

[SS 38] structural and construction and fibre and resin and polymer

Results in EPODOC 6

[SS 39] ..li



1/6 © EPODOC / EPO

PN - [WO2017089967](#) A2 20170601

PNFP - WO2017089967 A3 20170720

PR - CO20150279194 20151123

AP - WO20161B57057 20161123

DT - *; Rep

CT - |ES| ISR (A3)

[EP0586707](#) A1 19940316 [X] (SUMITOMO CHEMICAL CO [JP])

[X] 1-15

* , página 2, líneas 3-10; página 3, línea 48 - página 5, línea 7; página 6, líneas 13-17; ejemplos. *;

[XP055398877](#) A[X];

[XP004443354](#) A[A];

[US5650109](#) A 19970722 [A] (KAISER MARK A [US], et al)

[A] 1-15

* , todo el documento. *;

[RU2012146528](#) A 20140510 [] (TURBO PROVOD SPETSSTROY LTD)

CTNP - |ES| ISR (A3)

[X] - VARAPORN TANRATTANAKUL et al., "Comparison Between Microwave and Thermal Curing of Glass Fiber-Epoxy Composites: Effect of Microwave-Heating Cycle on Mechanical Properties", Journal of Applied Polymer Science, (20060000), vol. 102, no. 2, pages 1059 - 1070, XP055398877

[X] 1-8

* . Ver Tablas I y III. *

[A] - KESSLER M R et al., "Self-healing structural composite materials", Composites Part A: Applied Science and Manufacturing, (20030801), vol. 34, no. 8, pages 743 - 753, XP004443354

[A] 1-8

* . Ver apartado 2. Métodos experimentales. 2.1. Materiales. *

[] - DATABASE WPI, 1, Derwent World Patents Index, (20170518), Database accession no. 2014-L89038

CUI - [C08K5/16](#)

PA - (A2 A3)
BUSINESS & CONSULTANTS ONE SAS [CO]

TI - (A2 A3)
COMPOSITION FOR **STRUCTURALCONSTRUCTION** ELEMENTS AND PRODUCTION METHOD

AB - (A2 A3)
The present invention relates to a composition for **structural construction** elements that are essentially characterised by a selection of **fibre**-reinforced **polymer** (FRP) compounds.

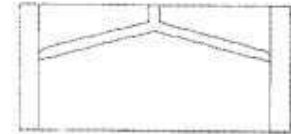
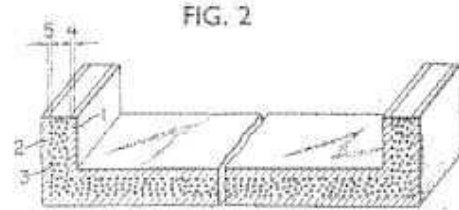
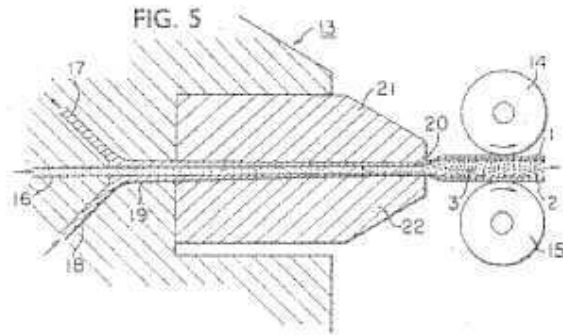
The composition comprises a **fibre** and a binding **polymer resin** having an anti-static composition, combined with silicon dioxide (SiO₂) as a starting component, treated with a highly compatible curing agent, and provided with an anti-static retardant binder to form a thermostable composition.

