SCGC

SCGC GREEN POLYMER™



GREEN SOLUTIONS

FOR A **BETTER** WORLD

WHO ARE WE ?

SCG Chemicals or SCGC is one of the leader in sustainable chemical innovations and manufacturing in Thailand and ASEAN that offers a full range of petrochemical products ranging from upstream production of olefins to downstream production of 3 main plastics resins: polyethylene, polypropylene, and polyvinyl chloride including finished products. SCGC is developing new technology and innovation to create high value added products (HVA) and holistic service solutions concerning growing area such as circular economy, medical & healthcare, and electric vehicle (EV) to better meet diverse places and emphasis demands sustainable environmental stewardship.

Chemicals Business for Sustainability

SCGC is determined to achieve leadership in integrated chemicals business for sustainability and committed to conducting business in line with Environmental, Social, and Governance (ESG) for achieving Sustainable Development Goals (SDGs) with SCGC sustainable development strategies.



Our ESG Strategic Directions



“ With sustainability at the core of our business, SCGC is passionately committed to improving people’s lives and protecting the world for future generations ”

Our Goals

1 MMT
Sales Volume of Green Polymer by 2030

=

1.77 MMT
GHG Emission Reduction by 2030*

=

187 Million
Tree Planting**

Remarks: *Green House Gas reduction calculation guideline by Thailand Green Gas Management Organization
**0.0095 MT CO2 absorption/tree/year

Towards our vision for sustainable future, SCGC has integrated the concept of circular economy into our core strategies to provide green solutions in polymer business, resulting in **SCGC GREEN POLYMER™** with 4 major solutions: **Reduce, Recyclable, Recycle and Renewable.**

SCGC Green Solutions to Enable Circularity

SCGC GREEN POLYMER™

Reduce
Enhancing Material for Eco-Efficiency



Recyclable
Design for Recyclability



Recycle
Mechanical & Advanced Recycling



Renewable
Bioplastics



SCGC GREEN POLYMER™
Solution Landscape



REDUCE

Enhancing Material for Eco-Efficiency

Growing awareness of sustainability, the most effective way to limit effect to mother Earth is to lessen resource consumption at the beginning. With massive amount of plastic consumption in current day, material reduction of only 5-10% can be first little drops of water to make a mighty ocean in sustainable world.

SCGC's breakthrough SMX™ Technology helps strengthen polyethylene resins and reduce the wall thickness in a product while retaining its functional properties. This does not only save raw material in manufacturing but also makes the product more lightweight, which translates to less energy required for transportation and less carbon dioxide emissions.

Benefits of SMX™ Technology

Low molecular weight

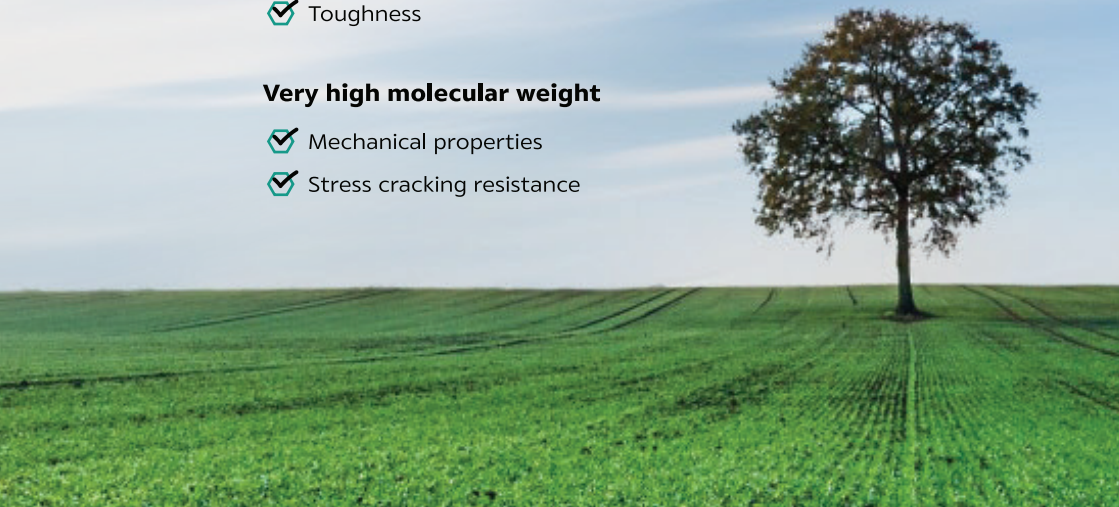
- Stiffness
- Process ability

High molecular weight

- Toughness

Very high molecular weight

- Mechanical properties
- Stress cracking resistance



High Performance HDPE Resin by SMX TECHNOLOGY

HIGH IMPACT FILM FOR INDUSTRIAL USE (S111F)

