

< >

LD · HDPE 가 Metallocene , Z/N

80 가 , 90

가

80

, Metallocene Single-Site Catalysts(SSCs)

가

, PE PP

가

Metallocene

Comonomers

가

(Line-Up)

, Union Carbide Himont

가

< 1 >

< 2 >

Unipol PP	Gas phase	PP	Union Carbide/Shell
Unipol	Condensing mode	PE	Union Carbide
Amoco/Chisso Impact	Horizontal gas phase	PP	Amoco/Chisso
Addipol	Posttreatment	PP	Himont
Flexomer	Gas phase	EP	Union Carbide
Catalloy	Bulk loop/Gas phase	EP	Himont
GPP	Gas phase	PP	Sumitomo
Exxpol	Solution	LLDPE	Exxon
Atol	Gas phase	LLDPE	Atochem
Novolen PE	Gas phase	PE	BASF
Superpolyethylene	Solution	PE	Mitsui
Spherilene	Bulk loop/Gas phase	PE	Himont
Exxpol/Superpolyethylene	Gas phase	PE	Exxon/Mitsui

:Catalyst

100% C ₂	Ultrahigh-molecular weight PE HDPE PE LLDPE(alpha olefin comonomer) VLDPE Flexomer/Catalloy EP copolymer rubber TPO thermoplastic olefin PP random copolymer
100% C ₃	PP homopolymer

:Catalyst

Exxon Chemical 90 Solution-Phase() Exxact

, Exxon Mitsui Sekka

Metallocene SSCs

, Gas-Phase SSCs

Exxpol Metallocene SSCs

가 PE

LDPE HDPE 가

Exxon

10 , Mitsui 94

10

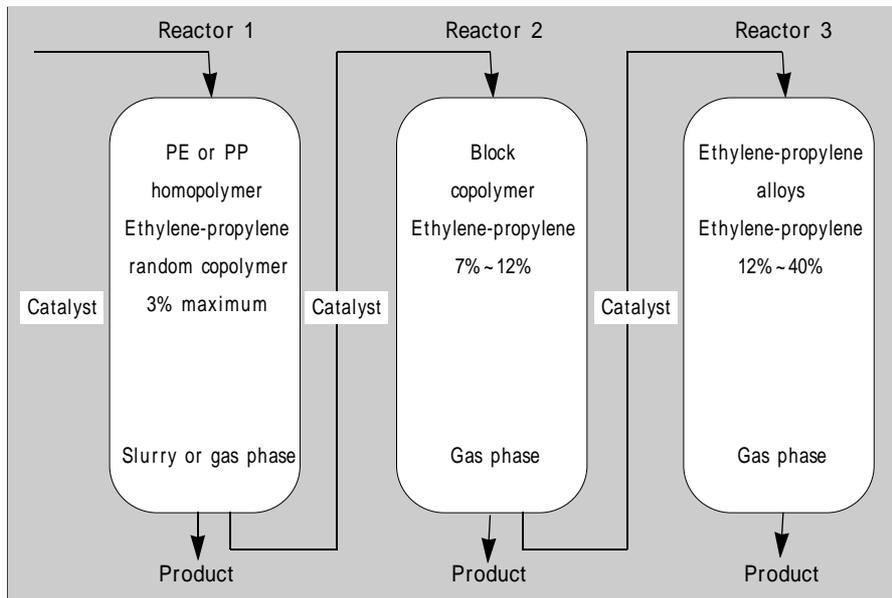
. Metallocene SSCs

Exxon Mitsui Mitsui gas-phase Metallocene SSCs , ,
Metallocene 가 .
Metallocene Yield가

Himont Metallocene 가 . Dow .
Fina · Chisso · Phillips · Mobil · BASF · SF · BP · Shell · Hoechst · Mitsui Toatsu · Idemitsu Kosan ·
Mitsubishi Metallocene SSCs PE · PP -
, 가 , Hoechst PP
() ,
Metallocene Fina
Metallocene Ziegler/ Natta(Z/N) Active Site()

Z/N Stereospecific() ,
, Metallocene SSCs , Stereoregular Product가
, Aluminoxane(MOA) 가 ,
(Non-MOA)가
Metallocene Aluminoxanes
Hafnium()

< >



:Catalyst

Metallocene , 80 Metallocene
Metallocene Propylene
Isotactic PP .
Exxon 89 Baton Rouge Exxpol 150 , 90
3 Chisso가 Metallocene PP .
Metallocene , 가가 가 Exxpol
. Metallocene . LLDPE .

PP , Fina · Chisso · Hoechst 가 Metallocene Syndiotactic
 Chisso Z/N Silyl Bridge System
 Metallocene Isotactic PP
 , Dow 3 Metallocene
 Mobil Geometry Metallocene 93
 Gas-Phase Metallocene
 () Hoechst Metallocene Pilot-Scale 가
 () 가
 Exxon · Mitsui · Hoechst , Hoechst가 3 PE
 Diene(Styrenic and Vinyl) Molecular
 , Metallocene SSCs Amorphous PP, Syndiotactic PP, PS
 가 가 가
 , 가 가
 가
 , Union Carbide · Himont Z/N Metallocene
 Exxon UCC Unipol , Metallocene UCC
 UCC가 Gas-Phase , Exxon UCC
 Mitsui Spheripol 가 Himont , Metallocene
 UCC Himont Metallocene , Z/N
 가 EP Copolymer UCC Flexomer , Himont/Mitsui
 Catalloy Metallocene
 Catalloy EP Copolymer , Gas-Phase loop reactor 가
 3 Reactor가
 Comonomers 가
) Himont Sphe-ripol ()
 PP) PE
 BASF Novolen PE 가 Amoco/Chisso Impact PP, Atochem,
 BF, Sumitomo Gas-phase
 Z/N 가 , 80 Himont/ Mitsui
 가 가 kg 3~4kg kg 20~40kg (PE, PP)
 , Homopolymer Copolymer Reactor
 Polymer Bead 가
 Pelletization Himont Valtec , 가가 가
 Pellitization Spherilene 10~15%
 10% 가