



PLASTICS REFERENCE HANDBOOK

REGAL PLASTIC SUPPLY COMPANY

PLASTICS REFERENCE HANDBOOK

regal

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Established in 1954, Regal Plastic Supply Company is considered one of the foremost pioneers in the plastic distribution industry. Throughout the years, the innovative “customer-oriented plan for success” thinking has become a credible trademark our customers rely on. Fortifying that philosophy, Regal introduced its Plastic Materials Reference Guide in 1984. As products and industries continue to evolve, so does this compilation of technical data. We view providing our customers with tools for effective planning and purchasing as important as meeting product “supply and demand”. You will find this guide an invaluable reference source for researching or finding the answer pertaining to your plastic application. The product information contained herein covers the most commonly used materials; it does not reflect our total capacity.

True customer service is a thought process not developed overnight. Our experience and stability in the industry gives Regal the opportunity to assist you in your plastics endeavors as you utilize staff who are accessible, knowledgeable and resourceful with regard to all inquiries.

We invite you to visit the Regal Plastic Supply Company location in your vicinity. All locations maintain generous inventories of plastic sheet, rod, tube, film, and numerous finished products.

Regal Plastic Supply Company thanks all of our customers for their patronage over the years. We will continue in our efforts to provide the best in JIT inventory and personal service. Plastic is in your future and Regal Plastic Supply Company is your best source.

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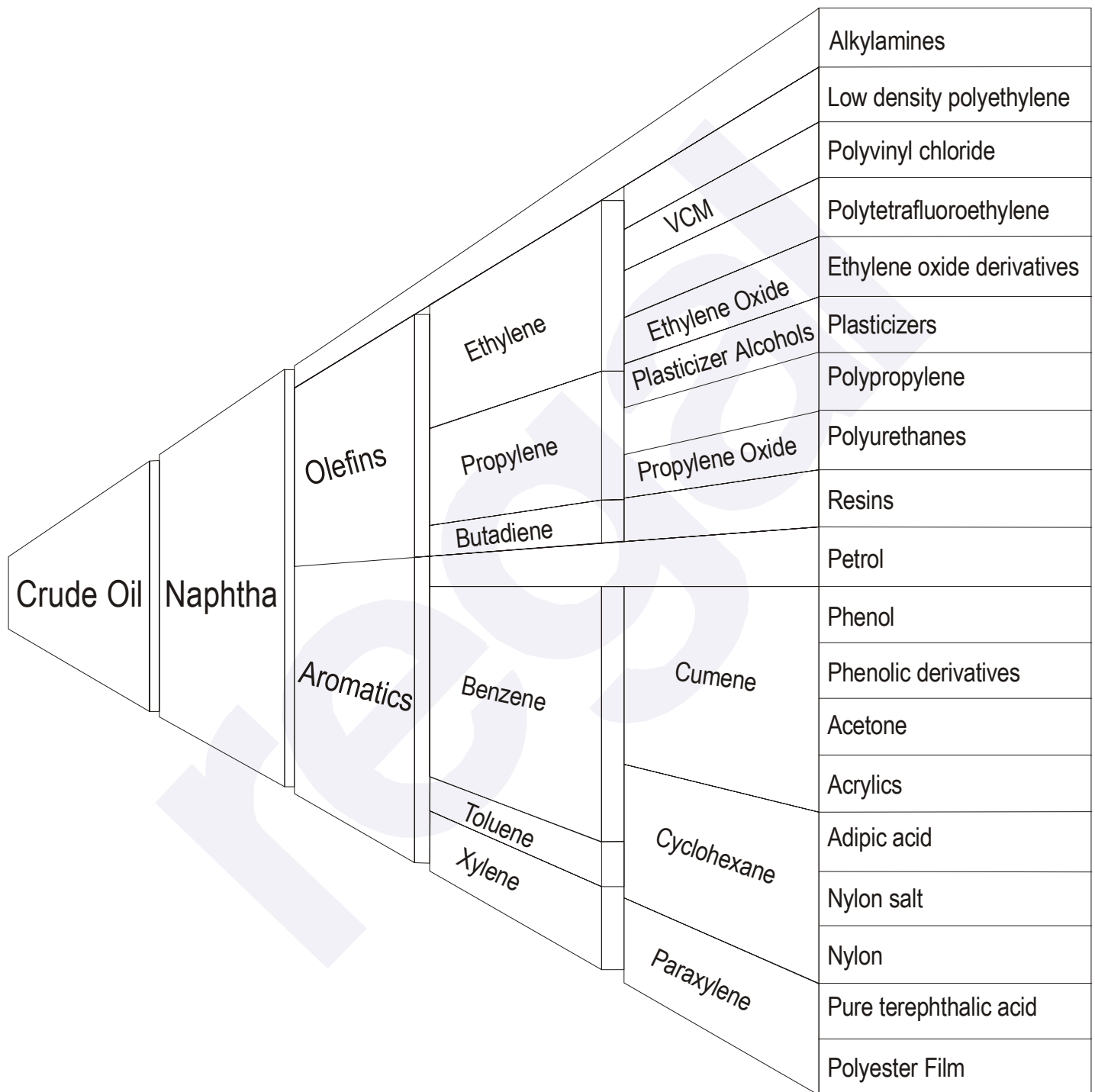
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INTRODUCTION