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PN - [RU2601486](#) C1 20161110
 PR - RU20150132616 20150805
 AP - RU20150132616 20150805
 DT - I
 CNOI - [B32B27/02](#) ; [B32B27/04](#) ; [C08J5/04](#) ; [C08J5/24](#) ; [C08K3/28](#) ; [C08K5/41](#) ; [C08K7/02](#) ; [C08L63/00](#)
 PA - FED GOSUDARSTVENNOE UNITARNOE PREDPRIJATIE VSEROSIJSKIJ NAUCHNO-
 ISSLEDOVATELSKIJ INST AVIATIONNYKH [RU]
 TI - EPOXY BINDER, PREPREG BASED THEREON AND ARTICLE MADE THEREFROM
 AB - FIELD: chemistry.SUBSTANCE: invention relates to epoxy binder for making **structural polymer** composite materials based on fibrous fillers and can be used in **construction** industry, aircraft, space, automobile, ship-building industry and other industries. Epoxy binder contains following, wt%: polyfunctional epoxy **resin** 5.0-36.0; epoxy non-functional **resin** 45.0-75.0; polyarylsulphone 4.0-15.0; curing agent - 4,4'-diaminodiphenylsulphone 10.1-13.5; latent curing agent - dicyandiamide 1.1-3.5. Also disclosed is a prepreg containing wt%: epoxy binder 30.0-50.0 and **fibre** filler 50.0-70.0. Article is obtained by automated laying of prepreg with subsequent vacuum moulding of prepreg.EFFECT: invention provides improved process characteristics and makes it possible to obtain composite material with a higher level of maintaining physical and mechanical properties after exposure to negative operational factors (temperature of 70 °C, humidity of 85 %).10 cl, 3 tbl, 12 ex

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PN - [GB1352051](#) A 19740515
 PR - JP19700039407U 19700424
 AP - GB19710010837 19710422
 DT - **
 CCI - [B29C44/22](#) ; [E04C2/205](#)
 CCA - [B29C47/0019](#) ; [B29C47/00](#)
 PA - MITSUBISHI RAYON CO; SHIN KOBE
 ELECTRIC MACHINERY
 TI - **STRUCTURALMATERIALS**
 AB - 1352051 Extruded foamed sheet
 MITSUBISHI RAYON CO Ltd and SHIN-KOBE
 ELECTRIC MACHINERY CO Lt 2 22 April
 1971 [24 April 1970] 10837/71 Heading
 B5A [Also in Division C3] A multi-layer
 extruded synthetic **resin** board of a
 configuration which is planar, or as
 shown in Fig. 2, comprises one or more
 foamed **resin** layers 3 intermediate and
 fused during extrusion to unfoamed **resin**
 layers 1, 2. The layers are extruded from a
 die passage 19 to which they are
 delivered by die passages 16, and 17, 18,
 via "coat hanger" type manifolds, Fig. 6,
 the temperature of the resins decreasing
 along the passage 19 and the layer 3
 issuing unfoamed from the outlet 20 of
 die lips 21, 22 and expanding to a density
 of 0.08 to 0.2 gm/cm³, effected
 by a volume increase of 1.3 to 5 times
 and determined by rolls 14, 15 which are
 followed by guide rolls, take-up rolls, and
 a cutter. The rolls 14, 15 are surface
 coated with hard chromium plating and
 are of a double shell **construction**
 defining a cavity within which hot water
 or oil is circulated and the peripheral
 surface speed difference between the rolls
 14, 15 and the takeup rolls is adjustable.
 The die lips 20-21 are transversely
 adjustable, Fig. 4 (not shown), by bolts
 (23), and a transversely adjustable choke
 bar is provided in each of the passages,
 16-18, which are each supplied by a
 variable speed screw extruder. To prevent
 the formation of excessively large cells
 (2), Fig. 8 (not shown), at the inter layer
 boundary, the temperature of the
 unfoamed layers within the passage 19 is

