SCGC

FOOD & BEVERAGE

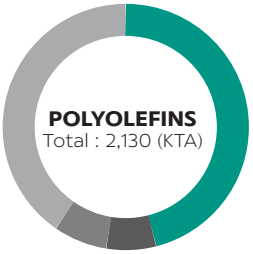
About SCG Chemicals or SCGC

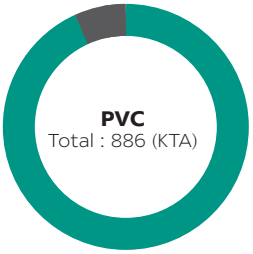
SCG Chemicals or SCGC is one of the leader in sustainable chemical innovations and manufacturing in Thailand and ASEAN that offers a full range of petrochemical products ranging from upstream production of olefins to downstream production of 3 main plastics resins: polyethylene, polypropylene, and polyvinyl chloride including finished products.

SCGC is committed to conducting business in line with Environmental, Social, and Governance (ESG) and achieving Sustainable Development Goals (SDGs). SCGC is developing new technology and innovation to create high value added products (HVA) and holistic service solutions concerning growing areas such as circular economy, medical & healthcare, and electric vehicle (EV) to better meet diverse places and emphasis demands sustainable environmental stewardship.

OUR PRODUCTION CAPACITY (AS OF 2021)

TOTAL CAPACITY : 3,016 KTA (PE / PP / PVC)





HDPE	980 KTA	PVC	850 KTA
LLDPE	140 KTA	PVC Paste	36 KTA
LDPE	150 KTA		
PP	860 KTA		

ESG Strategic Directions

“INNOVATION THAT’S REAL”

FOOD & BEVERAGE

SCGC believes in being a part of environmental conservation efforts by creating sustainable packaging.

With population growth on the rise, the issue of waste, especially from food and beverage packaging, has gained attention from both people and companies who wish to take better care of the environment.

SCGC believes in being a part of environmental conservation efforts by creating sustainable packaging. Thus, SCGC has developed its signature SMX™ Technology, an innovative manufacturing process for high-density polyethylene (HDPE) resins that are recyclable, stronger, lighter, and uses less plastic. SCGC has also established i2P Center, an innovation and application development hub where partners can explore novel solutions for HDPE, LDPE, and PP applications that give superior quality and environmentally friendly.

To further reduce environmental impact, SCGC has been working on developing mono-material solutions for fully recyclable packaging. With its longstanding expertise in the petrochemical industry and wide range of networks with research laboratories, SCGC believes that such a solution will grow the near future. For instance, SCGC is currently collaborating with Norner, a research laboratory, as well as other machine makers and brand owners worldwide for these initiatives. With mono-material packaging in sight, SCGC is confident that it can create a more circular economy for everyone in the coming years.

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

Design for Sustainability

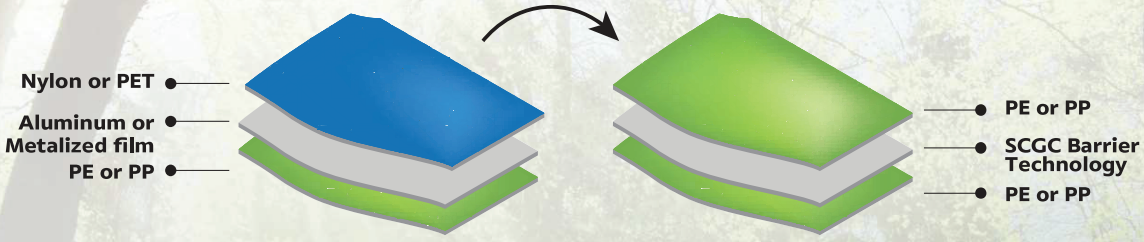
RECYCLABLE

Design for Recyclability

The packaging industry is the largest consumer of plastic, and flexible packaging is a major type of plastic packaging that takes 70% of the market. Normally, flexible packaging consists of inextricable layers of different materials with different properties and melting points, thus is not easy to get to recycling process.

