

# Research Uncovers Keys to Capitalizing on Emerging, High Growth Markets:

An LSR and Elastomers Market Survey



*Every step of the way*

As global competition continues to intensify, North American moldmakers must diversify their products and services to expand their customer base. By proactively identifying growth markets that align with their core competencies, moldmakers will position themselves as preferred solution providers, build their customer bases and capitalize on new market opportunities.



One of the most prevailing growth markets for North American moldmakers is LSR processing. D-M-E Company recently commissioned an independent market research study that sheds further light on how companies can move to leverage LSR processing to expand their business and increase profitability. The key to successfully integrating LSR is dependant on continued education and strategic supplier relationships.

- **Dave Lawrence,**  
President of D-M-E Company

A handwritten signature in blue ink, appearing to read 'DL', located below the name and title of Dave Lawrence.

## **Parameters and Methodology**

### **Participants - Qualitative**

Decision makers involved in identification and implementation of new products/technologies

- 5 participants from rubber/elastomer industry: molders, moldmakers and industry consultant
- 5 participants from plastics industry: moldmakers and product manufacturers/injection molders

### **Participants - Quantitative**

- 471 participants: Plastic and rubber molders and moldmakers, OEMs and design firms

### **Data Analysis**

Using key findings on growth opportunities and process challenges from the interviews with thought leaders and industry representatives, D-M-E commissioned an independent market research firm to develop and implement a quantitative survey to validate qualitative results.

Results are classified as “Key Findings” based on recurrent responses in qualitative research (interviews) when those response themes were supported by the quantitative online survey data.

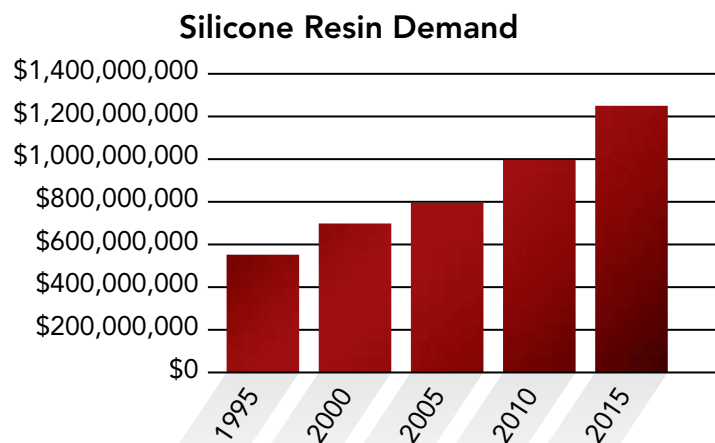
D-M-E Company is an essential mold technologies resource to customers worldwide. In addition to the plastics industry’s broadest range of market-leading products, we provide unsurpassed knowledge, a global logistics infrastructure and exceptional service every step of the way.

To discover how D-M-E is responding to what we’ve learned in our research, contact Craig Messerknecht, Vice President – Marketing and Global Product Development at **248-544-5750**. Visit **[www.dme.net](http://www.dme.net)** for more information.

**As global competition increases, North American moldmakers must diversify their products, services and customer base, partly by recognizing growth markets that fit with their core competencies.**

One such area of opportunity is in the utilization of Liquid Silicone Rubber (LSR), High Temperature Vulcanizing (HTV) Silicone Rubber and other elastomers to meet the demands for products requiring “soft-touch” applications.

LSR applications are expected to grow by 10-12 percent annually, in part due to increased demand in the medical, electronic, automotive and industrial sectors. Sales of LSR material in North America alone are expected to be up more than 50 percent from 2005 to 2015. Additionally, specific properties of LSR — including chemical resistance, clarity, non-ageing, and the ability to withstand a great range in temperatures — have made it the elastomer of choice for both plastics and rubber processors looking to enhance their capabilities.

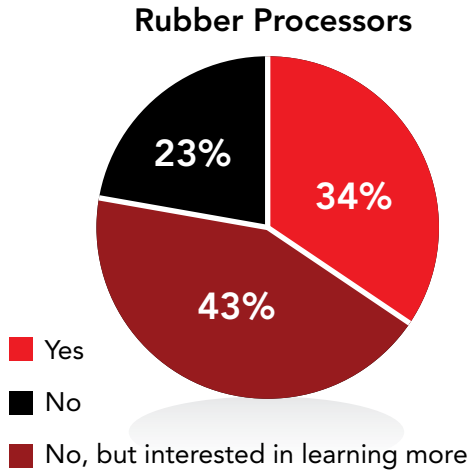


### Key Findings

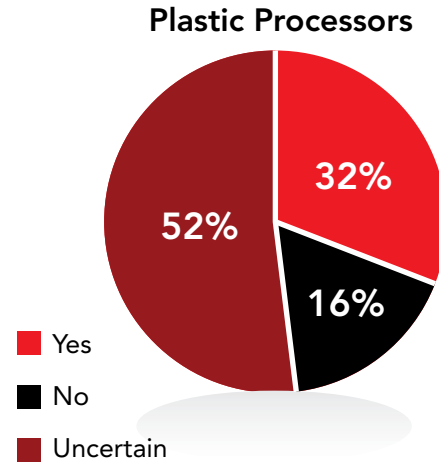
- Both plastics and rubber molders and moldmakers are aware of LSR as a possible extension of their current business offerings that can help them remain competitive.
- Companies most interested in integrating LSR are those currently working with rubber, or those working with both rubber and plastics.
- Plastics molders and moldmakers are unsure of how to best integrate LSR into their current business offerings.
- Both plastics and rubber processors are working in market growth areas that are well-served by LSR applications.
- Because plastics processors are not yet working with LSR, they aren't as aware of the need for specialized LSR processing equipment.
- A standardized coldrunner system can combat LSR processing challenges and create growth opportunities for moldmakers.