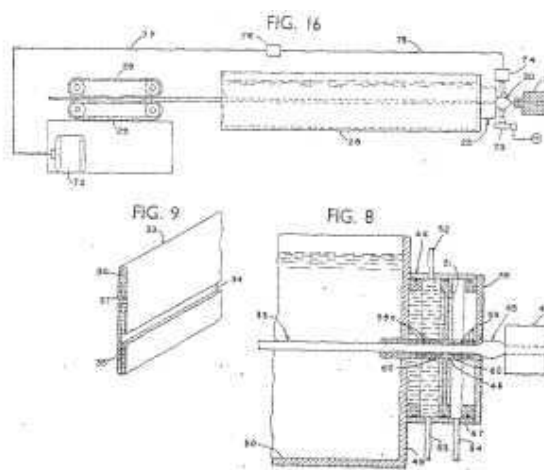


maintained less than 10 C. above that of the foamable layer. Temperature control of the die is maintained by independent electric heating panels, Fig. 3 (not shown), the heaters nearer the die edges being maintained at temperatures 2-5 C. above that of the intermediate heaters to maintain an even temperature across the width of the die. The resins may comprise A-B-S co-**polymer**, polystyrene, polyethylene, or polyvinyl chloride and the layers may comprise different resins, or the same **resin** having each layer differently coloured. In the Examples, boards are extruded comprising: (1 and 2), 4 mm thick azodicarbamide foamed A-B-S **resin** intermediate 1 mm. unfoamed A-B-S layers, each layer being of the same or of a different colour, and the board being of 0.7 gm/cc., (3) similar thickness layers in a board of 0.8 gm./c.c., the foamed layer comprising A-B-S **resin** foamed by 2% azodicarbonamide between layers respectively comprising A-B-S **resin**, and a copolymer of styrene, methylmethacrylate, acrylonitrile, and acrylic rubber; (4), similar thickness layers and density of board, the foamed **resin** and one exterior layer being of the same resins as in Example (3), and the other layer being a copolymer of acrylic rubber, acrylonitrile and styrene. Test results are given relating to the rigidity and the shock absorption properties of the Example (2) board, a similar board having 2 mm. thick surface layers, and boards of the same weight comprising aluminium sheet, glass **fibre** reinforced polyester sheet, steel sheet, and A-B-S sheet; and also relating to exposure resistance, as measured by impact strength, of the Examples (2) and (3) materials in comparison with single layer 1 mm. sheets of the co-**polymer** resins of these examples. The boards of different coloured exterior layers may be utilized in boat building. A desired weathering or combustion resistance may be effected in one exterior layer by incorporating suitable resisting agents.

The board may be used in signboards or improved resistance to ultra-violet rays when one surface layer comprises an acrylic rubber co-**polymer**, comprising butyl acrylate; acrylonitrile and styrene; a copolymer comprising butyl acrylate, acrylonitrile, styrene and methyl methacrylate; or copolymers comprising butyl acrylate, acrylonitrile, styrene, methyl methacrylate and n-butyl acrylate. The blowing agents may also comprise 0.1-2.0% dinitrosopentane, methyltetramine, or 1-8% methane or butane as a **resin** impregnant.

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- PN - [GB1417312](#) A 19751210
- PR - US19720227575 19720218
- AP - GB19730000652 19730104
- DT - **
- CCI - [B29C47/0019](#) ; [B29C47/0016](#) ;
[B29C47/0023](#) ; [B29C47/003](#) ;
[B29C47/8815](#) ; [B29C47/882](#) ;
[B29C47/8895](#) ; [B29C47/90](#) ;
[B29C47/903](#) ; [B29C47/908](#) ;
[B29C47/92](#) ; [B29C44/50](#)
- CCA - [B29C47/8835](#) ; [B29C47/884](#) ;
[B29C2947/92161](#) ;
[B29C2947/92219](#) ;
[B29C2947/9258](#) ; [B29C2947/926](#) ;
[B29C2947/92647](#) ;
[B29C2947/92676](#) ;
[B29C2947/92685](#) ;
[B29C2947/92714](#) ;
[B29C2947/92885](#) ;
[B29C2947/92933](#) ; [Y10S264/05](#) ;
[Y10S264/14](#) ; [Y10S264/17](#)
- PA - ARCO POLYMERS INC
- TI - METHOD AND APPARATUS FOR MAKING **STRUCTURAL** ELEMENTS
- AB - 1417312 Extruding foamed plastics ARCO POLYMERS Inc 4 Jan 1973 [18 Feb 1972] 652/73
Heading B5A [Also in Divisions A4 C3 and G3] An extruded foamed thermoplastics section, simulating wood grain and having a denser or



