATERIALS PRODUCTION

#### Production infrastructure assurance

- Risk-based asset management -Aware™ Corrosion Inspection, materials
- corrosion engineering
- Waste-Water testing solutions
- · Emission testing technologies
- Microplastics monitoring
- Turnarounds/
- shutdowns inspection services



- Counterfeit investigations
- · OEM specifications testing · Weathering & performance testing
- Certification against specifications
- Consumer complaint
- Failure investigation

#### **CIRCULARASSURE FOR BRANDS & RETAILERS**

#### CHALLENGES



Pressures from consumers and retailers environmenta bodies to rethink wasteful models of production and consumption, reduce their environmental impact and justify their green claims



nvestors have a heightened focus on ESG measures
of the companies in their portfolios



Need to realize costs savings where possible (e.g lightweighting vs performance)

## END-TO-END RISK-BASED ASSURANCE SOLUTIONS

#### Demonstrating commitment to sustainability:

Recycled content audit and certification, ISCC certification

Resource consumption per kg of resin

Carbon footprint/LCA

Recycled content verification

Eco-claims verification

ESG audits and corporate sustainability programs

Materials/product quality & safety Regulatory compliance and testing (e.g. food contact)

Performance and failure testing Contamination investigations



#### INTERTEK INTERPRET



#### Real-time analytics to drive greater insight and value for the recycling value chain

As the global polymers and plastics industry progress towards a circular economy, understanding innovative chemical recycling technologies and feedstocks is critical to optimizing recycling value chains.

Interpret provides clients with rapid access to vital characterization data required to make informed decisions on product quality and quantity, thus saving time and cost while also maximising output.

#### Feedstock

Analysis of feedstock for quality control and contaminant ID

Track overall feedstock composition

#### Conversion

Big data analytics to track processes & ensure optimum process conditions for maximum plant performance

#### Purification

Fast online analysis of products before and after separation processes for control & quality monitoring

#### **End user**

Added value for traders and refiners

Can provide data and assurance to marketplace



### MITIGATING CIRCULAR ECONOMY CHALLENGES

### **Total Quality Assurance**

From electronics to automotive, from packaging to construction, across all sectors that use polymers or plastics, **CIRCULARASSURE** helps businesses to close the loop and tell their sustainability story.

Contact our **CIRCULARASSURE** team now to discover how our risk-based quality assurance program can help you to achieve Total Quality Assurance and accelerate innovation of well-performing, safe and compliant products and processes that benefit our daily lives.





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