The Origins of Plastic Materials



INTRODUCTION

Preface

Introduction

PLASTIC-(per Webster)- “Any numerous organic, synthetic, or processed materials that are high molecular weight polymers.”

Polymers are a tribute to man’s creativity and inventiveness. They are truly man-made materials. Like any other material, they have their origins in nature, in such basic chemical elements as carbon, oxygen, hydrogen, nitrogen, chlorine, and sulfur. These elements in turn are extracted from the air, water, gas, oil, coal, or even plant life.

It was man’s inspiration to take these elements and combine them, via various chemical reactions, in an almost unending series of combinations, to produce the rich variety of materials we know today as plastics.

The possibilities of combining chemical elements to create plastics with different properties are almost endless. It is this diversity that has made plastics so applicable to such a broad range of end uses and products today.

In the Beginning

Given this kind of versatility and the role that plastics play in modern living, it’s surprising to realize that a little over a century ago there was no such thing as commercial plastic in the United States. During the 1850's and 60's, developmental work was going on with hard rubbers and cellulose materials, but the U.S. plastics industry officially dates its beginnings back to 1868, when a product called Celluloid was created as the first commercial plastic in the U.S. The development was in response to a competition sponsored by a manufacturer of billiard balls. It came about when a shortage developed in ivory from which the billiard balls were made, and the manufacturer sought another production method. Celluloid was one of the materials considered, and the U.S. plastics industry was born.

As has been typical of new plastic materials ever since, Celluloid quickly moved into other markets. The first photographic film used by Eastman was made of celluloid: producing the first motion picture film in 1882. The material is still in use today under its chemical name Cellulose nitrate, for making products like eyeglass frames.

Forty years were to pass before the plastics industry took its second major step forward. In 1909, Dr. Leo Hendrik Baekeland introduced Phenol formaldehyde plastics (or Phenolics as they are more popularly known), the first plastic to achieve world wide acceptance.

The third big thrust in plastics development took place in the 1920's with the introduction of Cellulose acetate, ureaformaldehyde, polyvinyl chloride, or Vinyl, and Nylon.

Evolution

In the World War II years of the 1940's, the demand for plastics accelerated, as did research into new plastics that could aid in the defense effort.

By the start of the 1950's plastics were on their way to being accepted by designers and engineers as basic materials, along with the more conventional ones.

Nylon, Teflon, Acetal, and Polycarbonate became the nucleus of a group in the plastics family known as the engineering thermoplastics. Their outstanding impact strength and thermal and dimensional stability enabled them to compete directly with metals. This group has grown since then to include a number of new plastics, as well as improved variations of older plastics that could similarly qualify for inclusion.

