AROMATIC SATURATION CATALYSTS

AT A GLANCE

CUSTOMER DRIVERS
High sulfur uptake, high activity, low hydrocarbon cracking, easy activation

SOLUTION
Advanced catalysts with maximum nickel dispersion on novel carriers

VALUE DELIVERED
Efficient use of nickel, extended cycle length, low pressure drop, reduced and passivated products

PROOF POINT
Strong history of high performance nickel catalyst products in multiple aromatics saturation applications

History of Proven Performance

In 1997, CRI acquired the catalyst manufacturing and technical expertise of KataLeuna Catalysts. With this purchase came Leuna’s extensive knowledge of nickel catalysts, which dates back to the early 1930’s. In 2001, CRI launched KL6564, an impregnated nickel catalyst. Over thirty-five catalyst charges have since been sold and operated. Today, KL6564 remains a preferred industry catalyst. In 2002, CRI launched the bulk nickel catalyst, KL6515. Over twenty charges have been installed and have exhibited superior performance.

Figure 1: KL6565-TL1.2

CRI’s track record of continuous catalyst improvement carries on with the development of CRI’s latest generation of impregnated nickel catalyst, KL6565 and a new high-capacity bulk nickel catalyst, KL6516.

Introduction

Multiple chemical/petroleum applications require complete hydrogenation (saturation) of aromatics in the product. The catalyst of choice depends on the feed properties (sulfur concentration, poison levels, etc.), the type of aromatics (mono, di, tri, poly), the degree of saturation targeted, and the unit operating constraints. CRI offers a broad range of nickel catalysts, allowing customers to select a product which best fits their individual needs. The majority of applications make use of either an impregnated or bulk nickel catalyst in an extruded form.
Catalyst Activation
CRI’s nickel catalysts are offered in a reduced and passivated form, allowing for low temperature activation. In addition, the catalysts are air passivated, dramatically reducing the risk of high temperature methanation reactions during the activation process.

Aromatic Saturation Applications
Aromatic saturation applications are highly diverse, and include areas such as resin hydrogenation, benzene removal, solvent purification, and white oil production. These catalysts operate under a broad range of conditions with temperatures ranging from 100 to 300°C, and pressures from 10 to 110 bar, as well as operating in trickle phase or gas phase systems. CRI delivers aromatic saturation catalysts designed to work under this wide range of conditions.

Full Line of Aromatics Catalyst Products
CRI offers specialized aromatic saturation catalysts, including nickel catalysts for the production of chemical-grade cyclohexane, and precious metal catalysts for high-sulfur feeds. In addition, CRI can offer custom catalyst solutions for customer-specific aromatic saturation goals.

Contact Us
E-mail at: cricatalystsales@cri-criterion.com

PROOF POINT
In 2002, KL6515 displaced a competitive nickel product in a high-poison application. The previous catalyst cycle was 6 to 9 months. The first charge of KL6515 lasted over two years, and subsequent charges have repeated this stellar performance. The site has been able to reduce the number of catalyst changes by > 65%.

Impregnated Nickel Catalyst
CRI impregnated catalysts maximize nickel surface area through optimal metal dispersion as demonstrated with CRI’s KL6564. This exemplary catalyst achieves high aromatic saturation activity with 28 wt% nickel content. The catalyst has also proven to give low hydrocarbon cracking characteristics, a desirable property, especially for lighter feeds. The new KL6565 catalyst delivers higher aromatic saturation activity with the same nickel content. In some applications, KL6565 has demonstrated an activity gain of >50% compared to KL6564.

Bulk Nickel Catalyst
Bulk nickel catalysts are designed for high activity with maximum tolerance to poisons. The most common poison in these applications is sulfur. CRI’s KL6515 exhibits up to 40% higher sulfur tolerance versus the impregnated KL6564. Since market introduction in 2002, the higher poison tolerance of KL6515 has been proven commercially in numerous applications.

Figure 2: Relative Sulfur Capacities
CRI’s newest bulk nickel catalyst KL6516 represents a step-out in performance by dramatically increasing poison tolerance. As shown in Figure 2, KL6516 displays a sulfur tolerance over 100% greater than KL6564.