

QUALITY PROTECTS.



Velcorin® technology is a cold sterilization agent that protects against beverage spoiling microorganisms while maintaining the natural flavor, color and odor.

X Velcorin®

QUALITY WORKS.

LANXESS
Energizing Chemistry

YOUR CHALLENGES OUR TECHNOLOGY MADE IN GERMANY

As a manufacturer in the beverage industry, you are faced with increasingly tough challenges; there is an ongoing need to develop new beverages (e.g., with added health benefits) while maintaining high production standards and ensuring that the drinks are protected against spoilage.

Microorganisms, such as yeasts, molds and bacteria, do not only affect the quality and sensory characteristics of the drink, but they can, in certain circumstances, endanger the health of consumers.

Microorganisms are everywhere when bottling beverages – in the ambient air, the production plants, the caps and in the drinks themselves. As the manufacturer, you can choose between a variety of different methods to stabilize your drinks. Among the available methods, cold sterilization with Velcorin® has successfully established itself as one of the top technologies.

CONVINCING PROTECTION REAL FLAVOR

Velcorin® (dimethyl dicarbonate or DMDC), even at low doses, is highly effective against most typical microorganisms that can spoil drinks. Velcorin® safeguards the quality of beverages with no impact on the taste or color of the drink.

Characteristics of Velcorin®:

- Highly effective against most common microorganisms
- No impact on taste or color
- Cost-effective
- Compatible with most types of packaging
- Application-specific advice and services

Benefits of Velcorin®:

- Potential extended shelf-life for chilled-chain products
- Replacement of artificial preservatives
- Clean-label technology
- Not present in final product

BROAD RANGE OF APPLICATIONS

- **Carbonated & still juice drinks**
- **Isotonic sports beverages**
- **Iced teas**
- **Flavored waters**
- **Wines, ciders, fruit wines**
- **Malt-based beverages/shandies**



UNCOMPROMISING AGAINST MICROORGANISMS

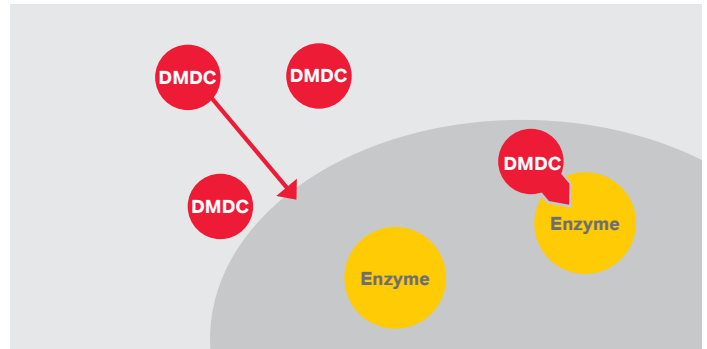
Velcorin® may be added during production of the beverage, or immediately prior to packaging. Even at low concentrations, Velcorin® can be very effective against typical microorganisms such as yeast, bacteria and molds.

How does Velcorin® work?

Velcorin® penetrates the cell and deactivates enzymes, causing the microorganisms to die.