The Monomers & Polymers

Many plastics are derived from fractions of petroleum or gases that are recovered during the refining process. For example: ethylene monomer, one of the more important feedstocks, or starting materials for plastics, is derived in a gaseous form from petroleum refinery gas, liquefied petroleum gases, or liquid hydrocarbons. Although petroleum gas derivatives are not the only basic source used in making feedstocks for plastics, they are among the most popular and economical in use today. Coal is another excellent source in the manufacturing of feedstocks for plastics.

From these basic sources come the feedstocks we call monomers. The monomer is subjected to a chemical reaction known as polymerization; it causes the small molecules to link together into ever increasingly long molecules. Chemically, the polymerization reaction gas turns the monomer into a polymer, and thus a given type of plastic resin.

The Product as We See It

The polymer or plastic resin must next be prepared for use by the processor, who will turn it into a finished product. In some instances, it is possible to use the plastic resin as it comes out of the polymerization reaction. More often, however, it goes through other steps which turn it into a form that can be more easily handled by the processor and processing equipment. The more popular forms of resin for processing are pellet, granule, flake, and powder.

In the hands of the processor, these solids are generally subjected to heat and pressure. They are melted, forced into the desired shape (sheets, rods, and tubes) and then allowed to cure into a finished product. Resins are most readily available in their natural color, but by adding coloring agents, most any color can be achieved during the processing.

Plastics are a family of materials, not a single material. Each has its own distinct and special advantages.

Each day brings new plastic compounds, and new uses for the old compounds.

INTRODUCTION

Chronology of Plastic

DATE	MATERIAL	ORIGINAL TYPICAL USE
1868	Cellulose Nitrate	Eye Glass Frames
1909	Phenol-Formaldehyde	Telephone Handsets
1926	Alkyd	Electrical Bases
1926	Analine-Formaldehyde	Terminal Boards
1927	Cellulose Acetate	Tooth Brushes, Packaging
1927	Polyvinyl Chloride	Raincoats
1929	Urea-Formaldehyde	Lighting Fixtures
1935	Ethyl Cellulose	Flashlight Cases
1936	Acrylic	Brush Backs, Displays
1936	Polyvinyl Acetate	Flash Bulb Lining
1938	Cellulose Acetate Butyrate	Irrigation Pipe
1938	Polystyrene or Styrene	Kitchen Housewares
1938	Nylon (Polyamide)	Gears
1938	Polyvinyl Acetal	Safety Glass Interlayer
1939	Polyvinylidene Chloride	Auto Seat Covers
1939	Melamine-Formaldehyde	Tableware
1942	Polyester	Boat Hulls
1942	Polyethylene	Squeezable Bottles
1943	Fluorocarbon	Industrial Gaskets
1943	Silicone	Motor Insulation
1945	Cellulose Propionate	Automatic Pens and Pencils
1947	Epoxy	Tools and Jigs
1948	Acrylonitrile-Butadiene-Styrene	Luggage
1949	Allylic	Electrical Connectors
1954	Polyurethane or Urethane	Foam Cushions
1956	Acetal	Automotive Parts
1957	Polypropylene	Safety Helmets
1957	Polycarbonate	Appliance Parts
1959	Chlorinated Polyether	Valves and Fittings
1962	Phenoxy	Bottles
1962	Polyallomer	Typewriter Cases
1964	Ionomer	Skin Packages
1964	Polyphenylene Oxide	Battery Cases
1964	Polymide	Bearings
1964	Ethylene-Vinyl Acetate	Heavy Gauge Flexible Sheeting
1965	Parylene	Insulating Coatings
1965	Polysulfone	Electrical/Electronic Parts
1970	Thermoplastic Polyester	Electrical/Electronic Parts
1973	Polybutylene	Piping
1975	Nitrile Barrier Resins	Containers

The information contained herein provides product data, suggestions, and guidelines we believe to be reliable. They are offered in good faith but without any guarantee, as conditions, type of product, and methods of product use are beyond our control.

