



**VELSICOL**  
CHEMICAL LLC



# Velsiflex<sup>®</sup> in Waterborne Adhesives

**ADHESIVE. INGCINA. MALAGKIT. TENACES.**

Adhesives span the globe in countless applications which are more varied than the spoken languages that refer to them.

Whatever you call an adhesive, there are certain universals. Adhesives are based on medium molecular weight polymers that can use some help in surface wetting, polymer coalescence, flexibility, Tg suppression, solvation, even adhesion. There's an incredible number of adhesive formulas and applications in this world. But whatever the chemical type, physical form, fluid delivery system or service requirement, there is high probability that a Velsiflex<sup>®</sup> plasticizer can help achieve your product goals.

## PROFILE

Velsicol Chemical LLC is a specialty and commodity chemical company that manufactures, distributes and sells a diverse range of performance chemicals. Velsicol is the world market leader in cyclopentadiene chemistry, including Hexachlorocyclopentadiene and Chlorendic Anhydride. We are also a leading producer and marketer of benzoate plasticizers for various polymer additive applications with our Velsiflex® branded product line. This product portfolio serves a wide range of customers and end-use applications in the unsaturated polyester resin market as well as the flame retardant, epoxy resin, adhesive, caulk, paint and coating, PVC and plastisol markets. Velsicol recently re-entered the benzoic acid market and is a testament to its commitment to upstream integration.

Velsicol has been in business since 1931, and through the years, we have shown that we will not compromise on our core values of **SERVICE, QUALITY AND PRODUCT STEWARDSHIP**. Together, these values define our day-to-day approach of working with our customers on a solutions-focused and value-added basis of doing business. We are a company that has a long history of partnering with our customers with many long-standing relationships that have lasted multiple decades.

Velsicol's global corporate headquarters is in suburban Chicago near O'Hare International Airport. We also have strategic manufacturing, distribution, and sales and marketing offices located all over the world in support of a global and multinational customer base.

## HISTORY

Velsicol is a company rich in history, dating back to its formation in 1931. Initially, the company was involved in selling petroleum-derived chemicals. Over the years, the company was also heavily involved in various agricultural-related businesses, providing a wide range of pesticides and insecticides. In the 1980s, Velsicol was taken private when the company became more focused on benzoic acid and derivatives and more specifically, plasticizers.

In 2005, the company was purchased by Arsenal Capital, a private equity firm. At that time, the focus of the company continued to be investing in high-performance and specialty chemicals. In 2010, a sister company of Velsicol's, Genovique Specialties, was sold. In 2011, Velsicol formed Resnovae Technologies, a business that sells a wide range of brominated and halogen-free flame retardants. In 2012 Velsicol was sold to its current management team whose members have all been with the company for many years. Today the business is run as a privately owned company by this management team.

Throughout its long and storied history, Velsicol has grown to become a global business that continues to focus on the basics of building a strong foundation that is anchored with a solid set of values. Forging partnerships with its customers, suppliers and communities commands its attention, as does maintaining a commitment to the specialty chemicals market.

With more than 80 years' experience under its belt, Velsicol is a company that is fully focused on sustainable growth, both organically and inorganically. The Velsicol of today and tomorrow will carry on the tradition and commitment to its core values of **SERVICE, QUALITY AND PRODUCT STEWARDSHIP**.

## HISTORY - TIMELINE





## VELSIFLEX® PRODUCT PORTFOLIO

Velsiflex plasticizers are an environmentally friendly option for formulators looking for an alternative to commodity and specialty phthalate esters. Velsiflex products are based on benzoic acid as a building block and are used in a number of applications, including adhesives, sealants, caulk, coatings and inks, plastisol and various flexible PVC uses. Velsiflex plasticizers are recognized as high-solvating, polar, monomeric plasticizers. In most cases, they provide superior performance compared to other plasticizers in the area of compatibility with the polymer, efficiency or desired softness and the overall permanence of the ester staying in the polymer. Velsiflex plasticizers are performance-adding low- to medium-viscosity fluid esters in a wide range of plastic additive end uses.

### VELSIFLEX 320

Velsiflex 320 is a proprietary blend of benzoate esters. This blend is typical of dibenzoate plasticizers and is formulated for waterborne latex applications to optimize efficiency and cost effectiveness. Like all Velsiflex products, it has full FDA approvals for adhesives.

### VELSIFLEX 328

Velsiflex 328 is a blend of dipropylene glycol and diethylene glycol dibenzoate in an approximately equal ratio. Velsiflex 328 is primarily known for its exceptional performance in polyvinyl acetate adhesives. It displays excellent wet tack, set times and open time performance. It also improves adhesion to acrylic latex caulks and is a high-solvating PVC plasticizer.

### VELSIFLEX 342

Velsiflex 342 is one of the most popular liquid plasticizers. It is a high-solvating plasticizer containing mostly dipropylene glycol dibenzoate. It is used in a wide variety of applications, including caulk, adhesives, resilient flooring, PVC-coated fabrics and artificial-leather cloth. In PVC, it acts as a medium-viscosity high solvator that saves energy and improves processability. Vinyl applications using Velsiflex 342 have excellent resistance to extraction from solvents and oils. It also works with vinyl to make it UV – light-degradation resistant and stain resistant.