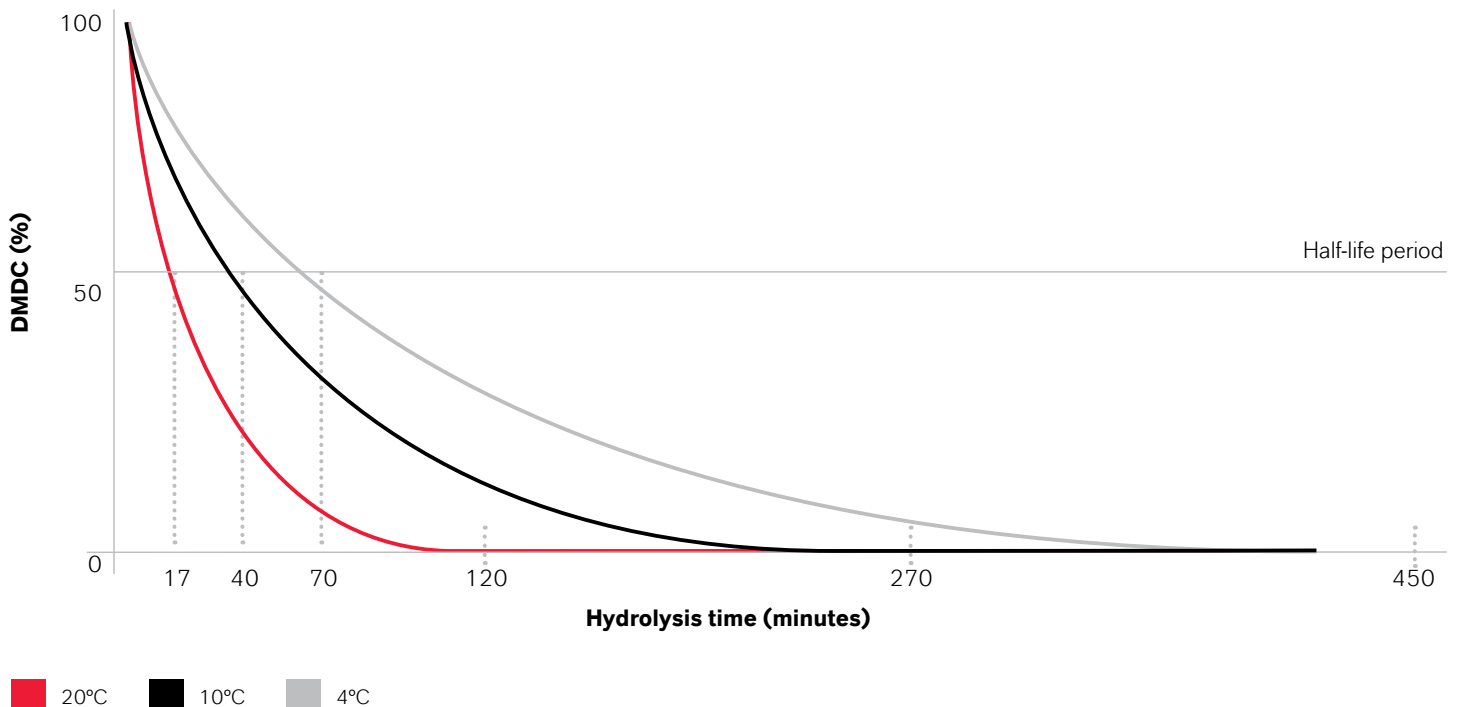
Once added to the beverage, Velcorin® rapidly breaks down into negligible amounts of methanol and carbon dioxide, two naturally occurring compounds often found in many beverages, such as fruit and vegetable juices and wines. Consequently, Velcorin® has no effect on the taste, color, or smell of the beverage.

A simplified illustration of how DMDC works



What is Velcorin®?	
Composition	99.8% Dimethyl dicarbonate (DMDC)

Breakdown (hydrolysis) of Velcorin® in beverages



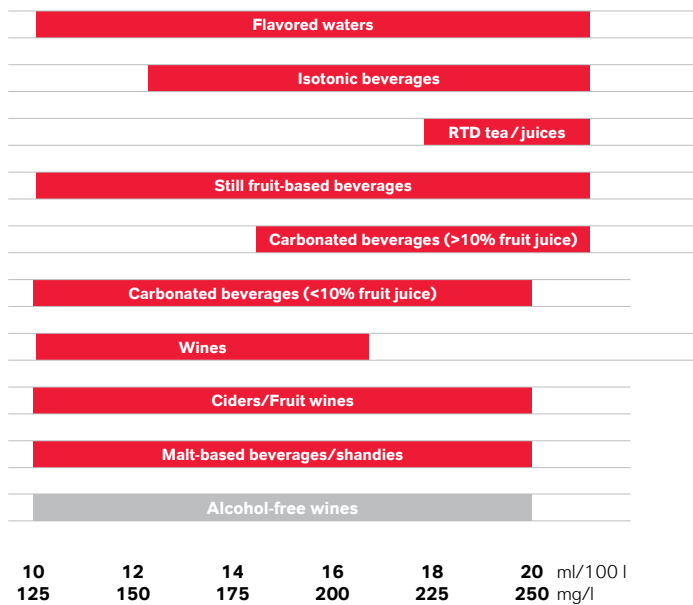
As with any product, use of Velcorin® in a given application must be tested (including field testing, etc.) by the user in advance to determine suitability.

Page 3 of 8: This document contains important information and must be read in its entirety.

VELCORIN® – HAS A BENEFICIAL EFFECT

It is clear that consumers are always searching for new and authentic flavors. It is easy to see why you can fully rely on Velcorin® during the filling process when you place particular importance on the product quality and authentic taste of your drinks.