unfoamed structure adjacent its surface than in its interior, is produced by pulling the extrudate from the extrusion die, e.g. by an opposed belt mechanism, through a sizing die which is cooled by a surrounding water jacket and is spaced apart from the extrusion die to permit partial foaming of the extrudate between the dies to a cross-section greater than that of the sizing die passage, and continuation of the foaming in the sizing die passage. The greater cross-section is maintained at a constant value, preferably by adjustment of the speed of the puller mechanism, either manually or automatically. The denser skin initially formed by contact with the cooled sizing die passage, progressively increases in thickness during continued expansion of the interior of the extrusion in passing through a refrigerated coolant or water cooling bath immediately downstream of the sizing die. The extrusion die may be of the same, or different shape from that of the section. Pigment may be added at the extruder hopper to accentuate the wood grain effect, and calcium carbonate and glass **fibre** fillers may be employed. Numerous conventional thermoplastics and blowing agents, and mixed blowing agents are specified, and these may comprise thermoplastics in which the blowing agent is incorporated during polymerization. The thermoplastics to be extruded may comprise expandable polystyrene beads together with specified hydrates, and with specified non-expandable thermoplastics powders which form an outer unexpanded layer in the section. An exemplary composition comprises

expandable polystyrene beads containing decomposable blowing agent, or pentane, citric acid and sodium carbonate, together with either a graft **polymer** of styrene on butadiene, or a blend of polystyrene and butadiene. or low or high density polyethylene, or acrylonitrilebutadiene-styrene **resin**, or with polystyrene. In the Fig. 1 embodiment (not shown) a circular section rod is obtained employing a similar shaped extrusion die passage, and with the sizing die comprising a water circulating jacket throughout its length. In the Fig. 8 embodiment, the passage of the extrusion die 43 and sizing die 44 are of the same shape as the section produced, Fig. 9, for use as a drawer side wall with grooves 34, 35 respectively serving for sliding engagement with a furniture piece side rail and for retaining the drawer base by means of adhesive or nails. In this embodiment, the sizing die 44 has an upstream chamber to which vacuum is applied, at 54, to draw water from ports 59a in a downstream water circulating cooling jacket and from the water bath 50, to function as a cooling and lubricating agent between the extrusion and the sizing die passage which is provided with transverse slots 60 to further reduce friction. The water bath 50, is provided with spaced supports, Fig. 4 (not shown), for the extrusion, and at its outlet with a rubber seal around the extrusion. In the Fig. 10 embodiment (not shown) a sizing die of otherwise similar **construction** to the Fig. 8 embodiment, produces a square section rod from an extrusion passage of circular section. In the Fig. 14 embodiment (not shown) a tubular section is employed using

a tubular extrusion die passage, and a sizing die provided with a surrounding circulating water passage throughout its length, and with a circulating water cooled mandrel supported either at lugs to the upstream face of the sizing die, or by the extrusion die mandrel. The greater cross-sectional area of the extrusion 30, Fig. 16, intermediate the extrusion and sizing dies 22, 23, may be automatically maintained constant, as in either the Figs. 16 or 17 embodiments. In the Fig. 16 embodiment, increase or decrease of the area of the extrusion 30 correspondingly alters the amount of light passing, from a light source 73, to a photoelectric cell 74 which is connected to a controller 76 which acts to alter the speed of motor 72 driving the opposed belt drawing mechanism 29. In the Fig. 17 embodiment (not shown) the speed of the electric motor driving the opposed belt drawing mechanism, is altered by varying the electric current supplied thereto, by a control device (86) which is responsive to fluid pressure in a delivery line (85) from a piston valve (80), which is actuated mechanically, by one arm of a bell crank lever (82), the other arm (78) of which acts as a feeler to be displaced by the area of the extrudate (30).

PN - [DE3934555](#) A1 19910418

PNFP - DE3934555 C2 19920820

PR - DE19893934555 19891017

AP - DE19893934555 19891017

DT - *, Rep

CT - || STSE (A1)
[DE3608938](#) A1 19870924 [] (GILIARD JULIUS DIPL ING);
[DE3144653](#) A1 19820701 [] (BRUNSWICK CORP [US]);
[DE8607213U](#) U1 19860626 [];
[GB2041824](#) A 19800917 [] (SECR DEFENCE);
[GB1364076](#) A 19740821 [] (BRITISH AIRCRAFT CORP LTD);
[US4861649](#) A 19890829 [] (BROWNE JAMES M [US])