- Up to **30%** ability to reduce film thickness
- **25%** Higher dart drop impact and puncture resistance
- Reduce material cost
- At least **19%** GHG reduction**

Recommended Application

- Food containers, Poultry bag
- Industrial bag
- Liner bag
- Premium shopping bag and trash bag

Product Characteristics

- Excellent dart drop impact and puncture resistance
- Easy processablity
- Recyclability

HDPE FOR LIGHTWEIGHT CARBONATED SOFT DRINK AND SPARKLING WATER CAPS & CLOSURES (SX002J/JA)



- Up to **28%** less plastic use*
- Superior stress cracking resistance*
- **10%** better gas retention*
- At least **13%** GHG reduction**

Recommended Application

- Carbonated Soft Drink Caps

Product Characteristics

- Material consumption reduction for lightweight closure designs
- Superior stress cracking resistance that ensures zero cracking rate
- Better carbonation preservation for carbonated beverage

HDPE FOR LIGHTWEIGHT CONTAINER (S411B)

- Up to **22%** ability to reduce packaging weight
- **20%** Higher stiffness
- Reduce material cost
- **20%** GHG Reduction

Recommended Application

- Food, Milk and drink containers
- Personal and homecare bottles
- Lubricant and chemical containers
- Cosmetic bottles

Product Characteristics

- Excellent combination of stiffness and chemical resistance
- Easy processablity
- Recyclability

HDPE FOR CONSUMER USE FILM (S199F)

- **>30%** ability to blend with recycled content while maintaining mechanical properties
- **20%** Higher dart drop impact*
- **16%** GHG Reduction

Recommended Application

- Shopping bags
- Trash bags
- Gloves
- Roll bags

Product Characteristics

- High dart drop impact / High tensile strength
- Easy processability
- Recyclability

*Compared to conventional grade

**Green House Gas reduction calculation guideline by Thailand Green House Gas Management Organization

*** PCR = Post Consumer Recycle
PIR = Post Industrial Recycle

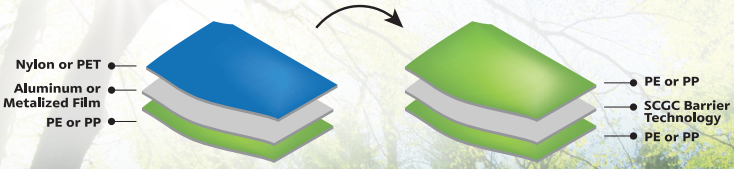
RECYCLABLE

Design for Recyclability

Moving toward sustainability, SCG Chemicals pioneers cutting-edge innovation launched to ultimate flexible packaging recyclability while preserving remarkable performance as oxygen barrier coating and wide sealing operation window

Conventional Multi-Material Packaging

Recyclable Packaging Solutions





- Unalike melting temperature
- Difficult to separate each layer

13 CLIMATE ACTION

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

BARRIER COATING (BWO1502G)

Water-Based Oxygen Barrier Coating Agent for Flexible Packaging

O_2 Prevent oxygen permeation

Meet Food Safety Packaging standard

H_2O Water-based with 14-15% solid content

Recommended Applications

- Oxygen barrier coating for mono-material packaging
- Able to apply on various types of film substrates via a dry lamination process

Key Benefits to Customers

- Achievable Oxygen barrier performance to replace Nylon and PET film
- Product reliability with stable viscosity
- Good optics performance

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Scan to email us

Scan to website

Recyclable Packaging Solutions

MDOPE (H619F)

HDPE Resin for Machine Direction Oriented Polyethylene Film

Wider sealing operation window from high heat resistance

Better printability from high stiffness

Recommended Applications

- Printing layer for recyclable film structure
- BOPET and BOPA replacement
- Moisture barrier application

