



(51) International Patent Classification:

C10G 1/00 (2006.01) *C10G 1/08* (2006.01)
C08J 11/10 (2006.01) *C10G 1/10* (2006.01)

(21) International Application Number:

PCT/US2021/026976

(22) International Filing Date:

13 April 2021 (13.04.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/008,932 13 April 2020 (13.04.2020) US

(71) Applicant: **EASTMAN CHEMICAL COMPANY**
[US/US]; 200 South Wilcox Drive, Kingsport, TN 37660
(US).

(72) Inventors: **DEBRUIN, Bruce Roger**; 43 Amesbury Court,
Gray, TN 37615 (US). **EKART, Michael Paul**; 1025
Hanover Ct, Kingsport, TN 37660 (US). **JACKSON,**

Anne-Martine Sherbeck; 2209 Charsley Road, Kingsport,
TN 37660 (US). **WEST, Nathan Mitchell**; 1912 Ashfield
Dr, Kingsport, TN 37664 (US). **LIU, Zhufang**; 1036 For-
rest Ridge Drive, Kingsport, TN 37660 (US).

(74) Agent: **TAYLOR POLK, Tammye L.**; P.O. Box 511,
Kingsport, TN 37660 (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, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, 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, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,

(54) Title: CHEMICAL RECYCLING OF WASTE PLASTIC MATERIALS WITH IMPROVED SOLVOLYSIS CATALYST

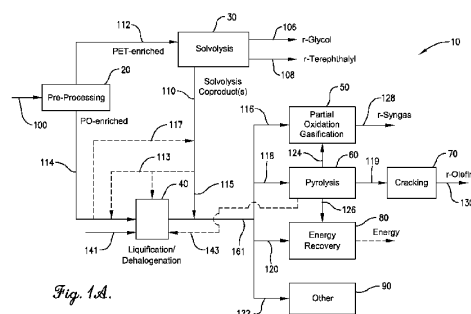


Fig. 1A.

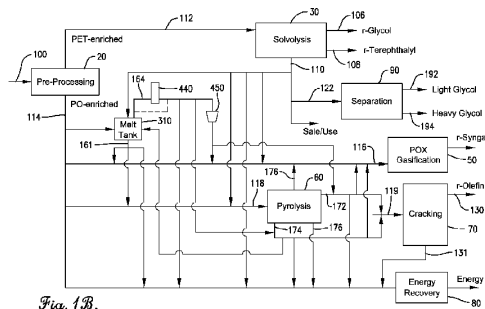


Fig. 1B.

(57) Abstract: Chemical recycling facilities for processing mixed waste plastic are provided herein. Such facilities have the capability of processing mixed plastic waste streams and utilize a variety of recycling facilities, such as, for example, solvolysis facility, a pyrolysis facility, a cracker facility, a partial oxidation gasification facility, an energy recovery facility, and a solidification facility. Streams from one or more of these individual facilities may be used as feed to one or more of the other facilities, thereby maximizing recovery of valuable chemical components and minimizing unusable waste streams.

[Continued on next page]

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).

Published:

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