The Complete Technology Book on Plastic Films, HDPE and Thermoset Plastics

Author: NIIR Board of Consultants & Engineers
Format: paperback
Code: NI182
Pages: 608
Price: Rs 1175 | US$ 125
Publisher: NIIR PROJECT CONSULTANCY SERVICES
Shipping: 5 days

About the Book

Plastic Films, HDPE and Thermoset Plastics are now an accepted part of the industrial and domestic scenes but this growth has been comparatively recent. Plastic films are typically used for sealing food items in containers to keep them fresh over a longer period of time. Plastic wrap, typically sold on rolls in boxes with a cutting edge, clings to many smooth surfaces and can thus remain tight over the opening of a container without adhesive or other devices. The past several years have seen numerous plastic films developed for the packaging industry, the most used today being polyethylene. Cast polypropylene film, like polyethylene film is unoriented (not stretched), but it was found that an improved film could be obtained by orientation (stretching the cast in one or more directions). Biaxial orientation is the process whereby the continuous cast film or sheet of plastic is heated up to brings it to a temperature that makes it stretchable. BOPP film possesses superior tensile strength, flexibility, toughness, shrink ability, good barrier and optical characteristics. The use of polyethylene terephthalate film is increasing considerably in recent years in videos audio magnetic tapes, computer tapes, photo and X ray films, power capacitors, insulation tapes and metalling for artificial zari. High density polyethylene (HDPE) or polyethylene high density (PEHD) is a polyethylene thermoplastic made from petroleum. The major applications of HDPE are in the manufacturing of containers, pipes, house wares, toys, filament, woven sacks, film, wire and cable insulation. HDPE is lighter than water, and can be moulded, machined, and joined together using welding (difficult to glue). Thermoset, or thermosetting plastics are synthetic materials that strengthen during being heated, but cannot be successfully remolded or reheated after their initial heat forming. This is in contrast to thermoplastics, which soften when heated and harden and strengthen after cooling. Thermoplastics can be heated, shaped and cooled as often as necessary without causing a chemical change, while thermosetting plastics will burn when heated after the initial molding. Additionally, thermoplastics tend to be easier to mold than thermosetting plastics, which also take a longer time to produce (due to the time it takes to cure the heated material).
Some of the astonishing fundamentals of the book are salient features of contemporary, technology and current research, three basic processes: advances, modern polyethylene, processes using high yield catalysts, solution polymerization processes, polyolefins, low density polyethylene, polyvinylidene chloride (PVDC), vinyl chloride/vinyl acetate copolymers, polyvinyl acetate, polyvinyl alcohol, physical and chemical properties, manufacturing methods, extrusion of film, slit die extrusion (flat film extrusion), comparison of blow and cast film processes, water cooled polypropylene film, calendaring, solvent, casting, casting of regenerated cellulose film, orientation of film, expanded films, plastics net from film, unsaturated polyester and vinyl ester resins, thermoset polyurethanes, guidelines and theories in compounding polyurethane elastomers, compounding for thermoset polyurethane elastomers, cellulose and cellulose derivatives, thermoplastic polymers etc.
The present books offer an up to date overview of the processing of plastic films, HDPE and thermoset plastics. This book is suitable for entrepreneurs, researchers, professionals, technical institutions etc.

Contents

Polyvinyl alcohol

CHAPTER 5 MECHANICAL PROPERTIES
Tensile and yield strength elongation and young's modulus
Test Methods
Burst strength
Impact strength
Impact Fatigue
Tear strength
Puncture penetration test
Stiffness
Flex resistance
Coefficient of friction
Blocking

CHAPTER 6 PHYSICAL AND CHEMICAL PROPERTIES
Optical properties
Light transmission
'See-Through' Clarity
Haze
Gloss
Permeability
Water vapour premeability
Gas Permeability
Odour Premeability
Density
Heat sealabiliy
Dimensional stability
Water absorption
Effect of chemicals
Effect of Light
Effect of Temperature
High Temperature
Low Temperature
Flammability

CHAPTER 7 MANUFACTURING METHODS
Extrusion of Film
Slit Die Extrusion (Flat Film Extrusion)
Comparison of Blow and Cast Film Processes
Water Cooled Polypropylene Film
Calendering
Solvent Casting
Casting of regenerated cellulose film
Orientation of film
Expanded films
Plastics Net From Film

CHAPTER 8 HEALTH SAFETY OF PLASTICS FILMS
Overall system
Base Lines for Evaluation

CHAPTER 22 PROCESSING AND FABRICATION
Orientation of molecules and fibers
Reinforced thermoset processing
Thermoplastic processing
Molds
Mixing equipment
Adhesive Application

CHAPTER 23 BAG AND SACK MANUFACTURE
Nature of the film
Bags made from tubular film
Bags made from Flat Film
Heavy duty sack manufacture

CHAPTER 24 THERMOFORMING
Methods of thermoforming
Vaccum forming
Skin pachaging
Pressure forming
Matched mould forming
Machine variables
Heating
Cooling
Moulds
Trimming
Printing
Materials and applications
PVC
Toughened polystyrene
Biaxially oriented polystyrene
ABS
Low density polyethylene
High density Polyethylene
Polypropylene
Cellulose acetate
Cellulose acetate/butyrate
Polycarbonate
Cold forming

CHAPTER 25 LAMINATION
Coating
Predetermined systems
Reverse roll coaters
NIP roll coaters
Gravure coaters
Calender coating
Curtain coating
Extrusion coating
Adhesive lamination
Wet bonding

Dry bonding
Coextrusion
Cross laminated film

NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes varies process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.

NIIR PROJECT CONSULTANCY SERVICES, 106-E, Kamla Nagar, New Delhi-110007, India. **Email**: npcs.india@gmail.com **Website**: NIIR.org