Caytur®

CAYTUR® curative is a delayed-action diamine curative made primarily for use with urethane pre-polymers. It consists of a complex of methylene dianiline (MDA) and sodium chloride dispersed in dioctyl adipate. At room temperature, it is virtually non-reactive with pre-polymers. However, when heated to 115-160oC (235-320oF), the salt complex is unblocked and the freed MDA rapidly cures the pre-polymer, forming a tough elastomer.

CAYTUR curative products are for industrial use only by companies with the appropriate chemical handling capabilities.

Identification

CAYTUR curatives are comprised of MDA particles blocked with sodium chloride dispersed in a plasticizer such as dioctyl adipate. Up to 2% free MDA might be present in the product. LANXESS-branded products include:

- CAYTUR 31 DA
- CAYTUR 21 DA
- CAYTUR 21

Description

CAYTUR curative products are used by urethane pre-polymer processors as a curing/hardening agent. Processors react toluene diisocyanate (TDI) or diphenylmethane diisocyanate (MDI) pre-polymers with CAYTUR to produce various industrial parts such as skateboard wheels, golf balls, industrial rollers and pipeline pigs (to name just a few applications).

Physical/Chemical Properties:

CAYTUR curative products are white milky liquids at room temperature and normal atmospheric pressure. The storage stability of the CAYTUR curative appears to be unlimited at room temperature and at least several months at 50oC (122oF). However, it is recommended that CAYTUR curative be stored at room temperature. CAYTUR curative needs to be rolled after prolonged storage to provide adequate remixing and ensure

homogeneity prior to use. Storage or handling above 50oC (122oF) is not recommended, since the complex may liberate additional free MDA.

Health Effects:

Free Methylene dianiline (MDA), which is present up to 2% in CAYTUR curatives, has been shown to produce cirrhosis of the liver and kidney damage in rats and dogs in experimental studies. It is known to have caused hepatitis in industrial workers in the early 1970s. MDA is considered to be a "potential human carcinogen" and has been added to the 1984-1985 ACGIH Appendix A.

The ACGIH has established a TLV for MDA of 0.1 ppm for an eight-hour TWA exposure. Since MDA is complexed with sodium chloride and dispersed in dioctyl adipate, dust exposure has been eliminated and, at recommended handling and processing temperatures, there is no risk of vapor exposure to MDA.

The main route of potential exposure is via skin contact. CAYTUR curative can cause allergic skin reactions and eye irritation. The use of appropriate protective clothing and gloves is required.

Potential Environmental Impact

CAYTUR curative is not presently regulated under the Resource Conservation and Recovery Act (RCRA), as of the Federal Register of May 19, 1980. However, disposal should be made in an appropriate manner. CAYTUR curative can be disposed of by allowing it to react with isocyanate-terminated polymers containing excess isocyanate groups. It may be incinerated by an approved waste handler. Disposal must be in accordance with local, state, and federal regulations.

Product Stewardship:

Manufacturing Locations:

Facility process safety management procedures, Safety Data Sheets (SDSs) and training programs are in place to communicate safe handling, risk mitigation measures and emergency response information and requirements to employees where CAYTUR curative is made and handled.

Processors/Users:

Risk mitigation measures for the processors during use of the product are mandated by the regulatory agency having jurisdiction (for example, the U.S. EPA) and are communicated to the user through the product label. Additional information is also found on the product SDS.

Environment:

Protective measures for the environment during use of the product are mandated by the regulatory agency having jurisdiction and are communicated to the user on the product label. Additional information is also found on the product SDS.

LANXESS SOLUTIONS US INC. conducts a lifecycle analysis of existing products to evaluate potential risk areas throughout the products' life cycles. Elements evaluated include raw materials, manufacturing, transportation, customer end use and disposal. New products are evaluated using environmental, health and safety (EHS) criteria. Additionally, before changes in existing product formulations are made, a detailed evaluation is made of the proposed change. A critical component of all of these processes is the SDS, which lists product hazard information.

Potential product risks are reviewed according to current controls. In the context of a continually improving risk-reduction program, periodic reviews of current controls occur in order to identify opportunities for improvements or enhancements.

Exposure Potential:

Industrial Use:

CAYTUR curative is commonly used as a hardener for polyurethane pre-polymers. It is not sold to the general public. CAYTUR curative is sold for industrial applications to processors of urethane-based parts and equipment.

Environmental Release – Industrial Use:

CAYTUR curative products react with polyurethane pre-polymers with the application of heat. Once reacted, CAYTUR curative and pre-polymers form a polyurethane elastomer, which has no reactive groups. Consequently, release of MDA while using CAYTUR curative is not likely during proper industrial use. However, MDA may be released if a spill of CAYTUR curative is not properly treated as mentioned above.

Regulatory Compliance:

CAYTUR curative is listed on the numerous chemical inventories for countries or regions such as TSCA in the US and DSL in Canada (as examples). CAYTUR curative is registered as a “non-dangerous good” at the various transportation agencies such as DOT, TDG and IMDG (as examples).

Conclusion

CAYTUR curative products are used as a curative/hardener for urethane pre-polymers. Protective measures for the users are mandated by the label and the SDS, and these requirements are emphasized in training programs. The product is only sold to urethane processors. The general public cannot purchase or use CAYTUR curative products and are unlikely to encounter them in their daily lives.

References/Resources:

The SDS and additional information regarding the CAYTUR curative can be found on the LANXESS web site: www.LANXESS.com.

Additional information and resources on MDA can be found at the following web sites:

- U.S. Environmental Protection Agency – Integrated Risk Information System (IRIS)
- http://www.epa.gov/ncea/iris
- U.S. Environmental Protection Agency: www.epa.gov/ttn/atw/hlthef/meth-dia.html
- U.S Department of Labor – Occupational Safety and Health Administration (OSHA)
- http://www.osha.gov/dts/chemicalsampling/data/CH_253500.html
- American Conference of Governmental Industrial Hygienists (ACGIH)
- http://www.acgih.org

Contact Information

For more information, please contact us by our web site: http://www.LANXESS.com

Notices

Use and Application Information

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to

the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.