

Redefining sustainability in cosmetics and personal care

The Eastman™ green biocatalytic process

Every day cosmetic & personal care (C&PC) products enrich the lives and improve the well-being of billions of people. A powerful trend in this market is the use of sustainable and renewable ingredients. As a dedicated supplier to this market, Eastman has developed a customized approach to producing C&PC ingredients via a green process that redefines efficiency and environmental responsibility.

Key Benefits:

- **Low energy consumption**
- **Operates at low temperatures and uses no solvents or strong acids**
- **Adheres to the EPA's Twelve Principles of Green Chemistry**
- **Utilizes natural source material to produce natural ingredients**

What exactly is the process?

The Eastman™ green biocatalytic process uses enzymes and closely controlled conditions to produce esters, an important class of cosmetic ingredients that includes actives, emollients and emulsifiers. This green biocatalytic process is a breakthrough because it avoids high temperatures, strong acids, potentially hazardous solvents and consumes significantly less energy than conventional esterification processes.



**Winner of the
2009 Presidential
Green Chemistry
Challenge Award**

EASTMAN

Eastman Chemical Company Corporate Headquarters

P.O. Box 431
Kingsport, TN 37662-5280 U.S.A.

Telephone:

U.S.A. and Canada, 800-EASTMAN
(800-327-8626)

Other Locations, (1) 423-229-2000

Fax: (1) 423-229-1193

Eastman Chemical Latin America

9155 South Dadeland Blvd.

Suite 1116

Miami, FL 33156 U.S.A.

Telephone: (1) 305-671-2800

Fax: (1) 305-671-2805

Eastman Chemical B.V.

Fascinatio Boulevard 602-614
2909 VA Capelle aan den IJssel
The Netherlands

Telephone: (31) 10 2402 111

Fax: (31) 10 2402 100

www.eastman.com

Eastman (Shanghai) Chemical Commercial Company, Ltd. Jingan Branch

1206, CITIC Square
No. 1168 Nanjing Road (W)
Shanghai 200041, P.R. China

Telephone: (86) 21 6120-8700

Fax: (86) 21 5213-5255

Eastman Chemical Japan, Ltd.

AIG Aoyama Building 5F
2-11-16 Minami Aoyama
Minato-ku, Tokyo 107-0062 Japan

Telephone: (81) 3-3475-9510

Fax: (81) 3-3475-9515

Eastman Chemical Asia Pacific Pte. Ltd.

#05-04 Winsland House
3 Killiney Road
Singapore 239519

Telephone: (65) 6831-3100

Fax: (65) 6732-4930

Material Safety Data Sheets providing safety precautions, that should be observed when handling and storing Eastman products, are available online or by request. You should obtain and review the available material safety information before handling any of these products. If any materials mentioned are not Eastman products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed.

Neither Eastman Chemical Company nor its marketing affiliates shall be responsible for the use of this information, or of any product, method or apparatus mentioned, and you must make your own determination of its suitability and completeness for your own use, for the protection of the environment and for the health and safety of your employees and purchasers of your products. NO WARRANTY IS MADE OF THE MERCHANTABILITY OR FITNESS OF ANY PRODUCT, AND NOTHING HEREIN WAIVES ANY OF THE SELLER'S CONDITIONS OF SALE.

Eastman and The results of insight are trademarks of Eastman Chemical Company.

© Eastman Chemical Company, 2009.