



VELSICOL
CHEMICAL LLC

Velsiflex[®] Plasticizers

ADVANTAGE – POLYURETHANE

Polyurethanes are everywhere in your life – the car you drive to work, the furniture you sit on at the office, the gym track you exercise on, the bed you sleep on. Polyurethanes are such a large part of your world because they are high performance materials and high performance materials need high performance modifiers to help them meet the demanding tasks and functions they are designed for. Velsiflex plasticizers bring advantages to polyurethanes by enhancing their functionality and by broadening the range of their applications.

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

HELPING TO KEEP YOUR WORLD DRY AND COMFORTABLE

Polyurethane sealants for industry and construction have an unrivaled reputation for flexibility, toughness, adhesion and compatibility. It is a well-deserved reputation because the urethane offers significant versatility. These urethane sealants need high permanence, and highly efficient plasticizers to optimize tensile modulus and adhesion. High-performance urethane sealants with minimal shrinkage could not exist without the aid of high performance plasticizers such as Velsiflex 342 S. Its chemical structure brings out the best attributes of the urethane sealant. And for urethane sealants that rely on "PVC gelation", Velsiflex 342 S is a highly effective primary plasticizer.

SAFE AND DEFECT-FREE

Many of the fastest-growing polyurethane markets are served by TPU's (thermoplastic urethanes). TPU's are engineering plastics, called on to provide very high levels of service in many applications; they provide the properties normally associated with highly crosslinked products but with the manufacturing convenience and cost of thermoplastics. We ask a lot from TPU's and sometimes they can be stretched close to the limit of performance. Velsiflex 342 S, when incorporated even at low levels, can provide dramatic reduction in stress cracking of TPU's.

KEEPING YOU (AND YOUR KIDS) ON YOUR GAME

Polyurethanes are widely used as elastic binders in specialty flooring, especially in sports tracks and playground safety surfaces. They provide tremendous rebound in the surfaces, reducing fatigue for the weekend athlete and providing added safety for the toddler on the playground. Velsiflex 342 S enhances system compatibility, and delivers permanence in weathering and flexibility even at the coldest outdoor conditions.

VERSATILE, ADAPTABLE, BUT PRECISION COUNTS

Critical to understanding polyurethanes is recognition that the urethane reaction is a precise reaction, requiring an optimum balance of raw materials. In plasticizers, this means that hydroxyl content/hydroxyl number must be at a very low and reproducible level from one batch to another. With an established track record and precise manufacturing process, Velsiflex 342 S provides the confidence that the engineer or polymer scientist must have in the selection of raw materials.

BETTER BONDING, CLEANER AIR

Compounded polyurethane adhesives, especially for construction, require compatibilization of many formulating inputs. With its outstanding solvency and permanence, Velsiflex 342 S provides the best of two worlds – the ability to combine a range of raw materials with the durability of a premium plasticizer without the VOC solvents or phthalates you seek to formulate out of your product portfolio.



GLOBAL CORPORATE HEADQUARTERS

Velsicol Chemical LLC
10400 W. Higgins Road Rosemont, IL 60018
877 847 8351 847 813 7999
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, nor 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.

