

## GLOSSARY OF TECHNICAL TERMS

*This glossary of technical terms contains terms used in this prospectus as they relate to our business. As such, these terms and their meanings may not always correspond to standard industry meaning or usage of these terms.*

“acetylene”	a colorless gas, $C_2H_2$ , with an ether-like odor, produced usually by the action of water on calcium carbide or by pyrolysis of natural gas
“BDO”	1, 4-butanediol, a saturated carbon-4 straight-chain dibasic alcohol with a molecular formula of $C_4H_{10}O_2$ . It is a colorless and almost odorless viscous liquid. BDO is an important basic organic chemical raw material and a feedstock of fine chemicals such as THF/PTMEG, PBT, GBL, PU and other solvents. These chemicals are widely used in fibres, engineering plastics, medicines, cosmetics, artificial leather, pesticides, plasticizers, hardener, solvent and rust remover etc.
“butadiene acetoxylation process”	a method of recovering butadiene gas from acetic acid
“CAGR”	compound annual growth rate, a method of assessing the average growth of a value over time
“chain extension process”	a process to synthesize and improve biodegradable polymers
“DAVY Process”	also known as the DAVY-McKee or Kvaerner process, a hydrogenation production technology which uses maleic anhydride as the main raw material for the manufacture of BDO
“di-methyl maleate”	an organic compound that can be synthesized from maleic anhydride and methanol, which be used as an additive and intermediate for plastics, pigments, pharmaceuticals, and agricultural products
“esterification”	a chemical reaction in which two reactants (typically an alcohol and an acid) form an ester as the reaction product

## GLOSSARY OF TECHNICAL TERMS

“GBL”	gamma-butyrolactone or $\gamma$ -butyrolactone, an immediate downstream product of BDO having a molecular formula of $C_4H_6O_2$ . It is a colorless, transparent and oily liquid soluble in water with a weak odor. GBL has a wide range of applications, including cosmetics, hair sprays, germicides, tablet binders and as process aids in beverage clarification
“IPCCAS Direct Polycondensation Process”	a PBS production process developed jointly by IPCCAS and HKH National Engineering Research Center of Plastics Co., Ltd (海爾科化工程塑料國家工程研究中心股份有限公司)
“isocyanate”	the functional group of atoms comprising of one nitrogen, one carbon and one oxygen
“maleic anhydride”	a colorless crystalline, unsaturated compound with a molecular formula of $C_4H_2O_3$ . It is soluble in acetone and hydrolyzes in water, and is used in the production of polyester resins, agricultural chemicals and fumaric acid and malic acids
“methanol”	$CH_3OH$ or methyl alcohol, or wood alcohol, a colorless, flammable liquid, produced synthetically by the direct combination of hydrogen and carbon monoxide gases, heated under pressure in the presence of a catalyst
“n-butane”	the feedstock for the catalytic process for the preparation of maleic anhydride
“NMP”	N-Methyl-2-pyrrolidone, a chemical compound used to recover pure hydrocarbons processing petrochemicals
“PBS”	polybutylene succinate, a fully biodegradable synthetic aliphatic polyester with a melting point of $114^{\circ}C$ and in solid form under room temperature. PBS can be applied to a range of applications such as film, lamination, extrusion, monofilament, fiber, injection molding, foamed sheet and blow molding.
“PBS copolymer”	polybutylene succinate copolymer, a fully biodegradable synthetic aliphatic/aromatic copolyester with a melting point between $110^{\circ}C$ and $120^{\circ}C$ and is in solid form under room temperature

## GLOSSARY OF TECHNICAL TERMS

“PBSA”	poly butylene succinate adipate, a biodegradable aliphatic polyester with lower crystallinity and better biodegradability compared to PBS
“PBT”	polybutylene terephthalate, an immediate downstream product of BDO. It is a semi-crystalline, white or off-white thermoplastic polyester with high heat resistance and superior electrical insulation properties
“polycondensation process”	a condensation reaction of a monomer having two functional groups which leads to the formation of a polymer
“polyhydroxyalkanoates”	linear polysters in nature by bacterial fermentation of sugars or lipids, which are produced by the bacteria to store carbon and energy
“polylactic acid”	a biodegradable polyester derived from renewable resources such as corn starch or sugar cane
“propylene oxide process”	a method of producing propylene oxide by oxidizing cumene hydroperoxide or ethylbenzene hydroperoxide
“PTMEG”	polytetramethylene ether glycol, a waxy, white solid that melts to a clear, colorless viscous liquid near room temperature, derived from THF. The main uses of PTMEG are in the production of polyurethane elastomers, spandex fibers and copolyester-ether elastomers
“PU” or “polyurethanes”	polyurethane, an immediate downstream product of BDO with a molecular formula of $C_{25}H_{42}N_2O_6$ . Its physical and chemical properties vary over a wide range, depending on the constituent monomers and reaction conditions, and therefore it is extremely versatile. PU is available in a variety of forms ranging from flexible or rigid foams to elastomers, coatings, adhesives, sealants, spandex fibers and hard plastic parts
“REPPE Process”	an industrial synthesis technology using acetylene as the main raw material to react with two molecules of formaldehyde to form BDO

## GLOSSARY OF TECHNICAL TERMS

“resin”	a hydrocarbon secretion of plants such as coniferous trees typically used for the production of varnishes, adhesives and food glazing agents
“succinic acid”	a solid at room temperature that forms colorless, odorless crystals, which plays a biochemical role in the citric acid cycle
“THF”	tetrahydrofuran, an immediate downstream product of BDO with a molecular formula of $C_4H_8O$ . It is a colorless, water miscible organic liquid with low viscosity at standard temperature and pressure. THF is mainly used as a precursor to polymers and is often used to produce PTMEG, which in turn is used in manufacturing industrial and commercial end products, from artificial leather, construction materials, injection molding to thermoplastic urethane elastomer. THF is also used as a solvent in many pharmaceutical syntheses.
“tpa”	tons per annum
“ton”	a unit of weight, one ton is equal to 1,000 kilograms
“TPU”	a class of plastics with many useful properties, including elasticity, transparency, and resistance to oil, grease and abrasion
“utilization rate”	a percentage calculated by dividing the actual annual production volume by the designed annual production volume
“°C”	degrees celsius