SAMPLE

Published Search
Number 70

Long Fibre Reinforced Thermoplastics

January 2008 - July 2009
Rien van den Hondel
*i*Smithers

Please note: The Polymer Library is updated with hundreds of new records every two weeks and each Published Search is only compiled when an order is placed, ensuring that any new records matching your search criteria are included.

This is a sample Published Search containing a limited number of abstracts; there are just 44 records in this file, whereas full Published Searches contain around 300 records.
It is intended to give an idea of the layout and type of information you will receive, rather than volume.

This sample contains references to 'Long Fibre Reinforced Thermoplastics' which may not match your chosen title.

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Introduction

Published Searches are bibliographies produced by online literature searches in the Polymer Library database.

The Polymer Library covers technical, commercial and economic information for the Rubber and Plastics Industry. The database contains nearly 1,000,000 references (with abstracts) to journal articles, conference proceedings, reports, Company brochures, books etc., collected since 1972. Some patents were covered for periods during these years, but completely stopped in 2002. Each fortnight approximately 1000 new references are added to the database.

The SUBJECT INDEX gives an alphabetical listing of index terms. The NAME INDEX provides an alphabetical index to authors, companies, affiliations and trade names.

Any suggestions for improvement and/or future titles will be gratefully received.

Rien van den Hondel

Item 503

Source → ***Adhasion*** 33,No.9,Sept.1989,p.38-43

German ← Language (unless in English)

Title → **REVIEW OF PATENT AND OTHER LITERATURE ON POLYURETHANE ADHESIVES 1984-1988. PART I. STARTING MATERIALS AND RECIPES**

Kujawa-Penczek B;Penczek P ← Author(s)

Organisational Source → PRONIT PLASTICS FACTORY; WARSAW,INSTITUTE OF INDUSTRIAL CHEMISTRY

214 references to polyurethane adhesives are reviewed. Sectionscovermethodsofpreparation,hotmeltadhesives, moisture-curing adhesives, UV-curing adhesives, polyurethane-acrylate adhesives, fillers for adhesives, aqueous dispersions of adhesives, anaerobic adhesives, adhesivescontainingencapsulatedadditives,crosslinking materials and catalysts, use of silanes, novel starting materialsandtheinfluenceofdifferentfactorsonadhesive properties. 214 refs. ← Abstract

POLAND; WEST GERMANY; WORLD; EASTERN EUROPE ← Location

Copyquest order no.385041

References from the Smithers Rapra Polymer Library

Item 1
Extrusion 15, No.1, 2009, p.36-37
German; English
REVOLUTION FOR LONG - FIBER THERMOPLASTICS (LFT).
Zimmerman D (Extruder Experts Systems)

Extruder Expert Systems' Nexxus-F, a new system for production of LFT pellets based on continuous fibre rovings, is briefly described. The system can be adapted to single- and twin-screw extruders and fibre length and fibre length distribution are precisely adjustable with control of the system. The system is suitable for use with polymers such as PP, PETP, polyamide-6,6 and ABS and with fibres such as glass, carbon, aramid and natural fibres. Experimental data on the mechanical properties of Nexxus LFT are included.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; WESTERN EUROPE

Copyquest order no. 1039593

Item 2
SAMPE Fall Technical Conference: Multifunctional Materials: Working Smarter Together. Proceedings of a conference held Memphis, Tn., 8-11 Sept., 2008
Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 1040, pp.8, CD-ROM, ISBN 978-1-934551-04-02, 012
DAMPING BEHAVIOR OF LONG FIBER REINFORCED THERMOPLASTIC (LFT) COMPOSITES .
Goel A; Chawla K K; Vaidya U K
Pennsylvania,State University; Alabama,University at Birmingham

The damping behaviour of LFT (21 vol% E-glass fibre/PP) in flexural mode was studied. It was observed that the LFT beams in which the majority of fibres were oriented in the transverse direction showed more damping than the LFT beams in which the fibres were mostly oriented in the longitudinal direction. When the fibres were oriented transversely, the damping behaviour of LFT was dominated by the matrix and hence transverse LFTs showed higher damping as compared with the longitudinal LFT beams in which the fibres were oriented longitudinally and the damping behaviour was dominated by fibres which restricted the vibratory motion of the beam under flexural loading. The damping behaviour of LFT with cast iron and unreinforced PP was compared and it was found that LFTs spanned a range intermediate between the unreinforced PP and cast iron. 9 refs.

USA

Copyquest order no. 1038821

Item 3
SAMPE Fall Technical Conference: Multifunctional Materials: Working Smarter Together. Proceedings of a conference held Memphis, Tn., 8-11 Sept., 2008
Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 1037, pp.7, CD-ROM, ISBN 978-1-934551-04-02, 012
PROCESSING AND CHARACTERIZATION OF THIN-WALLED LONG FIBER REINFORCED THERMOPLASTIC (LFT) COMPOSITES .
Haibin Ning; Pillay S; Vaidya U; Andrews J B
Alabama,University at Birmingham

Thin-walled long fibre - reinforced thermoplastic (LFT) (carbon fibre- reinforced polyarylamide shells) that possessed enhanced rigidity and strength compared with glass reinforcement were manufactured and analysed. The extrusion-compression moulding process was used to produce 1.8 mm to 2 mm thick LFT composite shells. Fibre content and microstructure were investigated at different locations of the thin-walled shells and the results indicated good consolidation and uniform fibre flow during processing. Potential applications of thin-walled LFT technology are considered in areas where lightweight, high stiffness and strength are required in parts of relatively complex geometry, yet producible cost-effectively with short (less than 2 min) cycle times. 17 refs.

USA

Copyquest order no. 1038818

Item 4
High Performance Plastics Jan.2009, p.4 ISSN: 0264-7753
PP LONG FIBRE THERMOPLASTIC FOR AUTOMOTIVE INDUSTRY.

