



(43) International Publication Date
9 April 2015 (09.04.2015)

(10) International Publication Number
WO 2015/050649 A1

(51) International Patent Classification:

C07C 37/08 (2006.01) C07C 407/00 (2006.01)
C07C 45/53 (2006.01)

(21) International Application Number:

PCT/US2014/052891

(22) International Filing Date:

27 August 2014 (27.08.2014)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/885,077 1 October 2013 (01.10.2013) US
14151423.2 16 January 2014 (16.01.2014) EP

(71) Applicant: **EXXONMOBIL CHEMICAL PATENTS INC.** [US/US]; 5200 Bayway Drive, Baytown, TX 77520-2101 (US).

(72) Inventors: **BENITEZ, Francisco, M.**; 19708 N. Palo Duro Lake Trl., Cypress, TX 77433 (US). **BECKER, Christopher, L.**; 3109 Driftwood Dr., Manhattan, KS 66503 (US). **KUECHLER, Keith, H.**; 912 Applewood Drive, Friendswood, TX 77546 (US). **DAVIS, Jason, D.**; 9531 Bearden Creek, Humble, TX 77396 (US).

(74) Agents: **CHEN, Siwen** et al.; ExxonMobil Chemical Company, Law Technology, P.O. Box 2149, Baytown, TX 77522-2149 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

(54) Title: PROCESS FOR MAKING PHENOL AND/OR CYCLOHEXANONE

(57) Abstract: A process for making phenol and/or cyclohexanone, the process comprising: (A) oxidizing a cyclohexylbenzene feed to obtain an oxidation product comprising cyclohexylbenzene, cyclohexylbenzene hydroperoxide and water; (B) removing at least a portion of the water from at least a portion of the oxidation product to obtain a cleavage feed; and (C) contacting at least a portion of the cyclohexylbenzene hydroperoxide in the cleavage feed with an acid catalyst in a cleavage reactor under cleavage conditions to obtain a cleavage product comprising phenol and cyclohexanone. The removing step may also comprises a step of removing a portion of the cyclohexylbenzene contained in the oxidation product. Water removal may be advantageously conducted in a water flash-drum before a cyclohexylbenzene hydroperoxide concentrator.



WO 2015/050649 A1