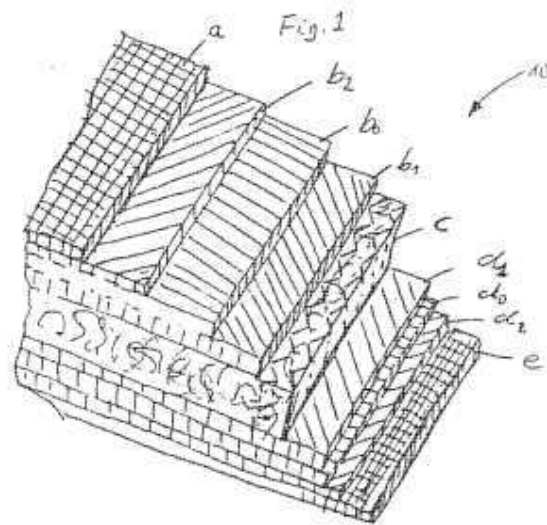
CTNP - (A1)
[] Plastverarbeiter, 34. Jg., 1983, Nr. 1, S. 41-44

CCI - [B29C70/08](#)

PA - (A1)
AUDI AG [DE]

TI - (A1)
Rigid for laminate for coachwork parts - has laminar **construction** reinforced with core of **polymer** fibres and multilayer skins of carbon **fibre**, all impregnated with epoxy] **resin**

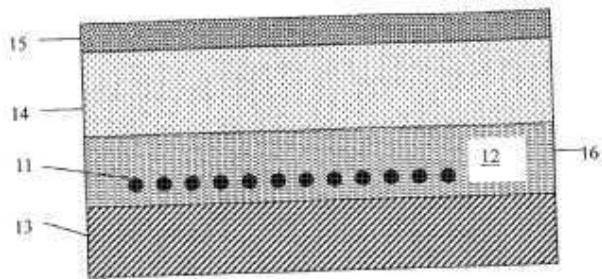
AB - (A1)
A sandwich **construction** FRP laminate is produced in the form of rigid flat high-strength **structural** components, and particularly coachwork parts of vehicles. The product is max. 2 mm thick and has a core with reinforcements of synthetic **resin** fibres namely polyester, polyamide, polyethylene, polypropylene, polyurethane, acrylic and/or aramid in the form of woven cloths, mats, felted or knitted material; the core has skins of at least two layers with carbon **fibre** reinforcement. One preferred **construction** has phenolic **resin** microballoons in



voids in the core. ADVANTAGE - Despite their extreme thinness the products have a high stiffness and can be handled very roughly without damage. They can withstand high temps. and be spray-coated. Their properties make them very suitable for use in the car industry. They are suitable for production in large numbers.

6/6 © EPODOC / EPO

- PN - [CA2390653](#) A1 20040102
- PR - CA20022390653 20020702
- AP - CA20022390653 20020702
- DT - **
- CCI - [E01C3/06](#) ; [E01C3/003](#) ; [E02D3/00](#) ; [E02D27/35](#) ; [E04C5/07](#) ; [F16L1/028](#)
- PA - MOROSCHAN CASEY [CA]
- TI - SUB-GRADE THERMO-**STRUCTURAL** BRIDGE
- AB - The Sub-Grade Thermo-**Structural** Bridge is intended to be used as a base in the **construction** of new road and runway/tarmac beds and beds for slab-on-grade structures such as building pads, pedestrian walk ways and the like to prevent or minimise sharp and/or significant differential settlement of the bed and the surface toppings be they concrete, asphalt, gravel or some other surfacing material, due to failure in the sub-grade matrices below the Thermo- **Structural** Bridge because of inherent weak characteristics due to permafrost, muskeg, ice lensing, organics, and the like. In this invention, after the grade has been excavated and/or graded to its preliminary rough grade, a grid of re-enforcing material, typically synthetic in nature, such as nylon mesh, **fibre**-glass rods, or other specified re-enforcing material is laid. A high density, two-part, closed cell, hydro-phobic and insulative



expanding **polymer resin** is sprayed over the grid of reinforcing material to a specified thickness to achieve a contiguous thermo-**structural** base which will bridge any current and future weak areas in the soils under the Thermo-**Structural** Bridge. Should the soils under the thermo-**structural** bridge degrade and/or settle over time, the thermo-**structural** bridge would continue to support and sustain the specified fills, topping, finishings, and the like comprising the balance of the make up of the bed.

[SS 39]