Title (en)

HIGH MODULUS POLYESTER YARN FOR TIRE CORDS AND COMPOSITES

Title (de)

POLYESTERGARNE MIT HOHEM MODUL FUER REIFENKORDEN UND VERBUNDMATERIALIEN

Title (fr)

FIL DE POLYESTER A MODULE ELEVE POUR CABLES DE PNEUS ET COMPOSITES

Publication

EP 0623179 B2 20010214 (EN)

Application

EP 93901119 A 19921222

Priority

- US 9211063 W 19921222
- US 82279992 A 19920121

Abstract (en)

[origin: WO9314252A1] Yarns are prepared by spinning PEN or other semi-crystalline polyester polymers made from similarly rigid monomer combinations to a state of optimum amorphous orientation and crystallinity. This is accomplished by selection of process parameters to form an undrawn polyester yarn of birefringence at least 0.030. The spun yarn is then hot drawn to a total draw ratio of between 1.5/1 and 6.0/1 with the resulting drawn semi-crystalline polyester yarn having Tg greater than 100 DEG C and a melting point elevation at least 8 DEG C. The preferred yarn has a tenacity at least 6.5 g/d, dimensional stability (EASL + Shrinkage) of less than 5 %, and shrinkage 4 % or less. The resulting yarn exhibits surprisingly high modulus and tenacity together with low shrinkage when compared to prior art yarns.

IPC 1-7

D01F 6/62

IPC 8 full level

B60C 9/00 (2006.01); **D01F 6/62** (2006.01); **D02G 3/48** (2006.01); **D02J 1/22** (2006.01)

CPC (source: EP)

D01F 6/62 (2013.01)

Citation (opposition)

Opponent :

- US 4026973 A 19770531 - SHIMA TAKEO, et al
- US 3564835 A 19710223 - KEEFE ROBERT LE ROY JR, et al
- WO 9000638 A1 19900125 - ALLIED SIGNAL INC [US]
- DERWENT ABSTRACT NO 1975-76346W & JP-A-S50-46923 + COMPLETE ENGLISH TRANSLATION
- JP-A-62-156312 + complete English translation
- ChemieFasern/Textilindustrie, June 1985, page 411
- ChemieFasern, May 1971, pp. 379-384
- Journal of Polymer Science, vol. 12, 2905-2915, 1974
- H. Kuchlin, Physik-Formeln und -Gesetze, Chapter 18.1,page 181, 1977

Designated contracting state (EPC)

CH DE ES FR GB IT LI NL

DOCDB simple family (publication)

WO 9314252 A1 19930722; AU 3331293 A 19930803; BR 9207038 A 19951205; CA 2126328 A1 19930722; CA 2126328 C 20020521; CN 1051586 C 20000419; CN 1078508 A 19931117; DE 69213474 D1 19961010; DE 69213474 T2 19970206; DE 69213474 T3 20010823; EP 0623179 A1 19941109; EP 0623179 B1 19960904; EP 0623179 B2 20010214; ES 2091589 T3 19961101; ES 2091589 T5 20010516; JP 2629075 B2 19970709; JP H06511293 A 19941215; MX 9300142 A 19940729; TR 28032 A 19951211; TW 224960 B 19940611

DOCDB simple family (application)

US 9211063 W 19921222; AU 3331293 A 19921222; BR 9207038 A 19921222; CA 2126328 A 19921222; CN 93101268 A 19930121; DE 69213474 T 19921222; EP 93901119 A 19921222; ES 93901119 T 19921222; JP 51246193 A 19921222; MX 9300142 A 19930113; TR 6593 A 19930120; TW 82100327 A 19930119