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09/827,411 6 April 2001 (06.04.2001) US(71) Applicant: **CATALYTIC DISTILLATION TECHNOLOGIES** [US/US]; 10100 Bay Area Boulevard, Pasadena, TX 77507 (US).(72) Inventors: **RYU, J., Yong**; 10100 Bay Area Boulevard, Pasadena, TX 77507 (US). **GILDERT, Gary, R.**; 14507 Windy Ridge Lane, Houston, TX 77062 (US).(74) Agent: **JOHNSON, Kenneth, H.**; P.O. Box 630708, Houston, TX 77263 (US).(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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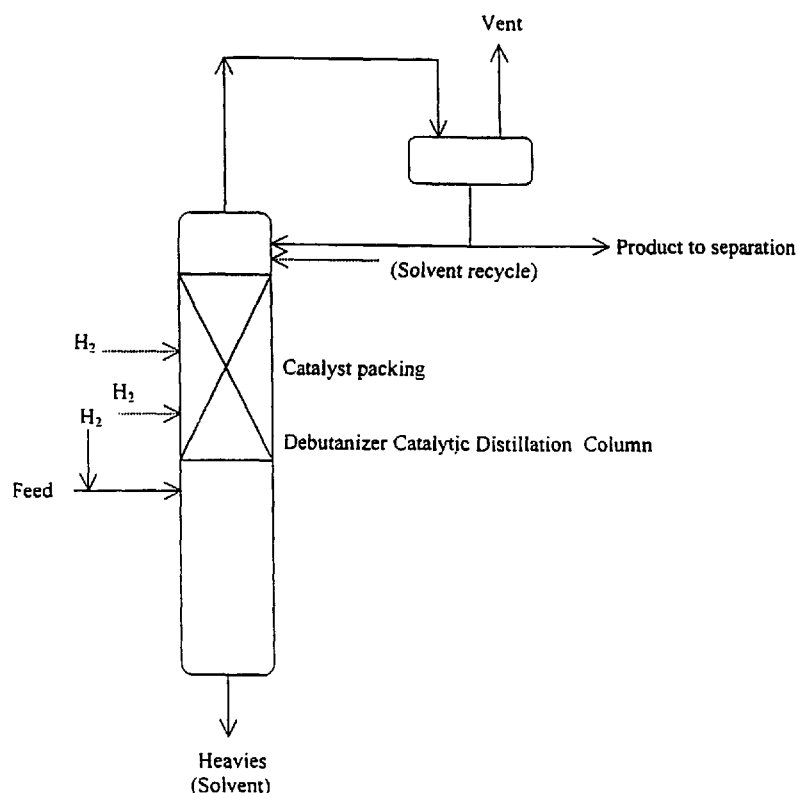
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(54) Title: PROCESS FOR SELECTIVE HYDROGENATION OF ALKYNES AND CATALYST THEREFOR



(57) Abstract: Acetylenic compounds in olefin streams such as mixed 1,3-butadiene were selectively hydrogenated over the supported copper catalysts on highly porous supports such as alumina, silica, etc. The preferred supports have the average pore diameter larger than about 200Å, no micro pores, total pore volume larger than about 0.65 cc/g, and preferably less than about 230 m²/g BET surface area. The copper catalysts were preferably promoted with the group VIII metal such as palladium to improve low activity of copper catalyst. The product stream typically contains less than 20 ppm total alkynes. Also the copper catalysts and the palladium promoted copper catalysts may be modified with zinc oxide to improve the performance of the catalysts. The reactor was loaded with two or more copper catalysts promoted with different levels of palladium. Preferably the copper catalysts were also modified with silver, gold or both silver and gold to reduce polymer formation by the copper component of the catalyst, improve the yield of olefins such as 1,3-butadiene, and prevent the loss of copper and/or palladium due to leaching out into the liquid phase of hydrocarbon.

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