Key Benefits to Customers

- Excellent compatibility with LLDPE and LDPE
- Acceptable clarity

BOPE-HD (S197F)

HDPE Resin from SMX™ Technology for Biaxial Oriented Polyethylene Film via a Tenter Frame Technology

Good alignment in CMYK registration at higher line speed for printing process

High clarity with haze ≤6 %

Recommended Applications

- Printing layer for recyclable film structure
- BOPET, BOPA, and BOPP replacement
- Moisture barrier application

Key Benefits to Customers

- Wider sealing operation window
- Better pouch appearance
- Ability to use form-fill-seal machine

HEAT RESISTANT BOPP (P408F)

PP Resin for High Heat Resistant Biaxial Oriented Polypropylene Film

30% less heat shrinkage

Better seal appearance

High clarity with haze ≤ 2%

Recommended Applications

- Printing layer for recyclable film structure
- BOPET replacement
- High line speed packing machine

Key Benefits to Customer

- High operating speed

EXCELLENT HEAT RESISTANT BOPP (P409F)

PP Resin for Excellent Heat Resistant Biaxial Oriented Polypropylene Film

70% less heat shrinkage

Better seal appearance

High clarity with haze ≤ 2%

Recommended Applications

- Printing layer for recyclable film structure
- BOPET replacement
- High line speed packing machine

Key Benefits to Customer

- Superior operating speed

Remarks: - all benefits of high and excellent heat resistant BOPP film produced from P408F and P409F are compared with general BOPP film
- all benefits of BOPE-HD film produced from S197F blending with 20-40% LLDPE resin, are compared with general BOPE-LL film

RECYCLE

Mechanical & Advanced Recycling

The global waste crisis has had far-reaching effects on the environment and all living creatures, including humans. Consequently, the concept ofthe circular economy has become ever-more important. SCGC has set out two major “Recycle” solutions to regenerate the environment: **High Quality Post-Consumer Recycled Resin (PCR)** from **Mechanical Recycling** and **Certified Circular Resin** from **Advanced Recycling** to tackle plastic waste problem.

Our solutions

Mechanical Recycling

- High quality PCR with Global Standard Compliance

  EuCertPlast · RecyClass RECYCLING PROCESS EN 15343 · Global Recycled Standard · FDA Letter of No Objection (LNO) In Progress

- Partnership with regional to global recyclers

  Sirplaste · TEAMPLAS GROUP · KRAS · REVKS · CIRCULAR

- Full range of products; Material type, Color, Special feature

Advanced Recycling

- Virgin-like resin and suitable for food and hygiene plastic packaging
- The first demonstration plant with fully commercialization in Thailand with end-to-end product, process, and technology

  CIRPLAS+

- ISCC PLUS Certification throughout whole supply chain

  ISCC

RECYCLE | Mechanical Recycling

SCGC GREEN POLYMER™ - **Post-Consumer Recycled Resin (PCR)** is one of product in our “Recycle” solution. With SCGC’s exclusive formulations and wide-ranging network of household waste collection, we can turn waste into High Quality PCR by **Mechanical Recycling.**



Traceability Standard

- Comply with Global Recycled Standard (GRS), EuCertPlast and RecyClass
- 100% sourced from local post-consumer waste in Thailand

Superlor Quality and Appearance

- Good color and sharp cosmetic appearance
- Packaging functions meet customer requirement

ISO 9001
ISO 14001

Global Compliance Standard

- International certifications

70% Green House Gas Reduction*

Quality Management

- Excellent mechanical recycling processing equipment
- Systematic quality control and assurance method

Processing-Friendly

- Ease of use as single pellet drop-in solution

Remarks: *Green House Gas reduction calculation guideline by Thailand Green House Gas Management Organization

High Quality Post-Consumer Recycled Resin (PCR)

Rigid Packaging

SCGC

Product Type		Product Grade	Color
PCR HDPE	ODORLESS	PCDH01BN	Natural
		PCDH02BW	White
	REGULAR	PCRH01BN	Natural
		PCRH03BB	Black

Recommended Applications

- Blow molding for bottle and gallon
- Extrusion film for shopping bag, trash bag, and laminated film
- Extruded tube