Minnesota, USA-based RTP Co. has commercialised a PP long-fibre thermoplastic concentrate, designed especially to meet demanding automotive specifications, it is announced in this concise article. Brief details are presented of the beneficial properties of the new LFT material, which is known as “199 X 118012".

USA

Copyquest order no. 1038770

Item 5
Iranian Journal of Polymer Science and Technology 21, No.6, Feb.-March 2009, p.477-493 ISSN: 1016-3255
Persian
RESIDUAL STRESSES IN THERMOPLASTIC COMPOSITES : A REVIEW.
Shokrieh M M; Dinachali S S (Iran,University of Science & Technology)

A review is presented research into residual stress in thermoplastics and short and long fibre reinforced thermoplastics . The effect of residual stress on the composites is discussed and experimental techniques for measuring residual stresses are studied. Methods for reducing residual stress are also covered. 92 refs.

IRAN

Copyquest order no. 1038713

Item 6

Composites Technology 15, No.1, Feb.2009, p.24-25
ISSN: 1083-4117

NAIA SHOW HIGHLIGHTS.

Brosius D

Despite the global slump in auto sales and ongoing financial crisis, the 2009 North American International Auto Show, held in January in Detroit, once again served as the leading showcase for production and concept vehicle introductions from domestic and international OEMs. The Automotive Composites Alliance sharpened its message about how composites can make hybrid vehicles lighter, thereby extending their range. AOC demonstrated extensions of its Tough Class A resin technology into lower-density exterior SMC panels. Standard TCA panels have a specific gravity of 1.9, but new formulations that replace heavy calcium carbonate filler with hollow glass microspheres or higher resin content can achieve a specific gravity of 1.3, offering mass savings of up to 50% versus steel. New applications for composites in mass-production vehicles on display included long fibre - reinforced thermoplastic front-end modules for the 2010 Ford Taurus and Ford Fusion.

NORTH AMERICA

Copyquest order no. 1038296

Item 7

Journal of Composite Materials 43, No.3, Feb.2009, p.217-246 ISSN: 0021-9983 CODEN: JCOMBI

PREDICTION OF THE ELASTIC-PLASTIC STRESS/STRAIN RESPONSE FOR INJECTION-MOLDED LONG - FIBER THERMOPLASTICS .

Nguyen B N; Bapanapalli S K; Kunc V; Phelps J H; Tucker C L (Pacific Northwest National Laboratory; Oak Ridge National Laboratory; Illinois,University)

A model was proposed to predict the elastic-plastic response of injection-moulded long - fibre thermoplastics (LFTs). The model accounted for elastic fibres embedded in a thermoplastic resin that exhibited elastic-plastic behaviour obeying the Ramberg-Osgood relation and J-2 deformation theory of plasticity. It also accounted for fibre length and orientation distributions in the composite formed by the injection moulding process. Fibre orientation was predicted using an anisotropic rotary diffusion model recently developed for LFTs. An incremental procedure using Eshelby's equivalent inclusion method and the Mori-Tanaka assumption was applied to compute the overall stress increment resulting from an overall strain increment for an aligned-fibre composite that contained the same fibre volume fraction and length distribution as the actual composite. The incremental response of the latter was then obtained from the solution for the aligned-fibre composite by averaging overall fibre orientations. Failure during incremental loading was predicted using the Van Hattum-Bernado model that was adapted to the composite elastic-plastic behaviour. The model was validated against the experimental stress-strain results obtained for long-glass-fibre/PP specimens. 37 refs.

USA

Copyquest order no. 1037970

Item 8

International Polymer Processing 24, No.1, March 2009, p.17-22 ISSN: 0930-777X CODEN: IPPREJ

INJECTION MOLDING OF LONG FIBER REINFORCED THERMOPLASTIC COMPOSITES .

Kumar K S; Patel V; Tyagi A; Bhatnagar N; Ghosh A K (Indian Institute of Technology)

Injection moulding of extruded pellets of long glass fibre-reinforced polypropylene (PP) and polyamide-6 thermoplastic composites was investigated under different processing conditions including fibre content, pellet size, screw speed and injection pressure, and the products were characterised by tensile, flexural and impact testing. Fibre length distributions were analysed using a profile projector and image analysis software, and the effects of fibre content, fibre length, pellet size and the addition of maleic anhydride-grafted polypropylene to improve interfacial adhesion between glass fibres and PP on mechanical properties of the injection moulded composites are discussed. 22 refs.

INDIA

Copyquest order no. 1037577

Item 9

Plastics Technology 54, No.12, Dec.2008, p.23 ISSN: 0032-1257 CODEN: PLTEAB

OPTIONS EXPAND IN LFT'S.

Two small items of news relating to long - fibre thermoplastics (LFTs) are reported in this very short article. Firstly, that “Stamax” long - fibre PP pellets will now be available in the USA from SABIC Innovative Plastics, and secondly, that PlastiComp LLC of the USA has adapted its LFT technology to high-temperature resins such as PPS, PES, PEI and PEEK.

EUROPE-GENERAL; NORTH AMERICA; USA

Copyquest order no. 1037227

Item 10

SAMPE Fall Technical Conference: Multifunctional Materials: Working Smarter Together. Proceedings of a conference held Memphis, Tn., 8-11 Sept., 2008 Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 30, pp.15, CD-ROM, ISBN 978-1-934551-04-02, 012

AN INTEGRATED APPROACH LINKING PROCESS TO STRUCTURAL MODELLING WITH MICROSTRUCTURAL CHARACTERIZATION FOR INJECTION-MOLDED LONG - FIBER THERMOPLASTIC .