Standard dosing



Exposure data on microorganisms

Minimum lethal concentrations of Velcorin®; populations of up to 500 cfu/ml

Velcorin® mg/l	
Yeasts	
<i>Candida krusei</i>	100-200
<i>Hansenula pichia</i>	25-50
<i>Kloeckera apiculata</i>	25-50
<i>Rhodotorula rubra</i>	50-200
<i>Saccharomyces cerevisiae</i>	25-100
<i>Saccharomyces diastaticus</i>	50-200
<i>Saccharomyces globosus</i>	25-50
<i>Zygosaccharomyces bailii</i>	50-150
Molds	
<i>Aureobasidium pullulans</i>	150-250
<i>Byssochlamys fulva</i>	100-150
<i>Penicillium glaucum</i>	150-200
Bacteria	
<i>Acetobacter pasteurianus</i>	50-100
<i>Lactobacillus brevis</i>	150-200

USED AROUND THE WORLD

The use of Velcorin® is approved for a wide range of different beverages around the world. Beverage manufacturers are responsible for ensuring that they meet all local legal requirements, including compliance for import/export activities. Prominent bodies, such as the EU Scientific Committee on Food, the FDA in the United States and the JECFA of the WHO, have all confirmed that dimethyl dicarbonate is safe for use in the beverage industry. The production of Velcorin® is certified according to ISO 9001:2015, ISO 14001:2015, ISO 22000:2005 and FSSC 22000 V4.1. Velcorin® also is certified to meet Halal and Kosher requirements.

VELCORIN® DT TOUCH – DOSING TECHNOLOGY

LANXESS now provides truly full-service Velcorin® technology for sterilization of your beverages.

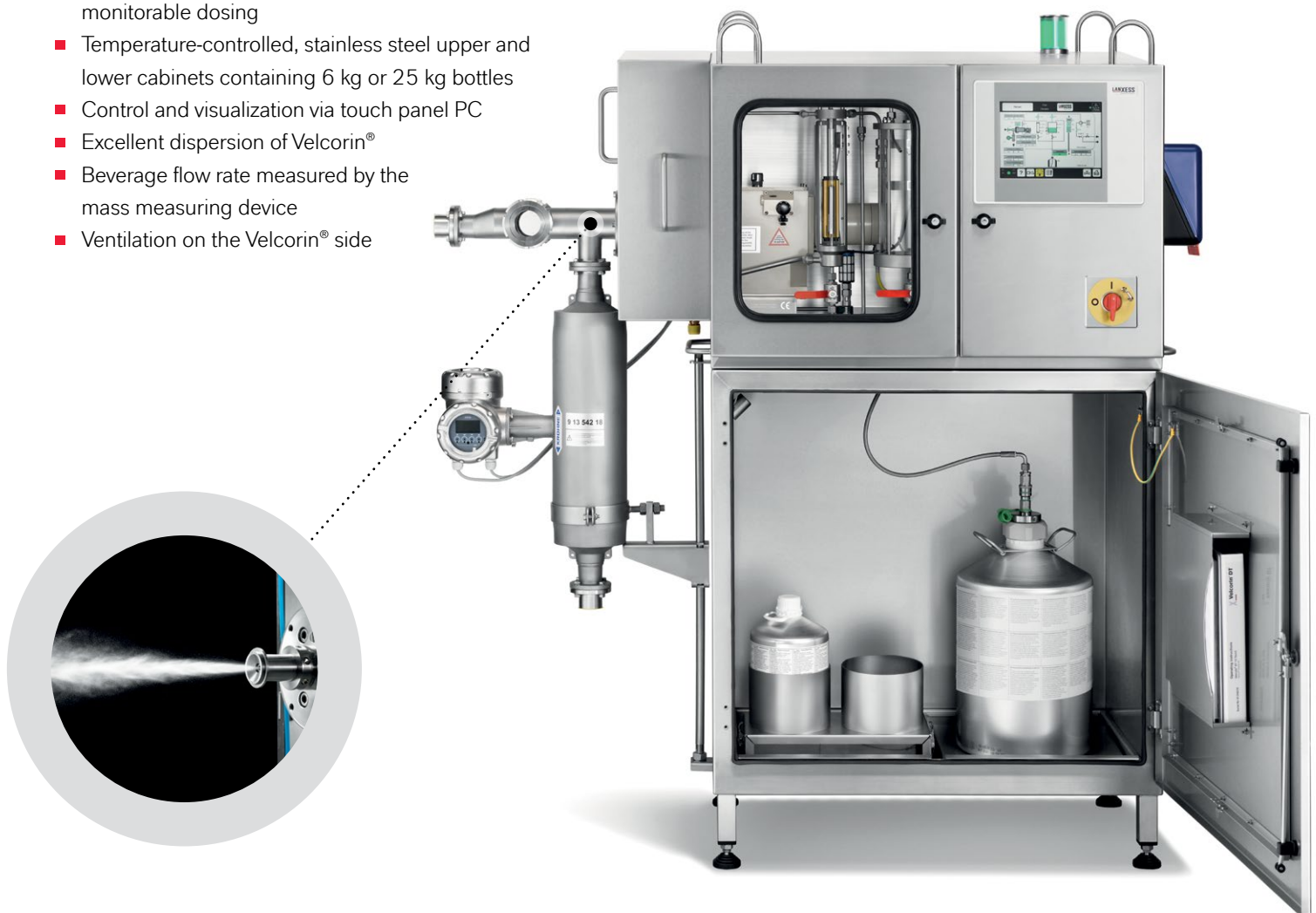
By providing Velcorin® dosing equipment in addition to Velcorin®, LANXESS not only provides a highly effective anti-microbial agent for the cold sterilization of your beverage, but also a convenient system for incorporating the agent into your beverage. LANXESS requires Velcorin® only be used with the authorized Velcorin® dosing systems.