Product Type		Product Grade	Color
PCR PP	ODORLESS	PCDP01JN	Natural
		PCDP02JN	Natural White
	REGULAR	PCRP03JB	Black

Recommended Applications

- Injection molding cap & closure, spray, and pail
- Mono filament for woven bag

Film Packaging

Product Type		Product Grade	Color
PCR LDPE	ODORLESS	PCDD01FN	Translucent
PCR LLDPE		PCDL01FN	Translucent

Recommended Applications

- Extrusion film for stretch cling, shrink wrap film, outer bag, premium shopping bag, trash bag, and laminated film
- Extruded tube

High Quality Post-Consumer Recycled Resin (PCR)

Rigid Packaging

Sirplaste

Product Type		Product Grade	Color
PCR HDPE	ODORLESS	SIRPRIME *B 00 022 NA AX*	Natural
		SIRPRIME *B 00 015 WH AX*	White

Recommended Applications

- Blow molding for bottle and gallon
- Extrusion film for shopping bag, trash bag, and laminated film
- Extruded tube

Film Packaging

REKS

Product Type		Product Grade	Color
PCR LDPE	REGULAR	REKS - rLDPE NaturalA	Natural
		REKS - rLDPE Light color	Light grey
PCR LLDPE		REKS - rLLDPE NaturalA	Natural
PCR LL/LDPE		REKS - rLL/LD Translucent	Translucent

Recommended Applications

- Extrusion film for stretch cling, shrink wrap film, outer bag, premium shopping bag, trash bag, and laminated film
- Extruded tube

HDPE Virgin Booster for Post-Consumer Recycled (PCR)
for Household Chemical Bottle Application

SCGC™ Product Offering

BTE01BN, HDPE virgin booster to improve **ESCR** property for bottle that made from PCR HDPE.

SCGC™ Booster Solution

Adding only **10-20%** of Booster into PCR HDPE to get ESCR performance at same level as virgin HDPE without scarifying of both mechanical properties and processability.

The Right Choice for Sustainable Goal

Ability to increase PCR HDPE content up to **75-80%** while maintain other significant properties of bottle.

RECYCLE | Advanced Recycling

This technology will convert post-consumer plastics, that have not been properly sorted, into recycled feedstock, which will then be reproduced into recycled plastic resins of equivalent quality to virgin plastic resins. Moreover, Advanced Recycling technology will encourage the circular economy's effective use of resources and eliminate waste to landfills, leading to reduction of greenhouse gas emissions from waste burning.

SCGC is the first company in Thailand certified with the International Sustainability and Carbon Certification "**ISCC PLUS**" throughout whole supply chain, accelerating advancement of high-quality post-consumer recycled resins to meet ESG commitment.

Jan 2021

SCGC Launched First **Advanced Recycling Demonstration in ASEAN**

CIRPLAS+

Sep 2021

Thailand's first Chemical Recycling **demonstration plant** with **ISCC PLUS certification of whole supply chain**

