

Titripac[®]: The clever packaging solution

Reducing environmental impact through sustainable design

The Titripac[®] packaging reduces laboratory waste, saves storage space, and cuts emission from shipping and waste.



Commitment to product sustainability

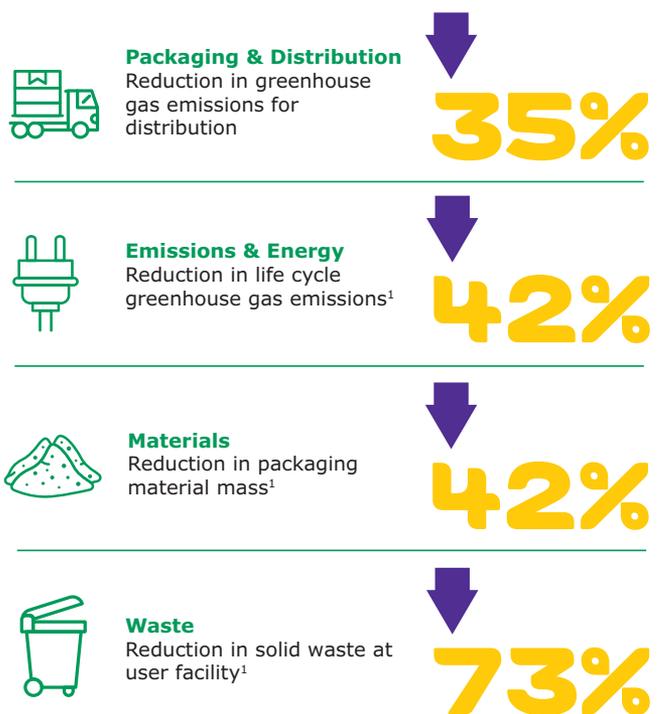
The products we create help our customers improve people's lives every day, but we recognize that every product we make also has an environmental impact, during manufacturing, distribution and in its use. That's why we are committed to continually improving the sustainability performance of our products.

Our products are designed to offer the highest in innovation, quality, safety, and effectiveness, while at the same time helping minimize environmental impacts associated with their use. We aim to develop future-forward products and solutions that meet performance needs, result in reduced life cycle impacts and help solve global sustainability challenges.

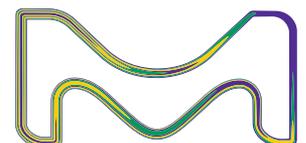
Titripac[®] Packaging features and advantages

- Reduces environmental impact of disposal – less package waste as outer recyclable carborad box and inner bag can be disposed of separately
- Saves costs and time – no unnecessary re-testing of the solution
- Reliable to use to the last drop – hermetically sealed pack, no contaminated residual amounts and less chemical waste
- Easy to use – integrated withdrawal tap, or direct connection to titration instruments

Product Improvement Highlights



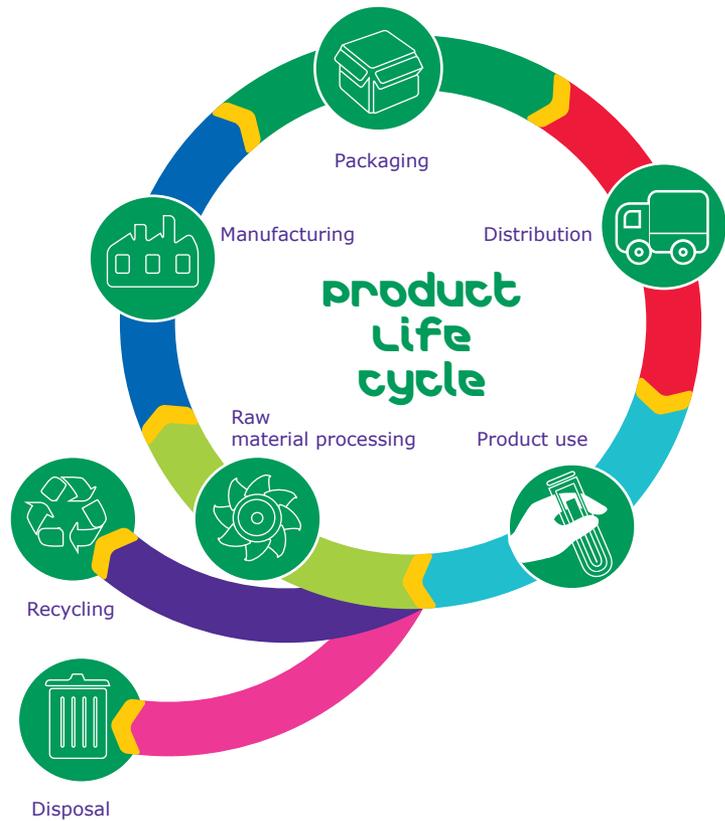
¹Compared to our product delivery system using 1 liter bottles



Design for Sustainability

Design for sustainability is an approach to product development we use that looks to minimize the environmental and health impacts at each stage of the product life cycle from manufacturing through use to disposal. At the same time, we look to maximize the product features that improve its performance and ease of use. We incorporate sustainability considerations early in the design process before impacts are locked in, and we use a set of criteria for major impact areas like energy and waste to measure improvements.