Nguyen B N; Bapanapalli S K; Smith M T; Kunc V; Frame B J; Norris R E; Phelps J H; Tucker C L; Xiaoshi Jin; Jin Wang

Pacific Northwest National Laboratory; Oak Ridge National Laboratory; Illinois University at Urbana-Champaign; Moldflow Ithaca

The application of a new fibre orientation model (ARD-RSC model) developed by Phelps and Tucker for long fibre thermoplastics is demonstrated. This model is implemented in a research version of the Moldflow processing packages and used in the injection moulding simulation of a long glass fibre/PP ISO-plaque. Fibre orientation distribution results from the simulation are mapped into an ABAQUS finite element mesh for structural analysis employing an elastic-plastic and strength prediction model developed by Nguyen et al. Predictions of failure locations are shown to agree well with experimental findings and confirm the importance of the fibre orientation effect on the overall response and occurrence of fracture. 14 refs.

USA

Copyquest order no. 1036247

Item 11

SAMPE Fall Technical Conference: Multifunctional Materials: Working Smarter Together. Proceedings of a conference held Memphis, Tn., 8-11 Sept., 2008
Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 27, pp.15, CD-ROM, ISBN 978-1-934551-04-02, 012

MATERIALS AND PROCESSES FOR A STRUCTURAL COMPOSITE UNDERBODY.

Berger L; Banks E; Wlosinski R
General Motors; Polywheels Manufacturing Ltd.; USCAR

A report is presented on the preliminary design of an underbody for a large rear-wheel-drive vehicle, materials selection therefore, processing feasibility, cost estimation, moulding trials and material testing. The material and process systems evaluated are long fibre injection, polyamide direct long fibre thermoplastic and sheet moulding compound and the system selected is a compression moulded SMC using vinyl ester resin with glass fibre fabric as the predominant reinforcement . The underbody design has been developed to replace the benchmark steel assembly. 2 refs.

USA

Copyquest order no. 1036244

Item 12

Extrusion 14, No.6, 2008, p.60/64
English; German

MATERIAL PREPARATION - “PULL-PUSH-TRUSION” - SYSTEM FOR LONG - FIBRE THERMOPLASTICS (LFT).

Details are provided on the NEXXUS Channel-F from RCT Srl. NEXXUS Channel-F is a multi-channel disk melt pump which collects and infiltrates a fibre strand in each channel. Due to high shear flow, the fibres are collected and aerated (“pull-trusion”) and discharged to a downstream processing plant (“push-trusion”). It is suitable for use in profile extrusion, sheet extrusion, pipe extrusion in-line compounding for injection moulding and long fibre thermoplastic granules.

EUROPEAN COMMUNITY; EUROPEAN UNION; ITALY; WESTERN EUROPE

Copyquest order no. 1032969

Item 13

Journal of Plastics Technology No.4, 2008, pp.21
ISSN: 1864-2217
German

TEXTILE GRIDS FOR LONG FIBER REINFORCED THERMOPLASTIC COMPOSITES MADE BY INJECTION MOLDING.

Cherif C; Franzke G; Hufnagl E; Hufenbach W; Boehm R; Kupfer R (Dresden,Technische Universitat)

The fabrication of a bus seat from preconsolidated, long fibre reinforced thermoplastics by injection moulding is described. The technique employed is suitable for producing lightweight composites for automotive, machine and plant construction. 30 refs.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; WESTERN EUROPE

Copyquest order no. 1032930

Item 14

JEC Composites No.45, Nov.-Dec.2008, p.35-39
ISSN: 0754-0876

SMART FORTWO TAILGATE: THE FIRST HIGH-VOLUME APPLICATION OF E-LFT TECHNOLOGY.

Ruegg A; Ziegler S; Jaggi D; Stotzner N (Esoro AG; Weber Automotive GmbH)

The high-volume production of the tailgate structure of the new Smart Fortwo automobile using a unidirectional endless glass-fibre- reinforced long - fibre thermoplastics design which features a completely visible grained, moulded-in-colour surface, is reported. The fabrication process combines long fibres with complex multi-layered inserts of unidirectional continuous fibres in a one-step process, and the structural rigidity, crashworthiness and costs are compared with previous tailgate designs based on alternative materials. 6 refs.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; WESTERN EUROPE

Copyquest order no. 1031799

Item 15

European Plastics News 35, No.11, Dec.2008, p.22
ISSN: 0306-3534 CODEN: EUPNBT

PLASTICS ARE ON TRACK.

Wood or concrete has been the conventional choice for rail track sleepers for decades, but these materials could soon be replaced by PU. The process has been underway in Japan for some 25 years, with Sekisui Chemical supplying its Eslon Neo Lumber FFU (Fibre reinforced Foamed Urethane) product. Now the FFU sleepers have been premiered in Germany, in the Leverkusen Chempark. The installation used 136 sleepers produced by Sekisui from a long fibre integral skin PU foam, Baydur 60, supplied by Sumika BayerUrethane.PUisalsofindingapplicationsbetweenthe sleepers. German rail engineering company Frenzel-Bau has teamed up with Bayer MaterialScience to develop Durflex,anewrailwaytrackballastsolutionusingBayflex flexible PU foam to infill the cavities between the ballast stones. Meanwhile, safety requirements are the absolute priority for materials used inside rail cars and two new grades of BMS's Bayblend PC/ABS sheet meet these demanding criteria.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; JAPAN; WESTERN EUROPE

Copyquest order no. 1031598

Item 16

International Journal of Plastics Technology 12, No.1, Aug.2008, p.863-875 ISSN: 0972-656X

EFFECT OF FIBRE LENGTH ON THE FRICTION AND WEAR OF DISCONTINUOUS FIBRE REINFORCED POLYPROPYLENE MATERIAL.

Subramanian C; Senthilvelan S (Indian Institute of Technology)

The effect of fibre length on the tribological properties of glassfibre-reinforcedPPcompositesunderdryslidingwas investigated using a pin-on-disc tribometer. Continuous measurement of friction force during testing revealed a transitionfromabrasivetoadhesivefriction.Adominance of PV factor over friction coefficient was observed. Long fibre-reinforcedPPcompositesexhibitedsuperiorfriction wear performance over short fibre reinforced PP composites and unreinforced PP and wear morphology confirmedthatwearmechanismsweresignificantlyaltered by fibre length. 17 refs.

