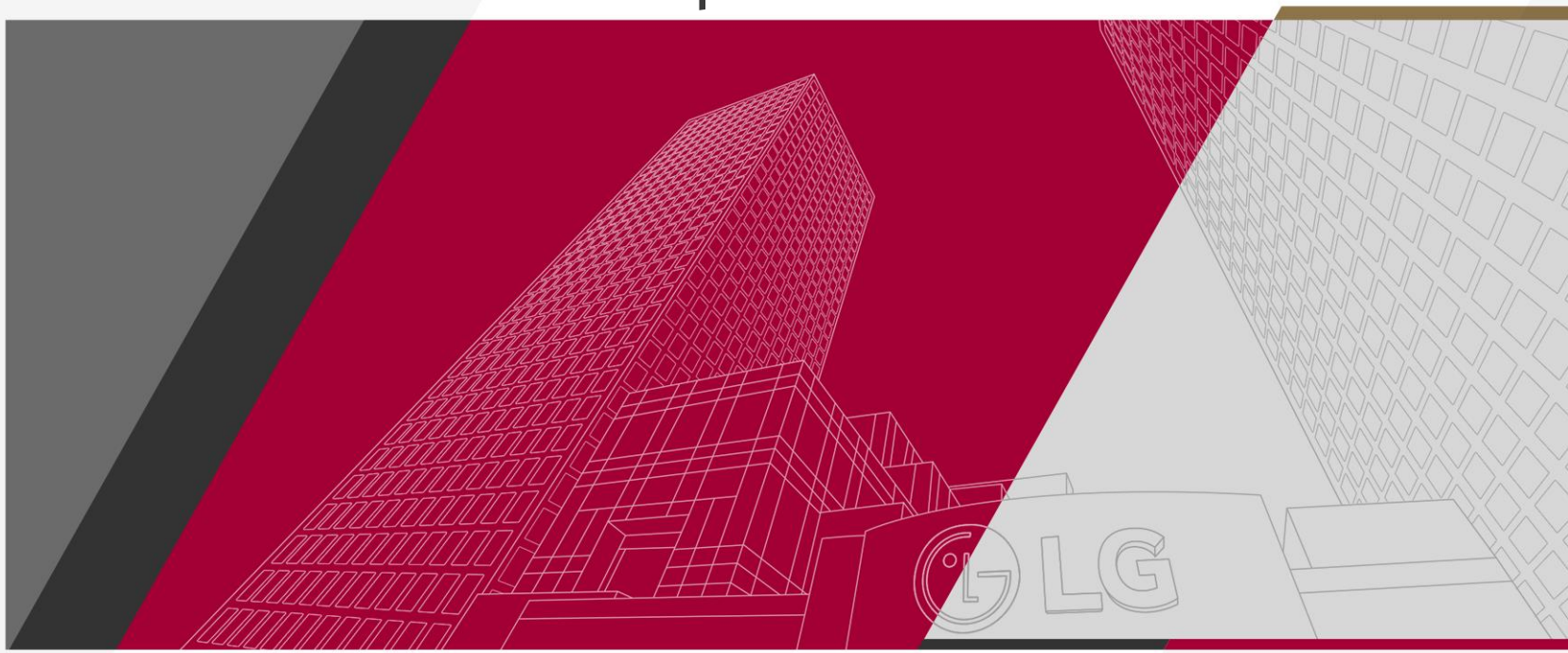
LG Chem

SolutionPartner

LG Chem Introduction of LUCENE™ SM250 for Caps & Closures



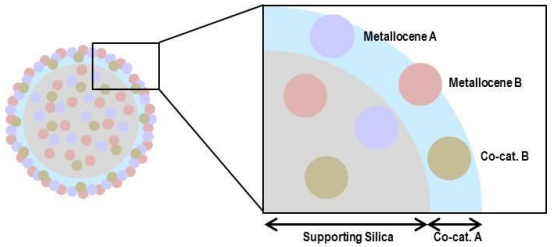
Introduction

LUCENE™ SM250 is new high density polyethylene based on LG Chem's own metallocene catalyst technology with excellent mechanical, processing and organoleptic properties.
It is very suitable for the purpose of Caps & Closures application requiring the high performance.
Customers can expect the distinguished ESCR and superior flowability in the industrial field.

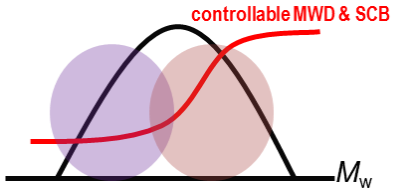
LUCENE™ SM250

LG dual-site Metallocene Catalyst

Structure of Supported Catalysts



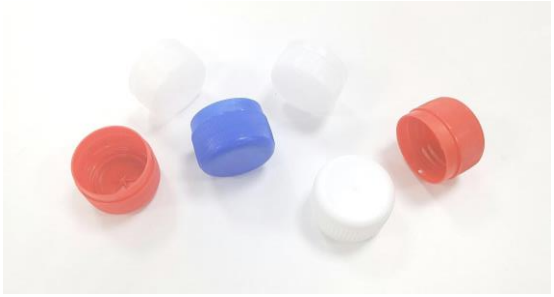
Molecular weight distribution



- High molecule : Excellent ESCR
- Low molecule : High flowability and low wax

SM250 Closure Applications

CSD closure



Others : Water/Tea(aseptic) closure

Product characteristics

Technical Data Sheet

Properties(1)	Method	Unit	SM250
MI (190℃, 2.16Kg)	ASTM D1238	g/10min	1.8
Density	ASTM D792	g/cm^3	0.952
Flexural Modulus	ASTM D790(2)	MPa	850
Izod impact strength Notched 23℃	ASTM D256	Kgfcm/cm	8.0
ESCR	ASTM D1693	hr	18
Cap ESCR	LG method(3)	hr	17
Spiral flow length	LG method(4)	cm	15
Injection pressure	LG method(4)	bar	1,450
Melting Temperature	LG Method	℃	131

