

Abstract

METHOD FOR SELECTIVE HYDROGENATION OF BUTADIENE EXTRACTION TAIL GAS AND SELECTIVE HYDROGENATION APPARATUS THEREOF

The present invention belongs to the field of petrochemical industry, and discloses a method for selective hydrogenation of butadiene extraction tail gas and a selective hydrogenation apparatus thereof. The method for selective hydrogenation of butadiene extraction tail gas comprises: (1) an alkyne-containing tail gas from a butadiene extraction unit is fed into a raw material tank, optionally impurities entrained in the alkyne-containing tail gas are removed before being fed into the raw material tank; (2) a C4 raw material in the raw material tank is pressurized by a feed pump to a pressure required for reaction, then merged with a circulated C4 stream from a first-stage reactor outlet buffer tank and fed into a first-stage mixer, wherein it is mixed with hydrogen gas, and fed into the first-stage reactor to undergo a first-stage hydrogenation reaction, and a first-stage reaction stream obtained by the reaction is fed into the first-stage reactor outlet buffer tank; the hydrogen gas required for the reaction in the first-stage reactor is fed through a first feeding mode or a second feeding mode: the first feeding mode comprises: all the hydrogen gas required for the reaction is fed through the first-stage reactor outlet buffer tank, and then fed into the first-stage reactor through a first route at an outlet of the first-stage reactor outlet buffer tank; the second feeding mode comprises: a part of the hydrogen gas required for the reaction is fed through the first-stage reactor outlet buffer tank, and then fed into the first-stage reactor through the first route at an outlet of the first-stage reactor outlet buffer tank; and the other part of the hydrogen gas is fed through the first-stage mixer, and then fed into the first-stage reactor; (3) there is no gas-phase discharge from the first-stage reactor outlet buffer tank, and a liquid-phase product is divided into at least two streams, the first stream is returned to the first-stage reactor as the circulated C4 stream, and the second stream is used as a feed to a stabilization tower or subjected to further hydrotreatment prior to being fed into the stabilization tower; (4) a C4 hydrogenation product is recovered after separation in the stabilization tower.

[No Suitable Figure]