INDIA

Copyquest order no. 1031217

Item 17

ADDCON 2008. Proceedings of the 14th International Conference on Plastics Additives and Compounding, held Barcelona, Spain, 15-16 October 2008 Editor(s): Smithers Rapra Technology Ltd. Shawbury, Smithers Rapra, 2008, Paper 1, pp.23, ISBN 978 1 84735 075 6, 29cm, 012

BRICS, FOUNDATION FOR STRATEGIC GROWTH.

Babinsky R; Gastrock F

Townsend Polymer Services and Information

This is a PowerPoint presentation, which examines the impact of the BRIC (Brazil, Russia, India and China) economiesontheglobalpolyolefinsandplasticsadditives industries. Statistics are included on polyolefins global consumption(2007),PE,PP,longfibrethermoplasticsand plastics additives global markets and consumption and BRIC resin and additives consumption.

BRAZIL; CHINA; INDIA; RUSSIA; USA; WORLD

Copyquest order no. 1030720

Item 18

HANDBOOK OF VINYL POLYMERS. Radical Polymerisation, Process, and Technology. 2nd. edn. Boca Raton, Fl., CRC Press, 2008, p.455-498, ISBN 978 0 8247 2595 2, 24cm, 42C38

FIBER-FILLED VINYL POLYMER COMPOSITES .

Das C K; Mukherjee M; Das T; Editor(s): Mishra M K; Yagci Y

Indian Institute of Technology

In this chapter on fibre-filled vinyl polymer composites , topics covered include types of fibres (glass, aramid, carbon, natural, mineral, animal, plant), resin systems (pultrusion, lay-up, filament winding), types of vinyl polymers(PVC,chlorinatedvinylpolymers,PVDC,vinyl ester resins and rubbers), fibre reinforcement of vinyl polymers (short fibre, long fibre , woven cloth, hybrid, in-situ), and fibre reinforcement of polyolefins. The applications, advantages and limitations of fibre-reinforcedvinylpolymersandfibre-reinforcedpolyolefins are also discussed. 82 refs.

INDIA

Copyquest order no. 1029653

Item 19

SAMPE '08: Material and Process Innovations: Changing our World. Volume 53. Proceedings of a conference held Long Beach, Ca., 18-22 May, 2008 Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 195, pp.8, CD-ROM, 012

DESIGN AND DEVELOPMENT OF A LONG FIBER THERMOPLASTIC HELMET LINER.

Vaidya U; Pillay S; Haibin Ning; Jong-Eun Kim; Littlefield D; Walsh S; Sands J

Alabama,University; US,Army Research Laboratory

The design, manufacture, modelling and finite element analysis of a long fibre thermoplastic helmet liner, which exhibits improved stiffness, enhanced performance towards conditions, such as ear to ear crush and form fit function for existing helmet shells used by the army, are described. Data from tests conducted on carbon fibre-reinforced composites with polyarylamide and polyphenylene sulphide matrix polymers are included. 10 refs.

USA

Copyquest order no. 1028789

Item 20

SAMPE '08: Material and Process Innovations: Changing our World. Volume 53. Proceedings of a conference held Long Beach, Ca., 18-22 May, 2008 Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 250, pp.11, CD-ROM, 012

MECHANICAL PROPERTIES AND ENERGY ABSORPTION OF POWDER-IMPREGNATED CONTINUOUS FIBER THERMOPLASTIC MATRIX COMPOSITES .

Steggall C; Advani S G; Yarlagadda S

Delaware,University

A novel process for manufacturing long fibre reinforced thermoplastic matrix composites , which employs a combination of vacuum-assisted resin transfer moulding to create a powder-impregnated fibre preform and compression moulding to consolidate the composite , is presented and used to produce glass fibre-reinforced HDPE composites . The mechanical properties of the laminates produced and their energy absorption abilities are evaluated and compared with a fully filled baseline laminate made from the pre-impregnated material. 6 refs.

USA

Copyquest order no. 1028532

Item 21

SAMPE '08: Material and Process Innovations: Changing our World. Volume 53. Proceedings of a conference held Long Beach, Ca., 18-22 May, 2008 Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 245, pp.9, CD-ROM, 012

HIGH STRENGTH ZENTRON FIBER AS ALTERNATIVE TO CARBON FIBER IN LONG FIBER THERMOPLASTIC MOLDING COMPOUNDS.

Rosenow M; Finan J; Murray D; Mancinelli J; Kranjc M; Wollan E
AGY; PlastiComp

E-glass fibre, S-2 Glass roving and ZenTron high strength glass fibre are compared to carbon fibre in a polyamide-6 long fibre thermoplastic compound. It is shown that at equal fibre volume, the ZenTron reinforced polyamide is equal in tensile strength but possesses from 26 to 50% greater impact toughness. This high strength fills the gap between E-glass and carbon fibre for demanding higher performance applications. 1 ref.

USA

Copyquest order no. 1028527

Item 22

SAMPE '08: Material and Process Innovations: Changing our World. Volume 53. Proceedings of a conference held Long Beach, Ca., 18-22 May, 2008 Editor(s): SAMPE Covina, Ca., SAMPE International Business Office, 2008, Paper 243, pp.9, CD-ROM, 012

PROCESSING & CHARACTERIZATION OF CONTINUOUS FIBER REINFORCEMENTS CO-MOLDED WITH LONG FIBER REINFORCED THERMOPLASTICS .

Thattaiparthasarthy K B; Vaidya U K
Alabama,University

The results are reported of a study carried out to establish the processing methodology to obtain a long fibre thermoplastic (PP) reinforced with preconsolidated (pultruded/compression moulded) continuous unidirectional tapes, which are co-moulded with a skin (endless long fibre thermoplastics). The initial thickness of the preconsolidated continuous tapes is optimised to obtain maximum flexural properties on the endless long fibre thermoplastics and the static response of the composite is compared with long fibre thermoplastics with and without ribs for equivalent flexural rigidity. 12 refs.

