

Title (en)

CARBON FIBER BUNDLE AND PRODUCTION METHOD FOR SAME

Title (de)

KOHLENSTOFFFASERBÜNDEL UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

FAISCEAU DE FIBRES DE CARBONE ET PROCÉDÉ DE PRODUCTION POUR CELUI-CI

Publication

**EP 4379100 A1 20240605 (EN)**

Application

**EP 22849335 A 20220720**

Priority

- JP 2021121230 A 20210726
- JP 2022028166 W 20220720

Abstract (en)

To provide a carbon fiber bundle capable of suppressing winding due to ring-shaped fuzzes, which occurs when the carbon fiber bundle is rolled out for advanced processing, and a production method for producing the same. Disclosed is a carbon fiber bundle wherein an average single-fiber diameter B is 6.9 to 11.0  $\mu\text{m}$ , a tensile modulus E of resin-impregnated strands is 230 to 310 GPa, the number of fuzzes inherent in the carbon fiber bundle is 40 fuzzes/m or less, and a proportion of fuzzes with a structure having a difference between skin and core is 1 to 25% of fuzzes inherent in the carbon fiber bundle. Such a carbon fiber bundle is preferably obtained by a method including, in a process of heat-treating a polyacrylonitrile-based precursor fiber bundle with a single-fiber fineness of 0.9 to 2.2 dtex in an oxidizing atmosphere at 200 to 300°C, heat-treating the polyacrylonitrile-based precursor fiber bundle so that a heat generation rate Q, which is the left side of the formula (3), is 150 to 500 J/m<sup>2</sup>/s until the density is 1.22 to 1.24 g/cm<sup>3</sup>, when q (J/g/s) is the heat generation rate of the single fiber, N is the number of filaments, d (dtex) is a single-fiber fineness of the stabilized fiber bundle and W (mm) is a yarn width, heat-treating the fiber bundle while applying a tension of 1.6 to 4.0 mN/dtex until the density is 1.38 to 1.50 g/cm<sup>3</sup> to obtain a stabilized fiber bundle, and heat-treating the stabilized fiber bundle in an inert atmosphere at 1,200 to 1,600°C.  $Q=q \times N \times d / W / 10$

IPC 8 full level

**D01F 9/22** (2006.01); **D01F 6/18** (2006.01)

CPC (source: EP KR US)

**D01F 6/18** (2013.01 - KR); **D01F 9/22** (2013.01 - EP US); **D01F 9/225** (2013.01 - KR); **D10B 2101/12** (2013.01 - US); **D10B 2101/122** (2013.01 - KR); **D10B 2401/04** (2013.01 - KR); **D10B 2401/06** (2013.01 - KR)

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

**EP 4379100 A1 20240605**; CN 117280087 A 20231222; JP WO2023008273 A1 20230202; KR 20240034682 A 20240314; US 2024133081 A1 20240425; WO 2023008273 A1 20230202

DOCDB simple family (application)

**EP 22849335 A 20220720**; CN 202280034184 A 20220720; JP 2022028166 W 20220720; JP 2022545063 A 20220720; KR 20237030760 A 20220720; US 202218573812 A 20220719