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Sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein, is strongly recommended.

General Electric manufactures one and two part silicone construction sealants for use in the building industry. These sealants, which are resistant to weather, have become very popular for glazing, weather sealing, and general purpose adhesive applications.

ONE-PART CONSTRUCTION SEALANTS & ADHESIVES

ACS10 Series - Acryseal™

A one-part acrylic latex sealant, this product is recommended for interior and exterior caulking. The addition of silicone polymer to the sealant gives this product exceptional weatherability, tooling and gunning. Acryseal™ is mildew and UV resistant with proven adhesion to many substrates including precast concrete planks, window/door frames, vinyl, aluminum, steel, plywood, sheet rock, marble, ceramic tiles, mortar joints, glass and painted surfaces.

NOTE: Acryseal™ is not intended for use in aquariums or structural glazing applications.

Construction SCS 1200 Silicone Sealant

This is a high strength acetoxycure sealant for structural glazing and general purpose sealing applications. Weather, U.V., and ozone resistant with a rapid cure time, it adheres to glass, ceramic, steel, granite, aluminum, many plastics, and painted surfaces. Applications include sealing building joints, curtain walls, windows, and other general maintenance tasks. Construction SCS 1201 (translucent), SCS 1202 (white), SCS 1203 (black), and SCS 1209 (aluminum), have FDA status, and all of those plus SCS 1297(bronze), meet USDA standards.

Insulating Glass Sealant IGS 3703

Designed as an insulating secondary glass seal, this product has a low odor, neutral cure with excellent filling and tooling characteristics. It has low sag and adheres to glass, most reflective glass coatings, aluminum and galvanized steel spacers.

IGS 3713 / IGS 3719

Designed for secondary seals, structural glazing, and conventionally glazed installations in insulated glass units, this sealant offers high strength and modulus, a short tooling time, low odor, and super hydrolytic stability.

Contractors SCS 1000® Silicone Adhesive Sealant

The SCS 1000® series is a general glazing sealant that will adhere to glass, most metals, and plastics. It is resistant to U.V. and ozone light as well as other environmental conditions, and retains cured properties from 40°F to 400°F. SCS 1001 (translucent), SCS 1002 (white), SCS 1003 (black), and SCS 1009 (aluminum), have USDA status, and all of those as well as SCS 1097(bronze), have FDA status.

Sanitary SCS 1700® Sealant

This sealant is mildew resistant for bathtubs, sinks, and general maintenance, and remains flexible without cracking, crumbling or drying out. Available in clear, white, almond, and marble.

SilGlaze® II SCS 2800 Silicone Sealant

This product is a saw kerf sealant for the setting of dimensional stone panels, and a perimeter weatherseal for field glazing, window installation, and general purpose sealing applications. It adheres to many substrates including Kynar* 500, Hylar** 5000, resin-based paints, glass, PVC, CPVC, wood, painted and anodized aluminum. It has a medium modulus, neutral cure, a 6-12 minute tool time, and a 2-4 days cure time. Available in translucent, white, black, blue beige, brown, gray, aluminum, and bronze.

SilPruf® Sealant

This weatherseal and general purpose glazing sealant can be used on metal, masonry, concrete, coated surfaces, plastics, wood and other common construction materials. Available in white, black, limestone, dark and light gray, aluminum, precast white, and bronze.

*KYNAR IS A REGISTERED TRADEMARK OF ELF ATOCHEM S.A.
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CONSTRUCTION SEALANTS

GE Silicones

SilPruf® LM SCS2700 Sealant

A one-part, neutral cure, low-modulus, matte-finish sealant, SilPruf® LM SCS2700 provides adhesion to a wide variety of materials, including Exterior Insulation Finish Systems (EIFS), concrete, metals, and plastics.