SCG Chemicals' new innovation, launched under the brand SCGC GREEN POLYMER™, can reinforce **"Recyclable Packaging Solutions"** that maintain the functional properties of the packaging while using solely PE, PP, or PO as materials, thus lends itself to recycling in the post-consumer stage

Conventional Multi-Material Packaging **Recyclable Packaging Solutions**



- Unalike melting temperature
- Diffcult to separate each layer

13 CLIMATE ACTION 12 RESPONSIBLE CONSUMPTION AND PRODUCTION **Certified by** RecyClass

BARRIER COATING (BWO1501G)

Water-Based Oxygen Barrier Coating Agent for Flexible Packaging

O_2 **Prevent oxygen permeation**

Certified by RecyClass

Meet Food Safety Packaging standard

H_2O **Water-based with 12-15% solid content**

Recommended Applications

- Coating agent on film substrates
- Widely used in food and non-food packaging (not suitable for boiling and retort application)

Key Benefits to Customers

- Tailor-made oxygen barrier level (achievable OTR of less than 1 cc/day/m^2)
- Ready-to-use one component

SCGC

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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 ≤ 9%

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

8-10% faster packing speed

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

- Higher speed for vertical form-fill-seal

EXCELLENT HEAT RESISTANT BOPP (X66C001F)

PP Resin for Excellent Heat Resistant Biaxial Oriented Polypropylene Film

10-15% faster packing speed

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

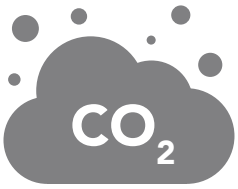
- Higher speed for vertical form-fill-seal

Remarks: - all benefits of high and excellent heat resistant BOPP film produced from P408F and X66C001F 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

SCGC GREEN POLYMER™ for Carbonated Soft Drink and Sparkling Water Caps & Closures

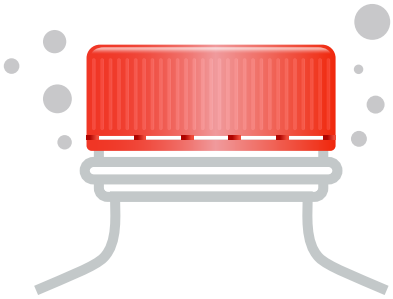
SX002J and SX002JA for Sustainable Food & Beverage Packaging

Up to 20% less plastic use

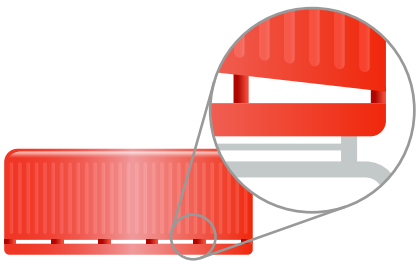


Reduces at least 224 kg of CO_2 emissions for every ton of plastic consumed

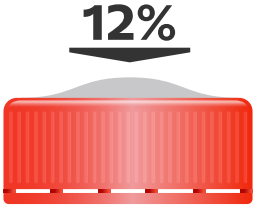
Superior stress cracking resistance



Better gas retention (10%)



Higher bridge strength (15%)



Less doming (12%)

Reference resin: SCGC Bi-modal HDPE for Carbonated Soft Drink and Sparkling Water Caps & Closures

SCGC GREEN POLYMER™ for Carbonated Soft Drink and Sparkling Water Caps & Closures

GRADE	SX002J	SX002JA
Recommended applications	- Lightweight carbonated soft drinks - Lightweight sparkling water closures	
Recommended processes	- Injection molding - Continuous compression molding	
Melt flow rate (MFR) at 190°C, 2.16kg (g/10min) ISO 1133	0.55	
Density (g/cm^3) ISO 1183-2	0.955	
Tensile modulus (MPa) ISO 527 (1B, Speed 1 mm/min)	1,000	
Charpy impact strength (kJ/m^2) ISO 179 @ 23°C	8	
Environmental stress cracking resistance (ESCR), F50, 10% Igepal (hr) ASTM D1693	>1,000	
Slip agents	✓	-
Key characteristics	- Superior Environmental Stress Cracking Resistance (ESCR) - Excellent balance of stiffness and toughness - Good organoleptic property	
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011	