(1) The properties values in this table are for reference only, and not guaranteed specification.
(2) Speed of 28 mm/min.
(3) Temperature : 42℃, Pressure : 5bar
(4) Temperature : 230℃

Table 1. Physical properties of SM250

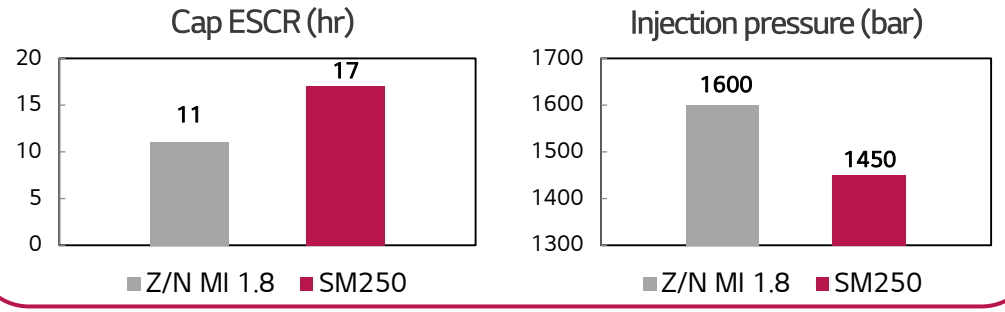
Properties of Closure

✓ Improved stress cracking resistance (ESCR)
- Potentiality of weight lightening

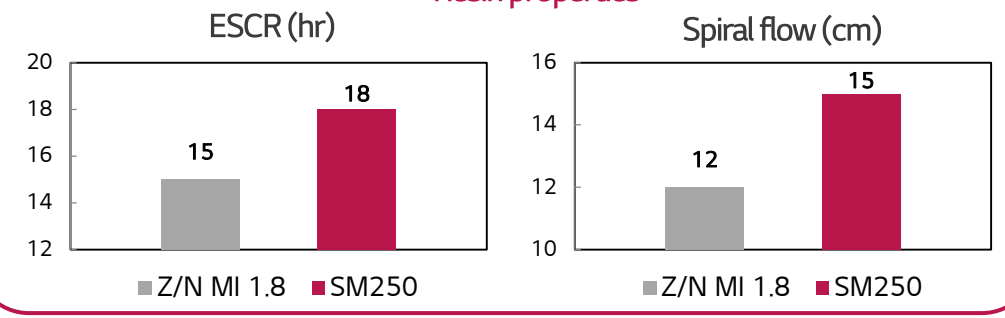
✓ Excellent processing performance
- Benefits of lower processing temperature
- Energy saving, Decrease in black spot and flow mark

✓ Excellent appearance
- High gloss, Good whiteness

Cap properties



Resin properties



Process guide for LUCENE SM250

Process values

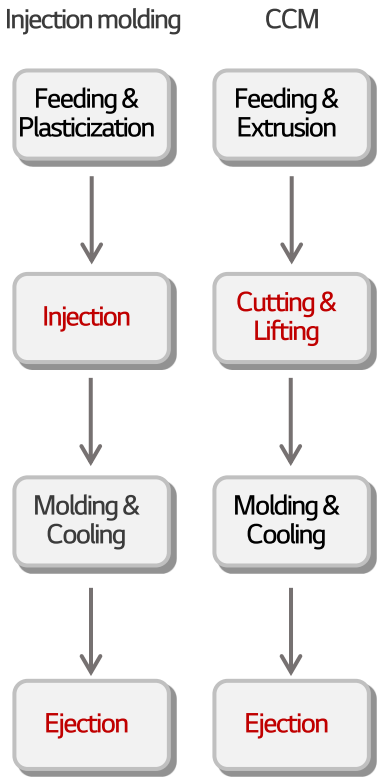


Figure1. Flow Chart
of Injection molding & CCM

Recommendation of Process condition

- The gradual decrease of process temperature is recommended with step by step by checking the pressures of injection and size of closures.
- Lower process temperature is suitable when SM250 processing. The fluidity is better than any other grade because they show lower viscosity behavior as the shear rate gets higher. Low processing temperature could decrease in cooling time and cycle time depending on size of closures.
- In some cases, it needs to increase holding pressure or holding time when the size of closure is small.

Process type	Process Variables	Z/N MI 1.8(existing)	SM250	Remark
Injection molding	Extruder temp (Nozzle) [℃] Hot runner [℃]	Existing (210~250℃)	(-) 5 ~ 20℃	Please check the injection pressure
	Back pressure [bar]	Existing (20~50bar)	(+) 0 ~ 10bar	Please check dosing time and cycle time
	Cooling time [sec]	Existing	(-) 0 ~ 10%	
	Holding pressure [bar]	Existing	(+) 0 ~ 20%	For decreasing the shrinkage of closures
CCM	Extruder temp (Nozzle) [℃]	Existing (160~200℃)	(-) 0 ~ 10℃	Please check the extruder pressure

Table 2. The recommendation of process conditions for caps & closures

※ These conditions can be changed in accordance with mold type and machine.