These approaches help reduce energy and water consumption, create more productive processes that minimize waste, streamline packaging, and reduce associated costs. The benefits come during the manufacturing process distribution as well as during product usage.



Titripac® packaging: Reducing environmental impact through sustainable design

Design Element	Benefits	Impacts	
42% reduction in mass of corrugated materials	<ul style="list-style-type: none"> • 61% reduction in product life cycle global warming potential (GWP) • 55% reduction in product life cycle energy demand • 35% reduction in global warming potential (GWP) of distribution to US customer • 73% reduction in solid waste at user facility 	Reduction of 9 kg CO ₂ for every 10 L package – equivalent to avoiding the combustion of 1 gallon of gasoline	= 1 gallon of gasoline
		Reduction of 45 kWh for every 10 L package – equivalent to the electricity usage of using a laptop computer for 1 hour	= 1 hour of computer use
		0.7 kg of use phase waste avoided for every 10 L package	= 1 hour of computer use
Increase the percent of corrugated materials from 45% to 86%	<ul style="list-style-type: none"> • 91% increase in the percent of bio-based materials 	Reduction of 1 kg of CO ₂ emissions during material production for every 10 L package – equivalent to 24 hours of light bulb use (75 watt incandescent)	= 24 hours of lightbulb use

Ordering Information for Products in Titripac® Packaging

Description	Concentration	Qty/Pk	Cat. No.
Titripac® volumetric solutions for Titration			
Titripac® Hydrochloric acid solution	0.01 mol/L (0.1 N)	4 L	1602384000
Titripac® Hydrochloric acid solution	0.1 mol/L (0.1 N)	4 L	1090604000
Titripac® Hydrochloric acid solution	0.1 mol/L (0.1 N)	10 L	1090609010
Titripac® Hydrochloric acid solution	0,357 mol/L (1 /2,8 N)	10 L	1131369010
Titripac® Hydrochloric acid solution	0.5 mol/L (0.5 N)	4 L	1090584000
Titripac® Hydrochloric acid solution	1 mol/L (1 N)	4 L	1090574000
Titripac® Hydrochloric acid solution	1 mol/L (1 N)	10 L	1090579010
Titripac® Hydrochloric acid solution	3,57 mol/L (1/0,28 N)	10 L	1131349020
Titripac® Silver nitrate solution	0.1 mol/L (0.1 N)	4 L	1090814000
Titripac® Silver nitrate solution	0.1 mol/L (0.1 N)	10 L	1090819010
Titripac® Sodium hydroxide solution	0.01 mol/L (0.1 N)	4 L	1603094000
Titripac® Sodium hydroxide solution	0.1 mol/L (0.1 N)	4 L	1091414000
Titripac® Sodium hydroxide solution	0.1 mol/L (0.2 N)	10 L	1091419010
Titripac® Sodium hydroxide solution	0.2 mol/L (0.1 N)	10 L	1091409010
Titripac® Sodium hydroxide solution	0.25 mol/L (0.25 N)	10 L	1091399010
Titripac® Sodium hydroxide solution	0.33 mol/L (0.33 N)	10 L	1055959010
Titripac® Sodium hydroxide solution	0.5 mol/L (0.5 N)	4 L	1091384000
Titripac® Sodium hydroxide solution	0.5 mol/L (0.5 N)	10 L	1091389010
Titripac® Sodium hydroxide solution	1 mol/L (1 N)	4 L	1091374000
Titripac® Sodium hydroxide solution	1 mol/L (1 N)	10 L	1091379010
Titripac® Sodium thiosulfate solution	0.1 mol/L (0.1 N)	4 L	1091479010
Titripac® Sodium thiosulfate solution	0.1 mol/L (0.1 N)	10 L	1091474000
Titripac® Sulfuric acid solution	0.05 mol/L (0.1 N)	4 L	1090744000
Titripac® Sulfuric acid solution	0.05 mol/L (0.1 N)	10 L	1090749010
Titripac® Sulfuric acid solution	0.25 mol/L (0.5 N)	4 L	1090734000
Titripac® Sulfuric acid solution	0.25 mol/L (0.5 N)	10 L	1090739010
Titripac® Sulfuric acid solution	0.5 mol/L (1 N)	4 L	1090724000
Titripac® Sulfuric acid solution	0.5 mol/L (1 N)	10 L	1090729010
Titripac® Titriplex® III solution (Na ₂ -EDTA)	0.1 mol/L	4 L	1084314000
Titripac® Titriplex® III solution (Na ₂ -EDTA)	0.1 mol/L	10 L	1084319010
Titripac® Titriplex® solution B	10 mg CaO/L = 1 ml	10 L	1084209010
Titripac® Titriplex® IV solution (Na ₂ -ECTA)	0,1 mol/L	4 L	1084474003
Certipur® Buffer solutions (20°C) for pH measurement			
Certipur® buffer solution	pH 2.00 (20°C)	4 L	1094334000
Certipur® buffer solution	pH 2.00 (20°C)	10 L	1094339010
Certipur® buffer solution	pH 4.00 (20°C)	4 L	1094354000
Certipur® buffer solution	pH 4.00 (20°C)	10 L	1094359010
Certipur® buffer solution colored red	pH 4.00 (20°C)	4 L	1094754000
Certipur® buffer solution colored red	pH 4.00 (20°C)	10 L	1094759010
Certipur® buffer solution	pH 6.00 (20°C)	4 L	1094374000
Certipur® buffer solution	pH 7.00 (20°C)	4 L	1094394000
Certipur® buffer solution	pH 7.00 (20°C)	10 L	1094399010
Certipur® buffer solution colored green	pH 7.00 (20°C)	4 L	1094774000