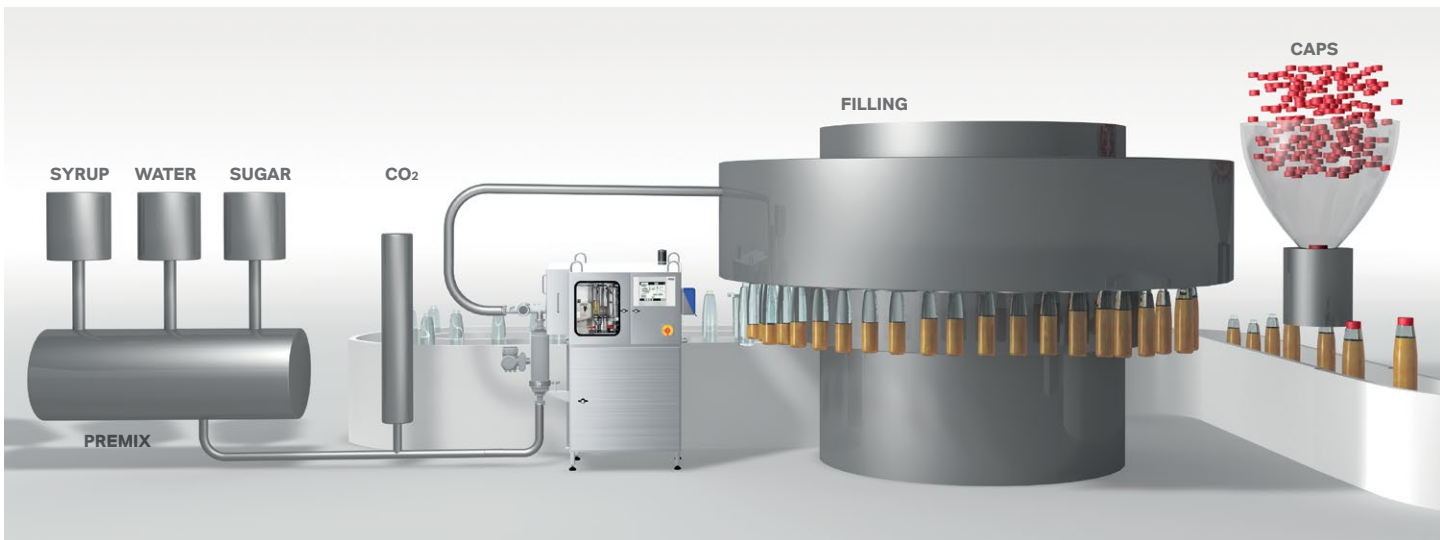
Features of Velcorin® DT Touch:

- High-quality and robust metering pump with monitorable dosing
- Temperature-controlled, stainless steel upper and lower cabinets containing 6 kg or 25 kg bottles
- Control and visualization via touch panel PC
- Excellent dispersion of Velcorin®
- Beverage flow rate measured by the mass measuring device
- Ventilation on the Velcorin® side

Control and visualization of dosing process

- Incorporable into the electronic control system of the filling line
- Automatic display of messages, warnings and maintenance intervals
- System visualization in a dynamic flow chart
- Clear overview of the target and actual values
- Data storage
- Data transfer via USB
- Various operator levels/access rights





The Velcorin® dosing pump is installed in new or existing filling lines. Only minor modifications to the filling line are required for this purpose.