USA

Copyquest order no. 1028525

Item 23

Composites Part A 39, No.9, 2008, p.1512-1521 ISSN: 1359-835X

PROCESS SIMULATION, DESIGN AND MANUFACTURING OF A LONG FIBER THERMOPLASTIC COMPOSITE FOR MASS TRANSIT APPLICATION.

Balaji Thattaiparthasarathy K; Pillay S; Ning H; Vaidya U K (Alabama,University)

Long fibre thermoplastics (LFTs) have witnessed rapid growth in thermoplastics matrix composites, mainly due to developments in the automotive and transportation sector. In LFTs, pelletised thermoplastic polymer matrix is reinforced with long glass or carbon fibres (3-25mm) are processed by extrusion-compression moulding. The current work focuses on the applied science and manufacturing of E-glass/polypropylene (E-glass/PP) LFT composite material. Process simulation was conducted to evaluate the flow of fibre filled viscous charge during the compression moulding of the LFT composite . Studies on optimum charge size and placement in the tool, press force, temperature of mould, shrinkage and warpage were also conducted. The flow pattern of the molten charge in the mould and the resulting fibre orientation predicted by process simulation are verified experimentally. The studies have been applied for a mass transit/transportation component namely, a LFT battery box access door for form-fit-function to replace a heavy metal door. Weight reduction of 60% was achieved using 40% weight percent E-glass/PP LFT over the metal design. 28 refs. Copyright (c) 2008 Elsevier Ltd.

USA

Copyquest order no. 1028016

Item 24

Polymers for Advanced Technologies 19, No.7, July 2008, p.895-904 ISSN: 1042-7147 CODEN: PADTE5

EFFECT OF FIBER LENGTH AND COMPOSITION ON MECHANICAL PROPERTIES OF CARBON FIBER-REINFORCED POLYBENZOXAZINE.

Kumar K S S; Nair C P R; Ninan K N (Vikram Sarabhai Space Centre)

The mechanical strength and modulus of chopped carbon fibre(CF)- reinforced polybenzoxazine composites were investigated by changing the length of CFs. Tensile, compressive and flexural properties were investigated. The void content was found to be higher for the short fibre composites. With increase in fibre length, TS increased and was optimised at around 17 mm fibre length, whereas compressive strength exhibited a continuous diminution. The flexural strength also increased with fibre length and was optimised at around 17 mm fibre length. The increase in strength of composites with fibre length was attributed to the enhancement in effective contact area of fibres with the matrix. The experimental results showed that there was about 350% increase in flexural strength and 470% increase in TS of the composites with respect to the neat polybenzoxazine, while compressive properties were adversely affected. The composites exhibited an optimum increase of about 800% in flexural modulus and 200% in tensile modulus. Enhancing the fibre length led to fibre entanglement in the composites , resulting in increased plastic deformation at higher strain. Multiple branch matrix shear, debonded fibres and voids were the failures visualised in the microscopic analyses. Defibrillation was exhibited by all composites irrespective of fibre length. Fibre debonding and breaking were associated with short fibres, whereas clustering and defibrillation were the major failure modes in long fibre composites . Increasing fibre loading improved the tensile and flexural properties up to 50-60 wt % of fibre, whereas the compressive properties consistently decreased with fibre loading. 31 refs.

INDIA

Copyquest order no. 1026102

Item 25

Express Polymer Letters 2, No.8, 2008, p.560-568
ISSN: 1788-618X

RELATIONSHIP BETWEEN FIBER DEGRADATION AND RESIDENCE TIME DISTRIBUTION IN THE PROCESSING OF LONG FIBER REINFORCED THERMOPLASTICS .

Zhuang H; Ren P; Zong Y; Dai G C (East China,University of Science & Technology)

Fibre degradation in long glass fibre- reinforced polypropylene composites processed by in-line compounding equipment with a modified single screw extruder was investigated by fibre length and fibre dispersion measurements, and residence time distributions (RTD) were determined by a pulse stimulus response technique using poly(ethylene terephthalate) spheres as tracers. The effects of screw speed, mixing length and channel depth on RTD curves and on fibre degradation were studied, and optimisation of processing conditions in terms of fibre length and dispersion is discussed. 17 refs.

CHINA

Copyquest order no. 1024490

Item 26

Modern Plastics World Encyclopedia 2008, p.54

TECHNOLOGY INNOVATIONS HELP SPUR MARKET.

Jung L; Renkl J (Krauss-Maffei GmbH)

Reaction process machinery (RPM) has grown in popularity as it enables processors to make lightweight parts with high flexural modulus on low-cost tooling. The process involves high-pressure mixing of two or more reactive liquid components for PUR, nylon, thermoset polyester or epoxy. A number of new technical developments have been developed by processing equipment maker KraussMaffei including mixing heads, metering machines and production systems for PUR. One of these is the company's proprietary SkinForm process. SkinForm combines injection moulding with RPM in a single production system. The first step of the work cycle produces a thermoplastic substrate. In the second step, the substrate is partly or completely coated with PUR in the mould. KraussMaffei also offers a new In-Mould Painting process for producing long - fibre injection parts with high-gloss surfaces. A relatively new application is honeycomb-core moulding, where a cardboard honeycomb layer is sandwiched between two reinforced PUR layers. Another relatively new option is to combine the LFI process with In-Mould Graining.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; WESTERN EUROPE

Copyquest order no. 1024400

Item 27

Kunststoffe International 98, No.6, 2008, p.14-15
ISSN: 1862-4243

THE POWER OF LONG FIBERS .

Maedefessel-Herrmann K

The opening of two new production plants by EMS-Chemie at Gross-Umstadt in Germany is described. The plants are a large state-of-the-art plant for efficient production of speciality polyamides and a pultrusion plant for production of long fibre - reinforced polyamides. Manufacturing capacity has been increased by more than 30%. The potential of the long fibre composites for use as a substitute for metal is discussed.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; WESTERN EUROPE

Copyquest order no. 1024230

Item 28

Journal of Materials Science 43, No.13, July 2008, p.4423-4432 ISSN: 0022-2461 CODEN: JMTSAS

EFFECT OF UV EXPOSURE ON THE MICROSTRUCTURE AND MECHANICAL PROPERTIES OF LONG FIBER THERMOPLASTIC (LFT) COMPOSITES .