SCGC™ HDPE:
EXCELLENT STRESS CRACKING RESISTANCE
for Carbonated Soft Drink and Sparkling Water Caps & Closures

GRADE	H555J	H555JA	H567J	H567JA	H568JA
Recommended applications	- Carbonated soft drink closures - Sparkling water closures - Aseptic beverages closures - Still water with nitrogen filled		- Carbonated soft drinks - Sparkling water closures		
Recommended processes	- Injection molding - Continuous compression molding		- Injection molding - Continuous compression molding		
Melt flow rate (MFR) at 190°C, 2.16kg (g/10min) ASTM D1238	1.8		1		0.8
Density (g/cm^3) ASTM D1505	0.953		0.952		0.956
Flexural modulus (kg/cm^2) ASTM D790	11,100		10,500		11,000
Notched Izod Impact at 23°C (J/m) ASTM D256	78		59		49
Environmental stress cracking resistance (ESCR), F50, 10% Igepal (hr) ASTM D1693	20		> 600		> 600
Slip agents	✓	-	✓	-	-
Key characteristics	- Good environmental stress cracking resistance (ESCR) - Good mechanical property - Good organoleptic property		- Excellent environmental stress cracking resistance (ESCR) - Good mechanical property - Good organoleptic property		
International compliance standards	- U.S FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011				

SCGC™ HDPE: ORGANOLEPTIC for Still & Mineral Water and Hot-Filled Beverage Caps & Closures

GRADE	H355JA	H455JA
Recommended applications	- Still & mineral water closures - Hot-filled beverage closures - Aseptic beverage closures	
Recommended processes	- Injection molding - Continuous compression molding	
Melt flow rate (MFR) at 190°C, 2.16kg (g/10min) ASTM D1238	7.5	4.5
Density (g/cm^3) ASTM D1505	0.961	0.958
Flexural modulus (kg/cm^2) ASTM D790	13,500	12,500
Notched Izod Impact at 23°C (J/m) ASTM D256	33	39
Environmental stress cracking resistance (ESCR), F50, 10% Igepal (hr) ASTM D1693	6	7
Slip agents	-	-
Key characteristics	- Excellent processability - High stiffness - Excellent organoleptic property	- Good processability - High stiffness - Excellent organoleptic property
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011	

SCGC™ PP: BLOCK COPOLYMER
for Carbonated Soft Drink and Hot-Filled Beverage Caps & Closures

GRADE	P443J
Recommended applications	- Carbonated soft drink closures - Hot-filled beverage closures
Recommended processes	- Injection molding - Continuous compression molding
Melt flow rate (MFR) at 230°C, 2.16kg (g/10min) ASTM D1238	6
Flexural modulus (kg/cm^2) ASTM D790	15,000
Notched Izod Impact at 23°C (J/m) ASTM D256	110
Tensile strength at yield (kg/cm^2) ASTM D638	290
HDT (°C) ASTM D648	120
Slip agents	✓
Key characteristics	- Excellent processability - High stiffness - High heat resistance
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011

SCGC™ PP: HOMOPOLYMER
for Thin Wall Injection Molding Food Packaging

GRADE	P904J
Recommended applications	- Drinking cups - Food containers - Household products
Melt flow rate (MFR) at 230°C, 2.16kg (g/10min) ASTM D1238	75
Flexural modulus (kg/cm^2) ASTM D790	16,500
Notched Izod Impact at 23°C (J/m) ASTM D256	38
HDT at 4.6 kg/cm^2 (°C) ASTM D648	121
Key characteristics	- High flowability - High clarity - Good stiffness and toughness balance - Microwavable or hot fillable
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011