Description	Concentration	Qty/Pk	Cat. No.
Certipur® buffer solution colored green	pH 7.00 (20°C)	10 L	1094779010
Certipur® buffer solution	pH 8.00 (20°C)	4 L	1094604000
Certipur® buffer solution	pH 9.00 (20°C)	4 L	1094614000
Certipur® buffer solution	pH 9.00 (20°C)	10 L	1094619010
Certipur® buffer solution colored blue	pH 9.00 (20°C)	4 L	1094764000
Certipur® buffer solution colored blue	pH 9.00 (20°C)	10 L	1094769010
Certipur® buffer solution	pH 10.00 (20°C)	4 L	1094384000
Certipur® buffer solution	pH 10.00 (20°C)	10 L	1094389010
Certipur® buffer solution colored yellow	pH 10.00 (20°C)	4 L	1094009010
Certipur® buffer solution colored yellow	pH 10.00 (20°C)	10 L	1094004000



Certipur® Buffer solutions (25°C) for pH measurement			
Certipur® buffer solution	pH 1.00 (25°C)	4 L	1094414000
Certipur® buffer solution	pH 2.00 (25°C)	4 L	1094424000
Certipur® buffer solution	pH 3.00 (25°C)	4 L	1094444000
Certipur® buffer solution	pH 4.00 (25°C)	4 L	1094454000
Certipur® buffer solution	pH 4.01 (25°C)	4 L	1094064000
Certipur® buffer solution colored red	pH 4.00 (25°C)	4 L	1990544000
Certipur® buffer solution	pH 5.00 (25°C)	4 L	1094464000
Certipur® buffer solution	pH 6.00 (25°C)	4 L	1990364000
Certipur® buffer solution	pH 7.00 (25°C)	4 L	1094074000
Certipur® buffer solution colored yellow	pH 7.00 (25°C)	4 L	1990574000
Certipur® buffer solution	pH 8.00 (25°C)	4 L	1990384000
Certipur® buffer solution	pH 9.00 (25°C)	4 L	1094084000
Certipur® buffer solution	pH 10.00 (25°C)	4 L	1094094000
Certipur® buffer solution colored blue	pH 10.00 (25°C)	4 L	1990504000
Certipur® buffer solution	pH 11.00 (25°C)	4 L	1990414000
Certipur® buffer solution	pH 12.00 (25°C)	4 L	1990224000

Other products			
Emsure® Water for analysis		4 L	1167544000
Emsure® Water for analysis		10 L	1167549010
Formaldehyde solution 4 %, buffered for histology	pH 6.9	10 L	1004969011

Future improvements and opportunities

Our commitment to produce sustainability is a never-ending journey. We are just beginning to identify the possibilities and potential within all industrial areas. We welcome your partnership and feedback as we continue to further improve packaging concepts and products.

The information and statements in this document should not be used for comparison with other bulk chemical packaging concepts' environmental and health impacts or improvements.

To place an order or receive technical assistance in the U.S. and Canada, call toll-free 1-800-645-5476

Technical and customer Service: sigmaaldrich.com/techservice

More info on sigmaaldrich.com/Titripac

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