Goel A; Chawla K K; Vaidya U K; Koopman M; Dean D R (Alabama,University at Birmingham)

The effects of UV exposure for various periods of time on the microstructure and dynamic Young's modulus of composites of polypropylene (PP) and E-glass long fibres, fabricated by extrusion and compression moulding, were investigated by optical microscopy, SEM, nanoindentation, FTIR and dynamic Young's modulus determination via an impulse excitation technique. The results are discussed in comparison with those for the PP matrix itself in terms of surface cracking and crystallinity of the damaged layer. 18 refs.

USA

Copyquest order no. 1023807

Item 29

Journal of Materials Science 43, No.13, July 2008, p.4391-4398 ISSN: 0022-2461 CODEN: JMTSAS

CHARACTERIZATION OF LONG FIBER THERMOPLASTIC /METAL LAMINATES.

Kulkarni R R; Chawla K K; Vaidya U K; Koopman M C; Eberhardt A W (Alabama,University at Birmingham)

The fabrication by compression moulding of long - fibre reinforced polyamide-6,6 composite /aluminium metal laminates, comprising alternate layers of metal and thermoplastic composite , and their characterisation by Young's modulus, mechanical strength, low velocity impact properties and SEM examination of fracture surfaces, is described. Failure mechanisms included delamination, fibre fracture and pull-out, and shear fracture of metal and composite layers, and the mechanical properties of the laminates are discussed in comparison with those of the composite and with predictions based on the rule-of-mixtures. 17 refs.

USA

Copyquest order no. 1023805

Item 30

Plastics Technology 54, No.3, March 2008, p.29 ISSN: 0032-1257 CODEN: PLTEAB

BIOCOMPOSITES BY IN-LINE COMPOUNDING AND MOLDING.

At the Fraunhofer Institut fur Chemische Technologie in Germany, scientists have been exploring new processes for manufacturing biocomposites of bio-based polymers and natural fibres such as hemp and flax. This small article offers us brief details of the researchers' adaptation of the D-LFT (direct long - fibre thermoplastic) technique for in-line compounding and moulding (previously used for glass fibre in standard resins such as PP).

EU; EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; WESTERN EUROPE; WESTERN EUROPE-GENERAL

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Item 31

Journal of Composite Materials 42, No.10, May 2008, p.1003-1029 ISSN: 0021-9983 CODEN: JCOMBI

FIBER LENGTH AND ORIENTATION IN LONG - FIBER INJECTION-MOLDED THERMOPLASTICS . I. MODELING OF MICROSTRUCTURE AND ELASTIC PROPERTIES.

Nguyen B N; Bapanapalli S K; Holbery J D; Smith M T; Kunc V; Frame B J; Phelps J H; Tucker C L (Pacific Northwest National Laboratory; Oak Ridge National Laboratory; Illinois,University)

A methodology was developed to predict the elastic properties of long-fibre injection-moulded thermoplastics (LFTs). The corrected experimental fibre length distribution and the predicted and experimental orientation distributions were used in modelling to compute the elastic properties of the composite. Firstly, the probability density functions were determined from the fibre length distribution(FLD) data, in terms of number of fibres versus fibre length, and were used in the computation. The two-parameter Weibull's distribution was also used to represent the actual FLD. The Mori-Tanaka model that employed the Eshelby's equivalent inclusion method was then applied to calculate the stiffness matrix of the aligned fibre composite containing the established FLD. The stiffness of the actual as-formed composite was then determined from the stiffness of the computed aligned fibre composite that was averaged over all possible orientations using the orientation averaging method. The methodology to predict the elastic properties of LFTs was validated via experimental verification of the longitudinal and transverse moduli determined for long glass fibre injection-moulded PP specimens. Finally, a sensitivity analysis was conducted to determine the effect of a variation of FLD on the composite elastic properties. The analysis showed that it is essential to obtain an accurate fibre orientation distribution and a realistic fibre length distribution for accurate prediction of the composite properties. 30 refs.

USA

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Item 32

Materials World 16, No.6, June 2008, p.28-30 ISSN: 0967-8638

IN THE FRAME.

Singh R (QinetiQ)

Current carbon fibre tennis racquet frames are manufactured by arranging ready-to-mould, pre-impregnated sheets of aligned, continuous fibre lengths and 0/90 degree weaves of fibre in a thermoset resin in different orientations and proportions so that the optimum balance in racquet properties can be achieved for a given frame shape and weight. However, this is labour intensive. Many advances in injection moulding and materials offer greater opportunities to mould larger and stronger components than were previously possible with short fibre composites. The benefits have arisen mainly from the development of discontinuous long - fibre reinforced moulding materials, containing fibre 10-15mm in length. QinetiQ, in collaboration with a major tennis racquet manufacturer, explored the possibility of using these types of materials for tennis racquet frames, with the aim of developing a competitive, low cost frame of comparable performance to existing composite versions.

EUROPEAN COMMUNITY; EUROPEAN UNION; UK; WESTERN EUROPE

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Item 33

European Plastics News 35, No.5, May 2008, p.27-29 ISSN: 0306-3534 CODEN: EUPNBT

JEC SHOWCASES INNOVATION.

Vink D

The JEC composites fair and conference attracted 1,053 exhibitors this year, up by 100 over 2007, and 27,000 visitors. The automotive industry was well represented, with Advanced Composites Group presenting use of the

carbon fibre prepreg system that is now supplied for bodywork of the Koenigsegg Automotive's Edition CCX and CCXR sports cars. Meanwhile, ACG launched its DForm Deformable Composite System at the show, combining conformability of short fibre moulding compound with the directional characteristics of high performance long fibre composites to make tooling systems. Gurit says its SPRINT car body sheet CFRP body panels are now used for the Aston Martin DBS model boot closure and lid, door opening surrounds, bonnet and front wing. PP honeycomb core maker, Nidaplast says that its five families of GRP, metal, decorative stone, wood and reinforced PP facings that can be used with the Nidaplast 8 honeycomb panels are making a large contribution to lightweight building fa ade claddings.