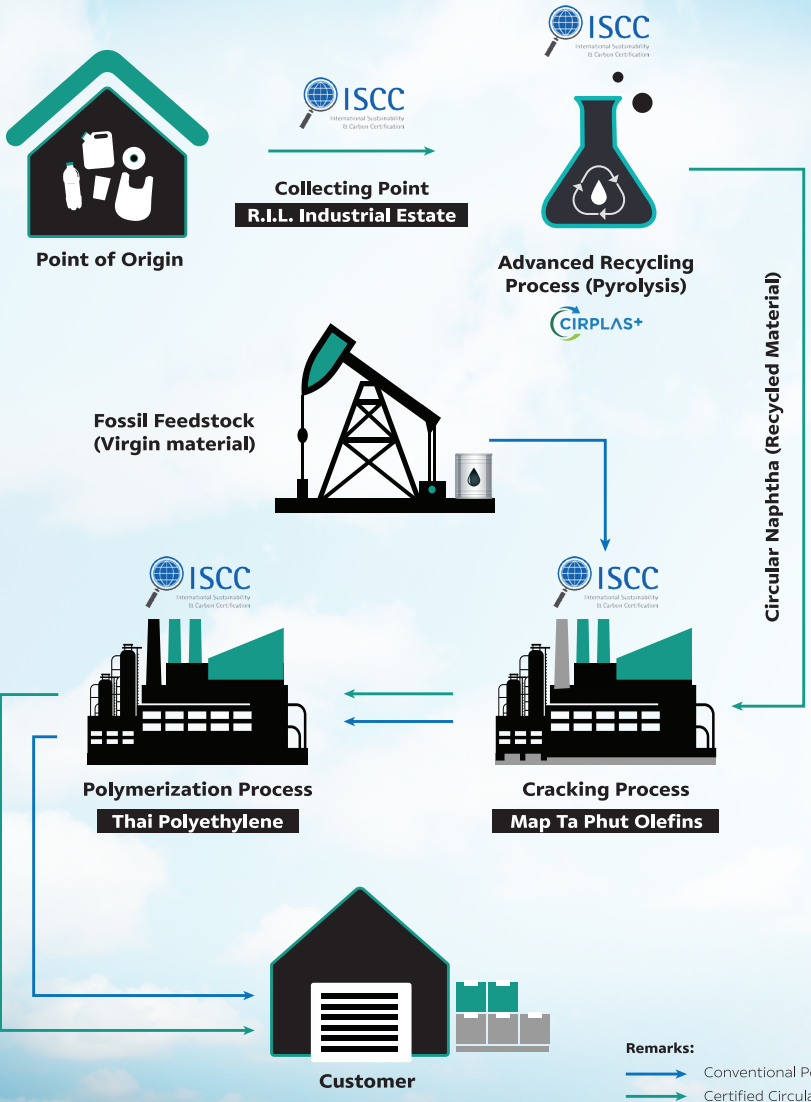
ISCC
International Sustainability & Carbon Certification

Feb 2022

Introduced **"Certified Circular PP",** made with **Advanced Recycling Technology for food packaging**







The Scope of ISCC Plus Certification for Advanced Recycling

RENEWABLE

Bioplastics

The global climate change and waste crises have had a tremendous impact on the environment and living creatures, including humans. To alleviate these crises, SCGC has adopted the concept of circular economy into its business practices. In this process of make-use-return, we have made the important step in becoming more sustainable. However, such initiatives can only transform into concrete actions with the support of different parties in the plastic industry.

Bio-based Polyethylene

I'm green™ bio-based polyethylene is a plastic made from a sustainably sourced renewable raw material (ethanol from agricultural sources) instead of traditional fossil feedstock (e.g., naphtha from oil). This promotes a significant reduction of the plastic's carbon footprint which helps combat Climate Change. I'm green™ bio-based polyethylene is used in a variety of products, from packaging for food and beverage to personal and home care products, toys, houseware, and plastic bags, to name a few. It can also be mechanically or advanced recycled just as regular polyethylene.

The combination of Braskem's bio-based plastics know-how with SCGC's expertise in PE production and strong position in the Asian market coupled with sustainability vision provides a solid business basis for the joint venture. The green ethylene plant will be located in Map Ta Phut, Rayong Thailand and will enable the production of the I'm green™ bio-based polyethylene that is the first of its kind outside of Brazil.



Bio-Compostable Compound Resin
for Consumer and Industrial Film Application

BIOC01FN, a bio-compostable compound under the brand "**SCGC GREEN POLYMER™**", is produced with a unique formulation with particular film-forming properties for the production of compostable bags for household and industrial sectors. The compound helps to reduce greenhouse gas emissions along the production chain and the resin is ready to use as a **drop-in compound** and processing-friendly.

This bio-compostable compound has been certified by the world's leading institution, **DIN CERTCO**, from in Germany, for being industrial compostable at 60 degrees Celsius, converting to carbon dioxide, water, and biomass in 180 days without leaving residues in the environment. Furthermore, this innovation has the ability to contribute to a full and environmentally-friendly recirculating process.

As the product can be completely composted, there will be no threat to environment along the sustainable chain.



Global Compostable Certification

- DIN CERTCO
- SEEDLING by Australasian Bioplastics Association (ABA)



Global Compliance Standard

- International certifications



Drop-in Compound with Easy Processing

- Ready-to-use drop-in compound
- High processability



Non-Eco Toxicity

- Ability to contribute to a full and environmentally-friendly recirculating process



THE SOLUTIONS


FOR A BETTER WORLD
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