SCGC™ PP: HOMOPOLYMER
for Thermoformed Food Packaging

GRADE	P304S	P303S
Recommended applications	- Dairy cups - Disposable drinking water - Food containers	- Dairy cups - Disposable drinking cups - Food containers
Melt flow rate (MFR) at 230°C, 2.16kg (g/10min) ASTM D1238	2.1	2.3
Flexural modulus (kg/cm^2) ASTM D790	13,500	19,000
Notched Izod Impact at 23°C (J/m) ASTM D256	60	59
HDT at 4.6 kg/cm^2 (°C) ASTM D648	110	128
Key characteristics	- Good stiffness and toughness balance - Good Clarity - Microwavable or hot fillable	- High stiffness - High clarity - Microwavable or hot fillable
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011	- U.S. FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011

SCGC™ PP: HETEROPHASIC POLYPROPYLENE for Thermoformed Frozen to Microwavable Food Packaging

GRADE	P348S
Recommended applications	Food containers
Melt flow rate (MFR) at 230°C, 2.16kg (g/10min) ASTM D1238	2.8
Density (g/cm^3) ASTM D1505	0.963
Flexural modulus (kg/cm^2) ASTM D790	20,500
Notched Izod Impact at 23°C (J/m) ASTM D256	34
HDT at 4.6 kg/cm² (°C) ASTM D648	130
Key characteristics	- Excellent thermal stability and high stiffness - High impact strength at low temperature - Microwavable or hot fillable
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Commission Regulation (EU) no. 10/2011

SCGC™ LDPE
for Extrusion Coating/ Lamination

GRADE	D477C	D777C	D388C
Recommended applications		- Sachet - Pouch - Aseptic box - Woven - Paper & tarpaulin	
Melt flow rate (MFR) at 190°C, 2.16kg (g/10min) ASTM D1238	4	7	8
Density (g/cm^3) ASTM D1505	0.924	0.920	0.919
Melting temperature (°C) ASTM D2117	112	107	107
Key characteristics	- Good neck-in performance - High stiffness - High scratch resistance - Good processability, thickness control, and edge stability	- Good neck-in performance - Good processability, thickness control, and edge stability	- Excellent draw ability - Suitable for high speed machine - Good processability and thickness control with low coating weight
International compliance standards		- U.S FDA 21 CFR 177.1520 - Regulation (EU) No.10/2011 - Regulation (EC) 2023/2006 (GMP) - Packaging and Packaging waste Directive 94/62/EC - RoHS: Directive 2011/65/EU - China's Hygienic Standards; GB9685 – 2016, GB4806 – 2016 - JHOSPA - Consult the regulations for complete details	

Remark: Coating properties obtained from pilot coating line, Melt temperature 295°C, line speed 100 m/min

SCGC™ HDPE
for Co-Extrude Blown Film/ Machine Direction Oriented Film

GRADE	H619F
Recommended applications	- General/Industrial packaging - Diaper back sheet - Stand up pouch - Laminated film and tube - Pressure sensitive adhesive label
Melt flow rate (MFR) at 190°C, 2.16kg (g/10min) ASTM D1238	0.7
Density (g/cm^3) ASTM D1505	0.962
Tensile strength at break (MPa) ASTM D882	MD 42, TD 35
Elongation at break (%) ASTM D882	MD 730, TD 4
2% secant modulus (MPa) ASTM D882	MD 915, TD 1010
Elmendorf tear strength (g) ASTM D1922	MD 8, TD 261
Key characteristics	- High film stiffness - High temperature resistance - Excellent compatibility with LLDPE, LDPE
International compliance standards	- U.S FDA 21 CFR 177.1520 - Regulation (EU) No.10/2011 - Regulation (EC) 2023/2006 (GMP) - Packaging and Packaging waste Directive 94/62/EC - RoHS: Directive 2011/65/EU - JHOSPA - China's Hygienic Standards; GB9685 – 2016, GB4806.6 – 2016 - Consult the regulations for complete details