WORLD

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Item 34

European Chemical Engineer June 2008, p.34-35

RISING TO THE DEMAND FOR LIGHTER AND STRONGER COMPOSITE MATERIALS.

Lydon M

Recent commercial developments in polymers, composites and foams to meet demands from the communications, diagnostics and aircraft sectors for lightweight high-strength products are reviewed. Examples cited include the production of long fibre - reinforced thermoplastic composites based on various resins such as polypropylene or polyamide for injection moulding applications, polyethylene fibres for medical device applications, and lightweight crosslinked closed-cell block poly(vinylidene fluoride) foams for aerospace applications. No refs.

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Item 35

Polymer Composites 29, No.5, 2008, p.525-533 ISSN: 0272-8397 CODEN: PCOMDI

MECHANICAL PROPERTIES OF INJECTION MOLDED LONG FIBER POLYPROPYLENE COMPOSITES , PART 2: IMPACT AND FRACTURE TOUGHNESS.

Senthil Kumar K; Bhatnagar N; Ghosh A K (Indian Institute of Technology)

This study describes the effect of fibre length and compatibiliser content on notched izod impact and fracture toughness properties. Long fibre polypropylene (LFPP) pellets of different sizes were prepared by extrusion process using a new radial impregnation die, and subsequently, pellets were injection moulded as described in previous publication(ref.1). The content of glass fibre reinforcement was maintained same for all compositions. Maleic-anhydride grafted polypropylene (MA-g-PP) was chosen as a compatibiliser to increase the adhesion between glass fibre and PP matrix and its content was maintained at 2 wt%. Notched izod impact property was studied for LFPP composites prepared with and without compatibiliser for different pellet sizes. Failure mechanism due to sudden impact was analyzed with scanning electron micrographs and was correlated with impact property of LFPP composites . Fracture and failure behaviour of injection moulded LFPP composite were studied and relationship between fracture toughness and microstructure of LFPP composite was analyzed. The microstructure of the composites was characterized by the dimensionless reinforcing effectiveness parameter, which accounts for the influence of fibre layer structure, fibre alignment, fibre volume fraction, fibre length distribution, and aspect ratio. Matrix stress condition factor and energy absorption ratio were determined for LFPP composites prepared with and without compatibiliser. Failure mechanism of both the matrix and fibre, revealed with SEM images, were discussed. 14 refs.

INDIA

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Item 36

Injection Molding 16, No.2, Feb.2008, p.28-31 ISSN: 1071-362X

HERE'S THE SKINNY ON LONG FIBER .

Maniscalco M

Long - fibre thermoplastics (LFTs) solve some of the trickiest metal-replacement challenges at a cost lower than that of exotic, high-end polymers. In addition, unlike glass mat thermoplastics which support only compression moulding or stamping, long fibre enables the design freedom, parts consolidation and processing benefits of injection moulding. More recently added to the mix are inline compounding (ILC) systems for injection moulding, also known as D-LFT (direct long - fibre thermoplastic), which promise to reduce costs for high-volume production as they serve up stronger structural parts primarily in automotive applications. Townsend Polymer Services & Information predicts that the LFT global growth rate will remain around 12% annually through 2011. PP remains the dominant resin used for LFT, and automotive continues to account for the majority of end-use applications.

WORLD

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Item 37

Plastics Additives and Compounding 10, No.2, March-April 2008, p.38-43 ISSN: 1464-391X

LFT DEVELOPMENT STATUS AND PERSPECTIVES.

Schemme M (Rosenheim,Fachhochschule)

Long fibre reinforced thermoplastics have become well established over the past 20 years as high performance engineering materials for structural applications in the automotive industry. Apart from their excellent economic benefits and low weight, their big advantage lies in a high level of productivity in processing, which is a result of the short cycle times attainable with thermoplastic matrix systems. This article reviews long fibre reinforced thermoplastics technologies and their applications in the automotive industry.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY;

WESTERN EUROPE

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Item 38

Plastics Engineering 64, No.3, March 2008, p.28/34
ISSN: 0091-9578 CODEN: PLEGBB

CLOSING THE GAP ON METALS.

Daykin S (DuPont Europe)

Recent developments in high-performance polymers and advanced reinforcing systems have allowed further use of engineering polymers as viable metal alternatives in demanding applications, but there is still a significant gap between strength and stiffness properties of engineering polymers compared with those of metals. Research and development of alternate technologies has explored materials solutions to further bridge this performance gap. DuPont has built a portfolio for Advanced Metals Replacement, which today includes two differentiated areas. SuperStructural Monolithic Solutions consists of an array of glass-, carbon- and long - fibre - reinforced thermoplastics for very high stiffness and strength combined with excellent resistance to creep and fatigue. New launches include high-stiffness carbon/glass-reinforced resins for Zytel HTN 51 and 53 series. The second addition is MetaFuse nanometal/polymer hybrids. MetaFuse uses a deposition process to apply a thin, ultra-high-strength metal layer to moulded components. A third, complementary solution is currently under development. Thermoplastic Composite Solutions foresees the overmoulding of a continuous-fibre reinforcement in a finished part to combine very high stiffness and strength with high part functionality and complexity.

SWITZERLAND; WESTERN EUROPE

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Item 39

Modern Plastics Worldwide 85, No.3, March 2008, p.26-28 ISSN: 0026-8275

MARKET CONDITIONS RIPE FOR HOT RUNNER ADVANCES.