Sizes

Model range	Min. beverage flow rate l/h	Max. beverage flow rate l/h	Max. Metering rate* ml/hl	Connections in DN (mm)
DT 3 Touch	600	3,600	20	40
DT 6 Touch	1,200	7,200	20	40
DT 13 Touch	2,400	14,400	20	50
DT 18 Touch	3,600	21,600	20	50
DT 30 Touch	6,000	36,000	20	50
DT 50 Touch	8,400	50,400	20	80
DT 75 Touch	13,200	79,200	20	80

* (ml Velcorin®/hl beverage) maximum permissible dosing rate depends on the product and country registration.



ALWAYS ON HAND

Comprehensive services and benefits for our customers

Technical Services

On-site support from our technical experts

- Technical evaluation and consultancy
- Line assessment and gap analysis
- Support of lab and industrial trials
- Training of personnel in Velcorin® product handling

Lab Services

Fully equipped beverage laboratory with various analytical capabilities

Microbiology and molecular biology laboratory

- Isolation and identification of beverage-spoiling microorganisms
- Efficacy tests
- Optimization of preservative usage
- Support of hygienic monitoring

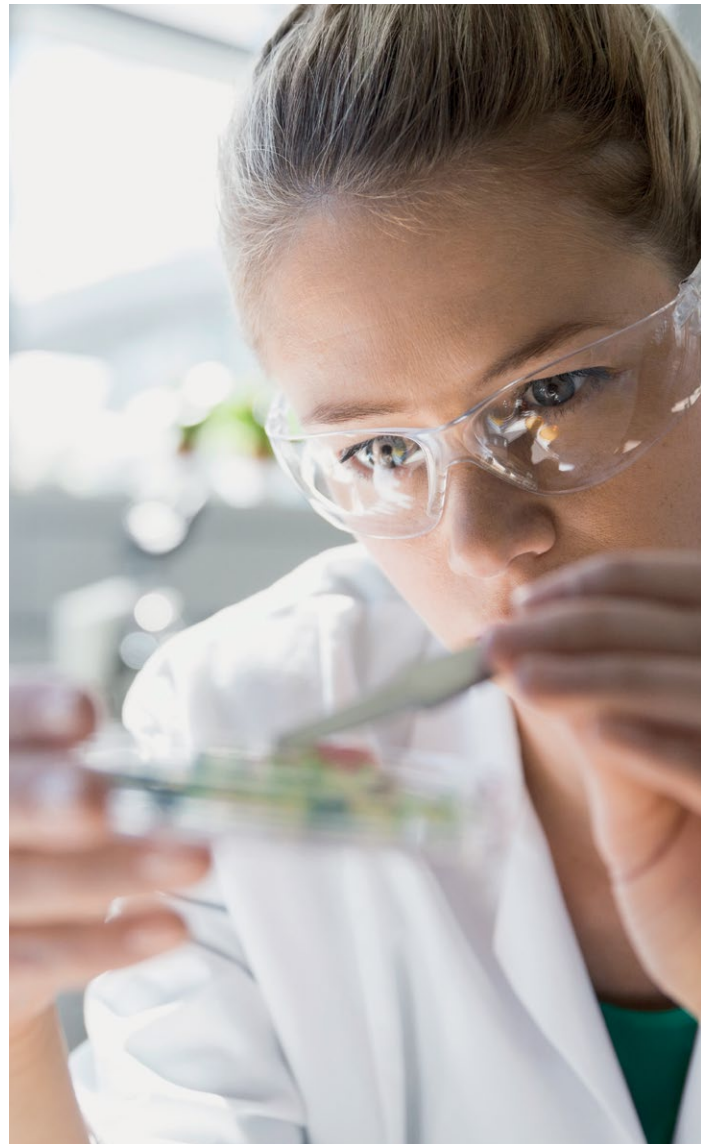
Analytical laboratory

- Determination of Velcorin® dosage, as well as other common preservatives
- Testing of key beverage quality parameters
- Existing strong network with external laboratories for further microbiological and analytical testing

Dosing Technology

Certified state-of-the-art equipment – Made in Germany

- Commissioning
- Training
- Service hubs all over the world
- Full-service package, including preventive maintenance
- 24/7 service hotline
- Unit leasing available on request



What can we do for you?

We look forward to each new challenge – and our next conversation with you!

www.velcorin.com



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Health and Safety Information: Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the LANXESS products mentioned in this publication. For materials mentioned which are not LANXESS products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., safety data sheets and product labels. Consult your LANXESS Corporation representative or contact the Product Safety and Regulatory Affairs Department at LANXESS.

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.

Velcorin is a hazardous substance according to the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200).

All of the brands are protected brands of the LANXESS Group, unless specified otherwise.
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Please contact LANXESS Corporation to determine if this publication has been revised.