



US009045650B2

(12) **United States Patent**
Finnie et al.

(10) **Patent No.:** **US 9,045,650 B2**
(45) **Date of Patent:** **Jun. 2, 2015**

(54) **POLYMER WITH SALT GROUPS AND
ANTIFOULING COATING COMPOSITION
COMPRISING SAID POLYMER**

(75) Inventors: **Alistair Andrew Finnie**, Whitley Bay
(GB); **Clayton Price**, Whitley Bay (GB);
Richard Mark Ramsden, Pelaw (GB)

(73) Assignee: **AKZO NOBEL COATINGS
INTERNATIONAL B.V.**, Arnhem (NL)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 254 days.

(21) Appl. No.: **13/058,714**

(22) PCT Filed: **Aug. 10, 2009**

(86) PCT No.: **PCT/EP2009/060317**

§ 371 (c)(1),
(2), (4) Date: **Feb. 11, 2011**

(87) PCT Pub. No.: **WO2010/018144**

PCT Pub. Date: **Feb. 18, 2010**

(65) **Prior Publication Data**

US 2011/0144217 A1 Jun. 16, 2011

Related U.S. Application Data

(60) Provisional application No. 61/091,813, filed on Aug.
26, 2008.

(30) **Foreign Application Priority Data**

Aug. 13, 2008 (EP) 08162288

(51) **Int. Cl.**
C09D 5/16 (2006.01)
C08G 75/24 (2006.01)
A01P 15/00 (2006.01)
C08F 220/18 (2006.01)

(52) **U.S. Cl.**
CPC **C09D 5/16** (2013.01); **C09D 5/1656**
(2013.01); **C09D 5/1687** (2013.01); **C08F**
220/18 (2013.01)

(58) **Field of Classification Search**

CPC C09D 5/16; C09D 5/1687; C09D 5/1656;
C08F 220/18

USPC 523/122; 514/772.3; 528/321
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2008/0124298 A1* 5/2008 Solomon et al. 424/78.09

FOREIGN PATENT DOCUMENTS

EP	0 529 693	3/1993
EP	0 663 409	7/1995
GB	798 604	7/1958
GB	1 457 590	12/1976
WO	00/43460	7/2000
WO	02/02698	1/2002
WO	2004/018533	3/2004
WO	2005/075581	8/2005

OTHER PUBLICATIONS

International Search Report, PCT/EP2009/060317, mailed Oct. 2,
2009, 4 pages.

European Search Report, EP 08162288.8, mailed Dec. 18, 2008, 6
pages.

Szegezdi, Jozsef, et al., "New method for pK_a estimation", presented
at eCheminformatics, Nov. 10-14, 2003.

Szegezdi, Jozsef, et al., "Prediction of dissociation constant using
microconstants", presented at the American Chemical Society
National Meeting, Mar. 28-Apr. 2004.

Szegezdi, Jozsef, et al., "A method for calculating the pK_a values of
small and large molecules", presented at the American Chemical
Society Spring Meeting, Mar. 25-29, 2007.

* cited by examiner

Primary Examiner — Kriellion Sanders

(74) *Attorney, Agent, or Firm* — Kenyon & Kenyon LLP

(57) **ABSTRACT**

A film-forming polymer with improved chemical stability in
antifouling coating applications, said polymer bearing pen-
dant to its backbone a salt of (i) a basic group with a first pK_a
of the conjugate acid of at least 4.0 and (ii) an organic acid
with a first pK_a of 2.0 or less; said basic group being
covalently bonded to the polymer backbone.

21 Claims, No Drawings