Goldsberry C; Defosse M

One goal apparent in new hot runner designs is their manufacturers' charge to help mouldmakers reduce mould size, and save on mould costs (steel) and enable processors to use smaller processing machines. Speed-to-market also remains critical. Meeting these requirements is a mould/hot runner combination developed by mouldmaker Amtec and hot runner manufacturer Heitec. Their challenge was keeping costs low and mould size small for a mould for syringes with both Luer Lock and needle lock connections, so each can be fitted with different needles. D-M-E now offers a hot runner system especially for injection moulding of crates. It is the company's first hot runner system with a filter as standard. Filters are crucial in crate moulding as processors often mould with high recyclate content and thus often high contaminant levels. New from Thermoplay is a hot runner system with the hot runner shut-off group integrated inside the nozzle(s) for moulders running stack moulds. Husky Injection Molding Systems is offering hot runners aimed at preserving the fibre length for processors of long - fibre - reinforced compounds and a new option for the Ultra 500 valve gate that is able to withstand high pressure to mould, for example, electronics applications.

WORLD

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Item 40

Plastics Technology 54, No.2, Feb.2008, p.28 ISSN: 0032-1257 CODEN: PLTEAB

IN-MOLD PAINTING FOR LONG - FIBER PUR.

Krauss-Maffei Kunststofftechnik GmbH of Germany has introduced a new in-mould painting process for long - fibre glass- reinforced PU composite parts, which produces smooth surfaces, for vehicles and agricultural machinery. The technology is briefly described in this short article.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; INDIA; USA; WESTERN EUROPE

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Item 41

Engineering Design No.1, 2008, p.2-3

CLOSING THE GAP ON METALS.

Robertson C (DuPont Engineering Polymers)

Research and development in alternate technologies have explored materials solutions to further bridge the gap in material properties between metals and thermoplastics. It is against this background, particularly with regard to the discrepancy in terms of stiffness between its own engineering polymers and metals, that DuPont has built its own portfolio for Advanced Metals Replacement, which today includes two differentiated offerings. The company's SuperStructural Monolithic Solutions consists of an array of glass-, carbon- and long fibre-reinforced thermoplastics for very high stiffness and strength combined with excellent creep and fatigue resistance. New launches include high-stiffness carbon/glass reinforced resins for the DuPont Zytel HTN 51 and 53 series, whereby tensile modulus, or stiffness, has been increased by 50% or more versus its existing glass fibre- reinforced grades. The second, most recent addition to the DuPont portfolio of advanced metal replacements are Metafuse nanometal/polymer hybrids. The new technology employs a proprietary process that precisely applies ultra high-strength nanometal to components made of DuPont engineering polymers to create lightweight components in myriad, complex shapes with the stiffness of magnesium or aluminium and higher strength.

USA

Copyquest order no. 1015262

Item 42

Composites Technology 14, No.1, Feb.2008, p.40-42
ISSN: 1083-4117

ADDITIVES ADD KEY INNOVATIONS.

Snyder M R

In the composites industry, the category “additives” describes a variety of materials that have in common the ability to modify the behaviour, appearance, mechanical properties and/or processability of a polymer resin. This article examines additives developments that have added value to these indispensable resin system add-ons. PlastiComp has introduced its line of Complet pellets in which long fibre - reinforced thermoplastic technology is compounded with impact modifiers, colourants and other customer-specified additives. It is claimed that the materials have found to be superior to dry-blended materials in terms of part-weight consistency and aesthetics. RTP has enhanced its line of long fibre thermoplastic compounds with the introduction of long-cut additive pellets, produced in masterbatches to reduce customer lead time. Material separation during handling reportedly is minimised because the pellet geometry of the additives is similar to the LFT pellets. Cloisite nanoclay additives from Southern Clay Products can be incorporated into material formulations for SMC and BMC to improve resin flow and, therefore, finished part quality.

EUROPEAN COMMUNITY; EUROPEAN UNION; NETHERLANDS; USA; WESTERN EUROPE

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Item 43

Reinforced Plastics 52, No.1, Jan.2008, p.32/39 ISSN: 0034-3617

LFT DEVELOPMENT STATUS AND PERSPECTIVES.

Schemme M (Rosenheim F.H.)

Apart from their excellent economic benefits and low weight, the big advantage of long fibre reinforced thermoplastics lies in a high level of productivity in processing, which is a result of the short cycle times attainable with thermoplastic matrix systems. With the arrival of new material systems optimised for the specific application, and with the ongoing development of the processing and process engineering, it has now become possible to mass produce highly stressed structural parts and innovative module systems with a high level of functional integration. Current examples of applications in the automotive segment include instrument panel supports, technical front-ends, door and roof modules, hatchback doors, seat shells, bumper supports, sound-absorbing shells, spare wheel pans and complete underbody systems. A real reduction in the weight of vehicles can only be reached by the use of new material concepts and manufacturing technologies. Glass fibre/PP based LFT materials meet the demands of the automotive industry regarding system costs and mass production because of their competitive prices and the cycle times which can be realised with thermoplastic matrices.

EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; WESTERN EUROPE

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Item 44

European Plastics News 35, No.1, Jan.2008, p.15
ISSN: 0306-3534 CODEN: EUPNBT

GLOBAL LFT MARKET IS SET FOR 12% GROWTH.

A 12% global growth rate for long fibre - reinforced thermoplastics is predicted up to 2011, according to the Global LFT Market report compiled by Townsend Polymer Services & Information. The report predicts that by 2011, an extra 400m US dollars in revenue from LFT will have been created. Growth is largely being driven by automotive producers using LFT to replace metal components to reduce the weight of their vehicles and therefore fuel consumption. Half of the LFT volume increase forecast over the next five years is put down to five application areas including: front-end modules, instrument panels, door modules and underbody shields in automotive and general/industrial goods in the non automotive sector. In 2006, China accounted for only 5% of the total worldwide LFT consumption, ranking it fourth behind Europe, North America and Japan. By 2011, however, China is expected to surpass Japan, which currently uses 11% of the world's LFT, it is briefly reported.

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