

Processing condition for Extrusion Blow Molding

SKYGREEN K2012 & ECOZEN T95, T95H

Ver. SK-140213

Drying Condition

- Drying Temperature : 70~75 °C (for ECOZEN)
- Drying Time : Min. 4 Hours / Max. 10 Hours
- Air Flow of Dry Air : > 0.065 m³/min per kg/h (1cfm per lb/h)
- Dew Point of Dry Air : < -30 °C, -40 °C is better for good drying
- Residual Moisture Contents : <0.03% (for ECOZEN)

Screw Design

- General purpose screw type
 - Low shear type is preferred to avoid shear and thermal degradation.
 - L/D = 24:1 or greater
 - Compression ratio: 2.5:1 ~ 3.5:1
 - Barrier flight for effective melting
- Tip: Maddock mixing is better to remove gel & unmelt.

Head & Die Design

- Low shear Head Design
- Die : Torpedo or Spider Type Low Restriction Die
- Preheating is needed to avoid damage of head and screw

Typical processing condition

	Mold	Die	Head	Adapter	Barrel 4	Barrel 3	Barrel 2	Barrel 1
SKYGREEN K2012	10-30	180-200	180-200	180-200	190-210	190-210	190-210	190-210
ECOZEN T95	20-40	190-210	195-210	190-210	200-220	200-220	200-220	200-220
ECOZEN T95H	20-40	190-210	195-210	190-210	200-220	200-220	200-220	200-220

Processing conditions shown in the example of a typical processing profile may vary somewhat in other similar applications.

Trimming

- In the EBM process, plenty of material should be trimmed after blowing.
- It must be trimmed while the molded bottle is warm.
- The trim scrap is generally being reused for the economic reason.

Caution when using regrind for EBM process

- Regrind should not be contaminated by other material.
- Regrind has to be pre-dried.
- Filtering fines is very important.
- They may cause the gels or unmelts on the EBM bottle.
- For stable quality control,
it is recommended to use the regrind material by no more than 20%.

Troubleshooting for Extrusion Blow Molding

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Parison Defects and Corrective Actions

1. Scratches and die lines

- Increase resin temperature
- Increase back pressure
- Check for contamination in materials
- Check for tooling damage
- Remove burnt resin on tooling faces
- Increase die temperature

2. Melt fracture

- Change extrusion pressure/rate
- Change extrusion back pressure
- Decrease regrind level
- Check for contamination in materials
- Check head heater band

3. Streaks

- Decrease extrusion pressure/rate
- Decrease extrusion back pressure
- Decrease regrind level
- Check moisture content of materials
- Check dryer unit
- Check heat controller

4. Rough/milky cold parison

- Increase extrusion pressure/rate
- Increase extrusion back pressure
- Check head heater bands
- Check heat controllers
- Increase resin melt index

5. Shiny/Clear

- Decrease extrusion pressure/rate
- Decrease extrusion back pressure
- Decrease regrind level
- Check for moisture in resin

6. Bubbles

- Decrease extrusion pressure/rate
- Increase extrusion back pressure
- Check for moisture in resin
- Check feedzone cooling for leakage
- Check screw/barrel for wear

7. Smoking

- Decrease stock resin temperature
- Decrease extrusion pressure/rate
- Check heat controller

Part Defects and Corrective Actions

8. Excessive Flash

- Decrease extrusion pressure / rate
- Decrease extrusion back pressure
- Decrease pre-blow air pressure
- Check mold alignment

9. Excessive Cycle

- Decrease material melt temperature
- Decrease mold temperature
- Decrease wall thickness
- Increase blowing air pressure
- Install cold blow air system

10. Container hangs in Mold

- Decrease mold temperature
- Increase blowing air pressure
- Increase air exhaust time
- Check mold for damage
- Increase cycle time
- Check pinch-off for burrs/sharpness

11. Thin Mold Parting Line

- Decrease mold temperature
- Increase blowing air pressure
- Check mold vents/surface
- Check if mold is fully closed

12. Thin Bottom Weld

- Decrease stock resin temperature
- Decrease mold temperature
- Decrease extrusion back pressure
- Check mold vents/surface

13. Orange Peel

- Check mold vents/surface
- Decrease stock resin temperature
- Increase mold temperature
- Increase extrusion back pressure
- Decrease mold open time
- Check for humidity of air(sweating of mold)

13. Orange Peel

- Increase cooling time
- Check cooling channels

Injection Properties for ECOZEN[®] T95

Product Name : ECOZEN[®] T95
CAS No. 1038843-64.9

Test Results : For further details, please contact SK chemicals R&D center.

Test Performed : SK Chemicals R&D center

Property	Test Method	Unit	Typical Values
Rockwell Hardness	ASTM D785	R-scale	115
Specific Gravity	ASTM D792	-	1.25
Moisture Absorption Factor	ASTM D570	%	0.2 – 0.3
Mechanical			
Tensile Strength @ Yield 50mm/min (2 inch/min)	ASTM D638	kgf/cm ²	520
Tensile Strength @ Break 50mm/min (2 inch/min)	ASTM D638	kgf/cm ²	430
Elongation @ Yield 50mm/min (2 inch/min)	ASTM D638	%	5.7
Elongation @ Break 50mm/min (2 inch/min)	ASTM D638	%	150
Flexural Strength 1.27mm/min (0.05 inch/min)	ASTM D790	kgf/cm ²	880
Flexural Modulus 1.27mm/min (0.05 inch/min)	ASTM D790	kgf/cm ²	21700
Izod Impact Strength, Notched @ 23 °C(73 °F)	ASTM D256	J/m	No Break
Thermal			
Heat Distortion Temperature @ 0.455 MPa(66 psi)	ASTM D648	°C	85
Glass Transition Temperature	ASTM D1525	°C	95
Optical			
Haze	ASTM D1003	%	< 1.0
Transmittance	ASTM D1003	%	90
Refractive Index, n _D	ASTM D542	-	1.56

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The information in this data sheet is, to the best of our knowledge, true and accurate. The representations about the product are based upon test results achieved under laboratory practices supervised and controlled by SK chemicals corporation.

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