### VELSIFLEX 342 S

Velsiflex 342 S is mostly dipropylene glycol dibenzoate. It is a lower moisture/lower hydroxyl plasticizer. It has been widely used in 2K polyurethane systems to reduce cure interface, which also provides better rebound, improved tear strength and reduced swell with solvents. It is also used in many polysulfide sealant applications and has proven to be a very efficient ester from a softening agent perspective.



**DO YOU HAVE ANY QUESTIONS? NEED MORE INFORMATION?**

Call us now at 1 877-847-8351 or email us [customerservice@velsicol.com](mailto:customerservice@velsicol.com)

## TRANSLATING SOLVENCY INTO PERFORMANCE

Plasticizers are judged first by their solvency – they are solvents that don't evaporate. And Velsiflex is among the best nonvolatile solvents available to the formulator, bringing a host of benefits to product performance, especially in construction adhesives and mastics. In many cases, Velsiflex can replace volatile (VOC) solvents, helping you move to the next level of regulatory compliance or over the next sustainability hurdle.

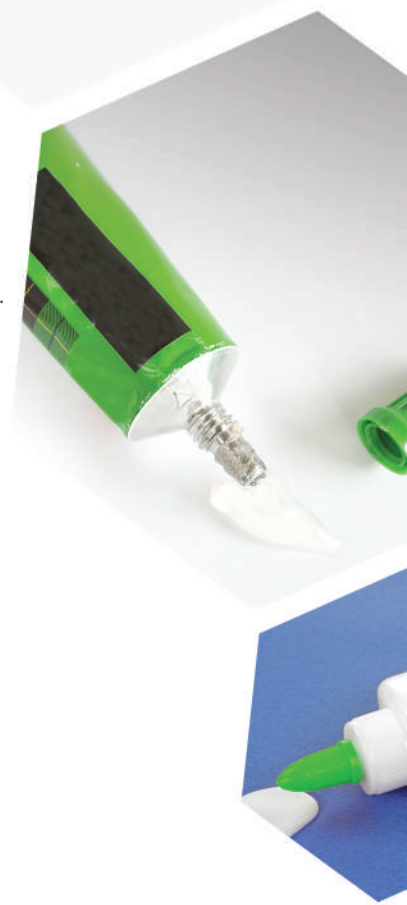
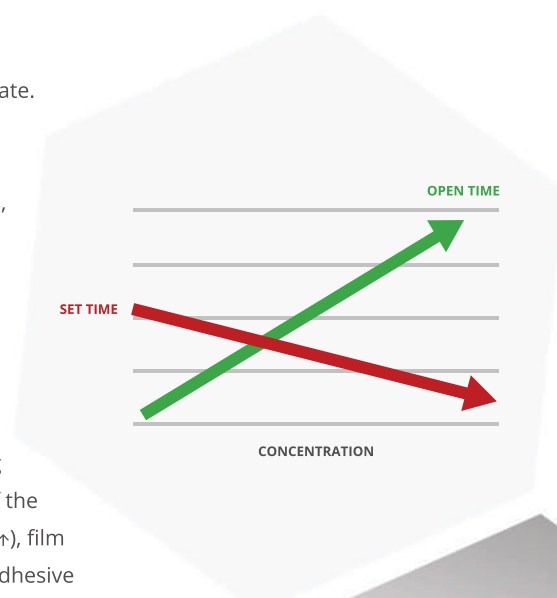
## WATER. AMANZI. TUBIG. AQUA.

The experienced formulator knows that water is the continuous matrix of choice for adhesives because it is benign and available, but it brings major compounding challenges. One of the first is the choice of coalescent to maximize the benefits of the polymer dispersion, and to achieve advantage in set time ( $\downarrow$ ), open time ( $\uparrow$ ), tack ( $\uparrow$ ), film formation temperature ( $\downarrow$ ), surface wetting ( $\uparrow$ ), Tg ( $\downarrow$ ), viscosity response ( $\uparrow$ ) and adhesive strength ( $\uparrow\downarrow$ ). Velsiflex makes that first choice an easy one, whether your adhesive is aimed at assembly or laminating.

## LANGUAGE (AND CHEMISTRY) ARE THE PROPERTY OF THE IMAGINATION

Many of the most innovative adhesives now available are 100% solids based on liquid reactive polymers. These systems depend heavily on compatibilization without use of volatile (VOC) solvents. Velsiflex provides the solvency, permanence and reliability of supplied quality that are so critical to these innovative technologies.

Velsiflex 320 and Velsiflex 328 are excellent choices for waterborne adhesives. Where a higher solvating characteristic is sought Velsiflex 342 is the recommended choice.



### GLOBAL CORPORATE HEADQUARTERS

Velsicol Chemical LLC  
10400 W. Higgins Road Rosemont, IL 60018  
877 847 8351 847 813 7999  
[www.velsicol.com](http://www.velsicol.com)



The information and recommendations herein are presented in good faith and Velsicol Chemical, LLC makes no representations or warranties as to the completeness or accuracy thereof. It is important that you determine the suitability and completeness of this information for your own use, for the protection of the environment and for the health and safety of your employees and purchasers of your products. Nothing contained herein is to be construed as a recommendation to use any product, process, equipment, or formulation in conflict with any patent. We make no representations or warranties, express or implied that the use thereof will not infringe any patent. No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers and nothing herein waives any of the seller's conditions of sale.

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