



(51) International Patent Classification:

C07C 37/08 (2006.01) **C07C 2/74** (2006.01)
C07C 39/04 (2006.01) **C07C 13/28** (2006.01)
C07C 45/53 (2006.01) **C07C 409/14** (2006.01)
C07C 49/403 (2006.01)

(21) International Application Number:

PCT/US2014/033475

(22) International Filing Date:

9 April 2014 (09.04.2014)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/826,341	22 May 2013 (22.05.2013)	US
13178304.5	29 July 2013 (29.07.2013)	EP

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

(72) Inventors: **COLEMAN, John, S.**; 2947 Saxon Flowers Drive, Fairfax, VA 22031 (US). **PATEL, Bryan, A.**; 786 N. Vermont St., Arlington, VA 22203 (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, 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).

Published:

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

(54) Title: PROCESS FOR PRODUCING PHENOL

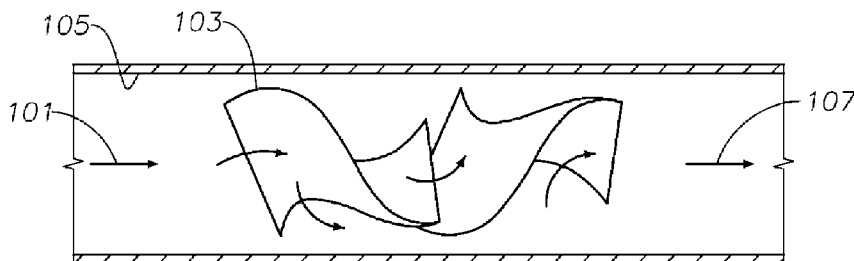


FIG. 1

(57) Abstract: In a process for producing phenol and cyclohexanone, reaction components comprising cyclohexylbenzene hydroperoxide and an acid catalyst are supplied to a cleavage reaction zone, mixed under mixing conditions effective to combine the reaction components into a reaction mixture and at least part of the cyclohexylbenzene hydroperoxide in the reaction mixture is converted under cleavage conditions to into phenol and cyclohexanone; and a cleavage effluent is recovered from the cleavage reaction zone. The cleavage and mixing conditions are controlled such that the ratio t_R/t_M is at least 10, where t_R is the half-life of cyclohexylbenzene hydroperoxide under the cleavage conditions and t_M is the time required after injection of a tracer material into the reaction mixture under the mixing conditions for at least 95% by volume of the entire reaction mixture to attain at least 95% of the volume-averaged tracer material concentration.