

Pilot tests of the microspherical aluminochromium KDI-M catalyst for iso-butane dehydrogenation

Lamberov A., Egorova S., Gilmanov K., Kataev A., Bekmukhamedov G.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2017, Pleiades Publishing, Ltd. Results from pilot tests of microspherical aluminochromium KDI-M catalyst mixed with IM-2201 in a large-scale unit (Nizhnekamskneftekhim) for iso-butane dehydrogenation are discussed. Compared to KDI catalyst, its modified analogue KDI-M is more active and selective; the optimized grain-size composition and mechanical strength ensures higher yields of iso-butylene and longer nonstop operation (up to 400 days) of the reactor unit.

<http://dx.doi.org/10.1134/S2070050417010093>

Keywords

aluminochromium catalyst, dehydrogenation, fluidized bed, iso-butylene, runlife

References

- [1] Buyanov, R.A. and Pakhomov, N.A., *Kinet. Catal.*, 2001, vol. 42, no. 1, pp. 64–75.
- [2] Kolesnikov, I.M., *Kataliz i proizvodstvo katalizatorov (Catalysis and Catalyst Production)*, Moscow Tekhnika, 2004.
- [3] USSR Patent 492112, 1994.
- [4] RF Patent 1571840, 2000.
- [5] Il'in, V.M., Veklov, V.A., Pavlova, I.N., Kas'yanova, L.Z., Bazhenov, Yu.P., and Saifullina, A.A., *Katal. Prom-sti*, 2004, no. 4, p. 47.
- [6] Taraban, E.A. and Simagina, V.I., *Katal. Prom-sti*, 2002, no. 4, p. 14.
- [7] Pakhomov, N.A., Parakhin, O.A., Nemykina, E.I., Danilevich, V.V., Chernov, M.P., and Pechernichenko V.A., *Catal. Ind.*, 2012, vol. 4, no. 4, pp. 298–307.
- [8] Kotel'nikov, G.R., Bepalov, V.P., Sidnev, V.B., and Kachalov, D.V., *Catal. Ind.*, 2009, vol. 1, no. 1, pp. 66–69.
- [9] Pakhomov, N.A., in *Promyshlennyi kataliz v lektsiyakh (Industrial Catalysis in Lectures)*, Noskov, A.S., Ed., 2006, vol. 6, p. 53.
- [10] Official site of JSC Sinthez-Kauchuk. Catalysts IM-2201, IM-2201 P. <http://www.kauchuk-str.ru/?event=article&cat=19&mes=32>. Cited April 22, 2016.
- [11] Egorova, S.R., Lamberov, A.A., Gil'manov, Kh.Kh., Nesterov, O.N., Kataev, A.N., and Bekmukhamedov, G.E., *Katal. Prom-sti*, 2008, no. 6, p. 47.
- [12] RF Patent , 2008.
- [13] RF Patent 2538960, 2015.
- [14] RF Patent 2271860, 2006.
- [15] RF Patent 2256499, 2005.
- [16] Pinakov, V.I., Stoyanovsky, O.I., Tanashev, Yu.Yu., Pikarevsky, A.A., Grinberg, B.E., Dryab, V.N., Kulik, K.V., Danilevich, V.V., Kuznetsov, D.V., and Parmon, V.N., *Chem. Eng. J.*, 2005, vol. 107, nos. 1–3, pp. 157–161.

- [17] Official site of the Boreskov Institute of Catalysis. Microspherical KDM catalysts for fluidized bed dehydrogenation of paraffins. http://www.catalysis.ru/block/index.php?ID=3&SECTION_ID=1472. Cited April 22, 2016.
- [18] Gil'manov, Kh.Kh., Nesterov, O.N., Lamberov, A.A., Bekmukhamedov, G.E., Kataev, A.N., Egorova, S.R., and Gil'mullin, R.R., *Catal. Ind.*, 2010, vol. 2, no. 3, pp. 270-277.
- [19] Egorova, S.R., Lamberov, A.A., Bekmukhamedov, G.E., Kataev, A.N., Gil'manov, Kh.Kh., Gil'mullin, R.R., and Nesterov, O.N., *Catal. Ind.*, 2011, vol. 3, no. 2, pp. 200-208.
- [20] Bekmukhamedov, G.E., Egorova, S.R., and Lamberov, A.A., *Catal. Ind.*, 2014, vol. 6, no. 1, pp. 44-52.
- [21] Kataev, A.N., Egorov, A.G., Egorova, S.R., and Lamberov, A.A., *Catal. Ind.*, 2015, vol. 7, no. 4, pp. 321-328.