Typical applications include:

- Glass, metal, and plastics in glazing and curtainwall assemblies
- EIFS to EIFS joints and where EIFS abuts to metals or other substrates
- Assemblies of metals, masonry, concrete, coated surfaces, plastics, wood and other common construction materials

NOTE: SilPruf® LM SCS2700 is not recommended for:

- structural glazing applications
- applications where abrasion or physical abuse is encountered in horizontal or below-grade joints
- locations subject to continuous water immersion
- surfaces which will be painted
- food contact surfaces

Available in six colors: SCS2700.02 (White); SCS2700.03 (Black); SCS2700.04 (Limestone); SCS2700.09 (Grey); SCS2700.20 (Precast White); and SCS2700.97 (Bronze), all meet with the standards for :

- Federal Specifications TT-S-001543A
- Federal Specifications TT-S-00230C
- ASTM C920, Type S, NS, Class 25
- EIMA 300.01
- ASTM C1382 Tensile Adhesion Test for EIFS

UltraGlaze® SSG4000 Structural Silicone Glazing Sealant, Black

This is a one part, high strength neutral cure sealant for structurally glazed curtain wall and weather sealing applications. With a long tool time, it adheres to both coated and uncoated glass, metals, and other substrates. It is also compatible with one or two-part silicone edge seals on insulating glass units.

UltraGlaze® SSG4000AC Structural Glazing Sealant

Designed for structural glazing applications like in-shop or field glazing of curtain wall modules, it also is used as a weatherseal in glass-to-glass butt joints.

UltraPruf™ II SCS 2900 Sealant

This weather resistant, matte finish, sealant is designed for perimeter seals around windows, curtain wall joints, and other weatherseal applications between metals, masonry, concrete, glass, paints, and plastic substrates.

TWO-PART CONSTRUCTION SEALANTS & ADHESIVES

IGS3723 Insulating Glass Sealant

As a secondary seal for insulating glass, this product adheres to glass as well as most reflective glass coatings, aluminum and galvanized steel spacers. It has a variable ratio for cure rate adjustment, a high application rate at low pumping pressures, low sag and low odor.

UltraGlaze® SSG4400 Structural Silicone Glazing Sealant, Black

Created for in-shop structural glazing applications including that of curtain-wall units and modules for unitized and panelized systems, this product adheres to a variety of substrates, glass, reflective glass coatings, anodized aluminum and most paints. It has a variable mix ratio for cure adjustment and no kit matching.

PRIMER

SS4179 Primer

This product enhances the adhesion of various GE sealants.

SS4044 Primer

This primer is a blend of organic chemicals and solvent formulated to enhance the adhesion of GE Silicones construction products on surfaces such as; concrete, limestone, various types of paints and coatings, aluminum, stainless steel, copper, galvanized metals, ceramics, and wood.

CONSTRUCTION SEALANTS

GE Silicones

Vulkem®

PRODUCT AVAILABILITY

Product	Container
Acryseal™ ACS 10XX	10.1 oz. cartridge, 5 gal. pail, 55 gal. drum
Construction SCS 1200	10.1 oz. cartridge, 5 gal. pail, 55 gal. drum
IGS 3703	5 gal. pail, 55 gal. drum
IGS 3713-D1 / IGS 3719-D1	IGS (3713-D1) 5 gal. pail, 55 gal. drum IGS (3719-D1) 55 gal. drum
SCS 1000®	10.1 oz. cartridge, 55 gal. drum
Sanitary SCS 1700®	10.1 oz. cartridge
SilGlaze® II SCS 2800	10.1 oz., 5 gal. pail, 55 gal. drum
SilPruf® Sealant	10.1 oz. cartridge, 20 oz. sausage packs, 2 gal. pail, 5 gal. pail, 55 gal. drum
SilPruf LM SCS2700	10.1 oz. cartridge, 20 oz. sausage packs, 2 gal. pail
UltraGlaze® SSG 4000/ SSG 4000AC	10.1 oz. cartridge, 20 oz. sausage pack, 2 gal. pail, 5 gal. pail, 55 gal. drum
UltraPruf™ II SCS 2900 Sealant	10.1 oz. cartridge, 20 oz. sausage pack, 2 gal. pail, 55 gal. drum
SS4179	1 pint, 1 gal. pail, 5 gal. pail, 55 gal. drum
SS4404	1 pint, 1 gal. pail, 5 gal. pail
IGS 3723	55 gal. drum (part A) with 5 gal. pail (Part B)
UltraGlaze® SSG4400	(A) 1 gal. pail or 55 gal. drum (B) 5 gal. pail