SCGC™ HDPE
for Cast Film/ Extrusion Coating/ Lamination

GRADE	H377C
Recommended applications	- Non-breathable film - Breathable film - Laminated film - Sachet
Melt flow rate (MFR) at 190°C, 2.16kg (g/10min) ASTM D1238	7.5
Density (g/cm^3) ASTM D1505	0.961
Tensile strength at break (MPa) ASTM D882	MD 37, TD 28
Elongation at break (%) ASTM D882	MD 859, TD 3
2% secant modulus (MPa) ASTM D882	MD 706, TD 855
Elmendorf tear strength (g) ASTM D1922	MD 8, TD 64
Key characteristics	- Excellent stiffness - Easy tearing in MD - Excellent temperature resistance and scratch resistance
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Regulation (EU) No.10/2011 - Regulation (EC) 2023/2006 (GMP) - Packaging and Packaging waste Directive 94/62/EC - RoHS: Directive 2011/65/EU - JHOSPA - China's Hygienic Standards; GB9685 – 2016, GB4806.6 – 2016 - Consult the regulations for complete details

Remark: Film properties obtained from pilot line at SCGC, 25 micron, Melt temperature 220°C

SCGC™ PP: HOMOPOLYMER & COPOLYMER for Cast Film

GRADE	P607F	P350F
Recommended applications	- Snack pouch - Laminated film - Metalized film	- Retort packaging
Melt flow rate (MFR) at 230°C, 2.16kg (g/10min) ASTM D1238	7.0	3.2
Density (g/cm^3) ASTM D1505	0.910	0.900
Tensile strength at break (MPa) ASTM D882	MD 36, TD 9	MD 39, TD 25
Elongation at break (%) ASTM D882	MD 470, TD 20	MD 804, TD 656
Haze (%) ASTM D1003	9	11
Key characteristics	- High film stiffness - Good clarity - Good processability	- Excellent seal properties - Excellent clarity - Good stress-whitening resistance
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Regulation (EU) No.10/2011 - Regulation (EC) No.1907/2006 (REACH) - Packaging and Packaging waste Directive 94/62/EC - RoHS: Directive 2011/65/EU - China's Hygienic Standards; GB9685 – 2016, GB4806.6 – 2016 - Consult the regulations for complete details	- U.S. FDA 21 CFR 177.1520 - Regulation (EU) No.10/2011 - Regulation (EC) No. 1907/2006 (REACH) - Directive 2011/65/EU (RoHS) - Consult the regulations for complete details

Remark: Film properties obtained from pilot line at SCGC, 25 micron (P607F) and 70 micron (P350F), Melt temperature 220°C

SCGC™ PP: HOMOPOLYMER
for Biaxial Oriented Film

GRADE	P405F
Recommended applications	- Laminated film - Metalized film - Snack & Confectionary pouch - Sachet
Melt flow rate (MFR) at 230°C, 2.16kg (g/10min) ASTM 1238	3
Density (g/cm^3) ASTM D1505	0.900
Tensile strength at yield (MPa) ASTM D638	35
Elongation at yield (%) ASTM D638	95
Flexural modulus (MPa) ASTM D790A	1500
Haze (%) ASTM D1003	1.1
Notched izod impact strength at 23 °C (J/M) ASTM D256A	47
Key characteristics	- Good stretchability - High clarity - Good dimensional stability
International compliance standards	- U.S. FDA 21 CFR 177.1520 - Regulation (EU) No. 10/2011 - RoHS: Directive 2011/65/EU - Consult the regulations for complete details

Remark: Film properties are based on film thickness 20 micron

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Disclaimer:

- The applications specified for reference only.
- It is customer's responsibilities to inspect and test the product for suitability of the customer's own use and purpose.
- The customer is responsible for appropriate, safe, legal use, processing and handling of the product. To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication. We however do not assume any liability whatsoever for the accuracy and completeness of the information contained herein.
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