NOTE: Container sizes may vary with colors. Consult with your nearest Regal Plastic Supply Distributor for current availabilities.

VULKEM®

Vulkem® is the tradename for the polyurethane sealant product line provided by Tremco®, Inc.

Polyurethane sealants effectively bond to all common construction substrates and are primerless, paintable, and suitable for continuous total water immersion. These sealants are available in one- and two-part formulations and a variety of colors.

VULKEM® 116

Vulkem® 116 is a one-part, moisture curing, gun-grade polyurethane joint sealant recommended for pre-cast and masonry joints; window frame perimeters; moving joints; and general purpose use. USDA approved, Vulkem® 116 also conforms to U.S. Federal Specification TT-S-00230C, Type II, Class A and ASTM C920-94, Type S Grade N S, Class 25, Use NT, M, T, A, and O.

VULKEM® 921

Vulkem® 921 is a low modulus, smooth, one-part, moisture curing, gun-grade polyurethane joint sealant. USDA approved Vulkem® 921 conforms to U.S. Federal Specification TT-S-00230C, Type II, Class A; ASTM C 920-94, Type S, Grade NS, Class 25, Use NT, M, A, and O; and CAN/CGSB 19.13-M87, Type MCG-2-25-A-N with QPL #81050. Vulkem® 921 white is listed by the NSF for use in contact with potable water.

VULKEM® 45

This product is a one-part, self-leveling, moisture curing, pour grade, polyurethane joint sealant. Recommended uses for Vulkem® 45 are sealing expansion and control joints in parking garages, plazas, terraces, highways, bridges, swimming pool decks, reservoirs, sewage treatment plants, floor and sidewalk joints. Vulkem® 45 meets the requirements of U. S. Federal specification TT-S-230C, Type 1, Class A and ASTM C920-94, Type S, Grade P, Class 25 Use T, M, A, and O. Vulkem® 45 passes Canadian Standard 19 GP16a. This product is USDA approved and tested and certified to ANSI/ NSF Standard 61 Drinking Water System Components Health Effects.

NOTE: The above products, Vulkem® 45, 116, and 921, should all be used with adequate ventilation and should not be applied over damp or contaminated surfaces.

PRODUCT AVAILABILITY

Product	Container Size	Colors
Vulkem® 45	Quart Cartridge, 2 Gallon and 5 Gallon Pails, 55 Gallon Drum	White, Limestone, Gray, Dark Tan, and Black
Vulkem® 116	1/12 Gallon Cartridge, 20 oz. Envirochubs, 2 and 5 Gallon Pails, 55 Gallon Drum	Almond, Aluminum, Black, Bronze, Brown, Dark Tan, Gray, Limestone, Redwood, Tan and White
Vulkem® 921	1/12 Gallon Cartridge, 20 oz. Envirochubs, 2 and 5 Gallon Pails, 55 Gallon Drum	Almond, Aluminum, Black, Bronze, Brown, Dark Tan, Gray, Limestone, Redwood, Tan and White

NOTE: [A variety of glazing tapes are available. Contact your nearest Regal Plastic Supply Representative for assistance.](#)

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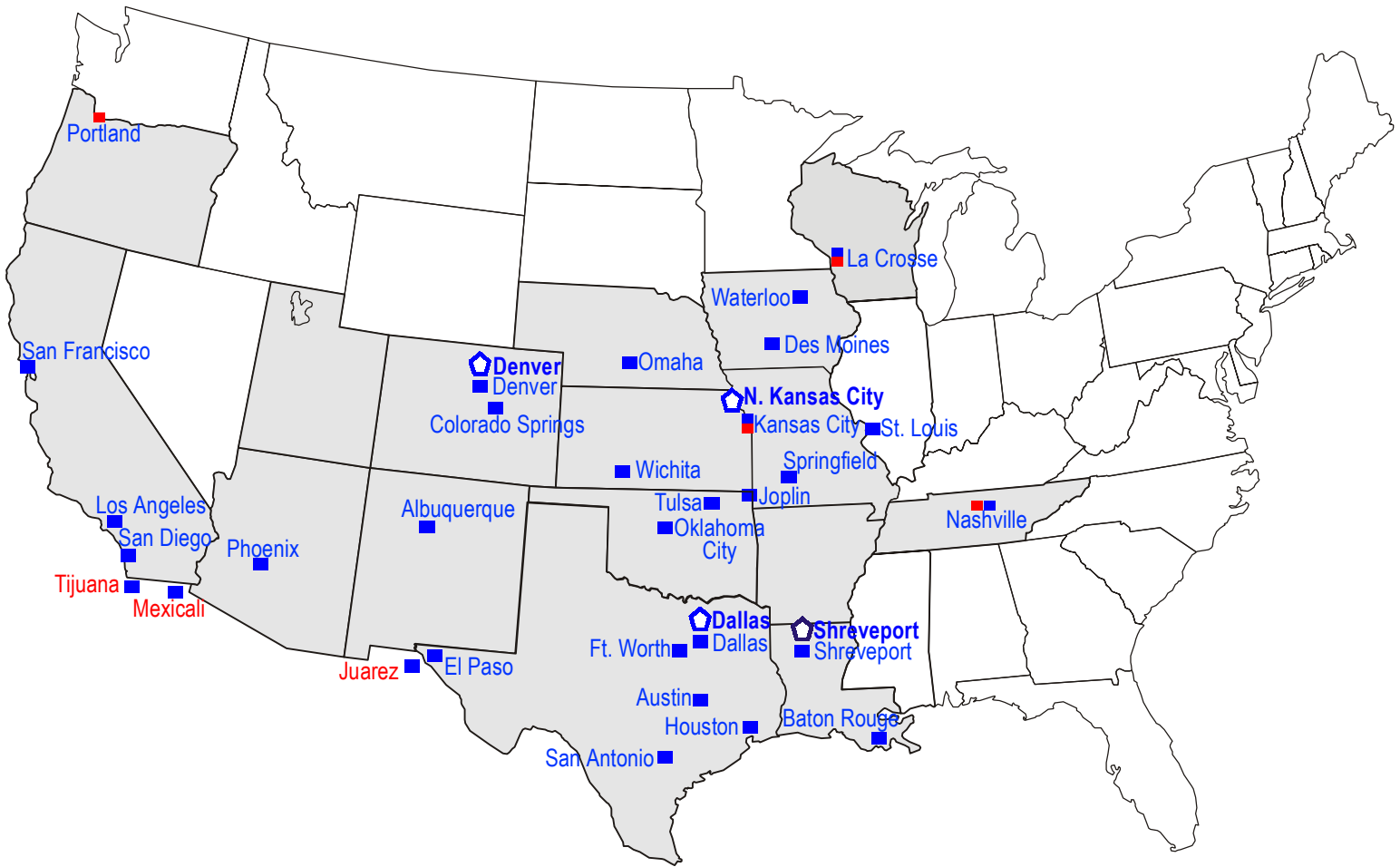
Tremco®, Inc.

W. F. Lake Corporation

Wegner North America, Inc.

Zeus Industrial Products

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 Divisional Corporate Offices

 Stocking Branches

 Film Conversion Centers