## Who's currently working with LSR?

Processors of both plastics and rubber recognize that LSR can become an integral part of their offerings. Although only a minority of those surveyed are currently working with liquid silicone rubber, a great number of both plastics and rubber processors are interested in learning more.



*57% of rubber participants currently work with LSR or are interested in learning more about it.*



*None of the plastics participants surveyed are currently working with LSR, although 32 percent stated that they're interested in learning more about LSR opportunities. Some 52 percent of participants, however, are uncertain as to whether their company would consider adding LSR to its offer.*

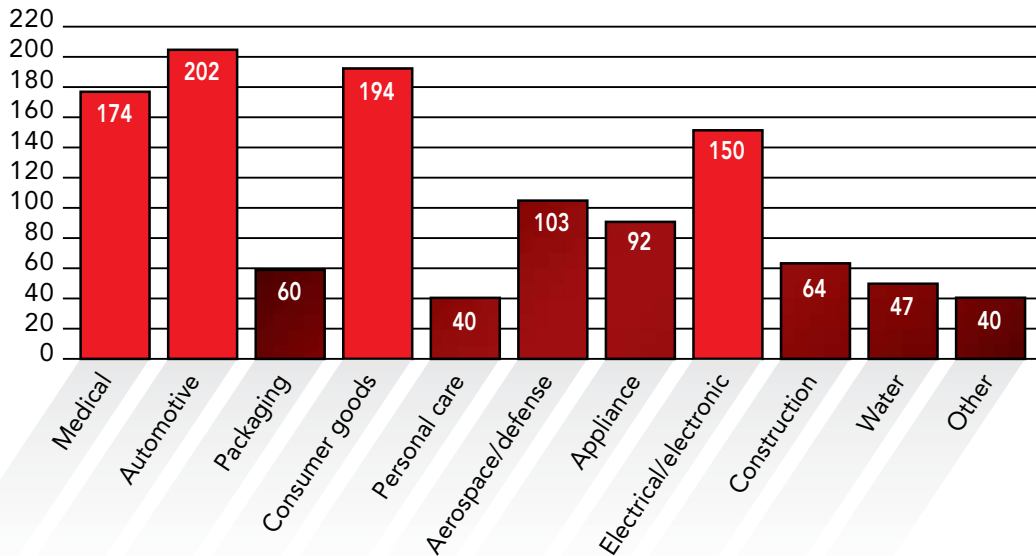
"We want to get into this market and have an ongoing initiative to learn more. We sent the sales team to a silicone meeting last week." Plastics moldmaker.

## Advantages of molding LSR over standard rubber molding

- No waste when done correctly
- Fast cycle times
- Flash-less technology
- No secondary operations
- Less inspection, less handling required
- Inability to alter material
- Less cavities, better quality
- Superior process control
- Unlimited future

## Why it makes business sense for plastics and rubber processors to integrate LSR into their offer

The increasing demand for LSR in markets that our survey participants already serve allows molders and moldmakers to build closer relationships with their current clients, a tactic our 2007 industry report ("Amid Global Challenges, Avenues of Opportunity: State of the Moldmaking Industry Independent Survey 2007") identified as one way to adapt to the global economy. Additionally, three of the top markets processors currently serve were identified last year as representing the greatest potential for profits for the moldmaking industry: automotive, medical and electrical/electronic.



*Both rubber and plastics processors are already serving 3 of the markets identified as those with highest growth potential for the moldmaking industry, allowing for easier transition for companies looking to expand their capabilities to include LSR.*

While many of these growing markets necessitate the use of elastomers to meet the needs of "soft-touch" applications, LSR's unique properties allow processors to meet greater market demands. LSR's clarity, chemical resistance and enormous range in temperature tolerances make it a preferred elastomer for products requiring high precision, including seals and sealing membranes, infant bottle nipples, medical applications, and kitchen utensils such as spatulas and baking pans.

*"Liquid provides rubber manufacturers with an opportunity to be competitive. It offers faster cycle times, less flash and reduced cost." - Rubber/Elastomer Industry Consultant*

Modifications to the material itself are opening new doors every day, as well. Hundreds of two-component LSR formulations are available, and a one-component formulation also recently entered the market. In addition, we're seeing:

- Healthcare grades
- High-strength grades
- Self-adhesive grades
- Self-lubricating grades to reduce friction on surfaces that need to be slippery
- Faster-curing grades for larger, thicker parts
- Liquid fluorosilicone elastomers, which offer enhanced resistance to automotive fuels
- Low compression set grades

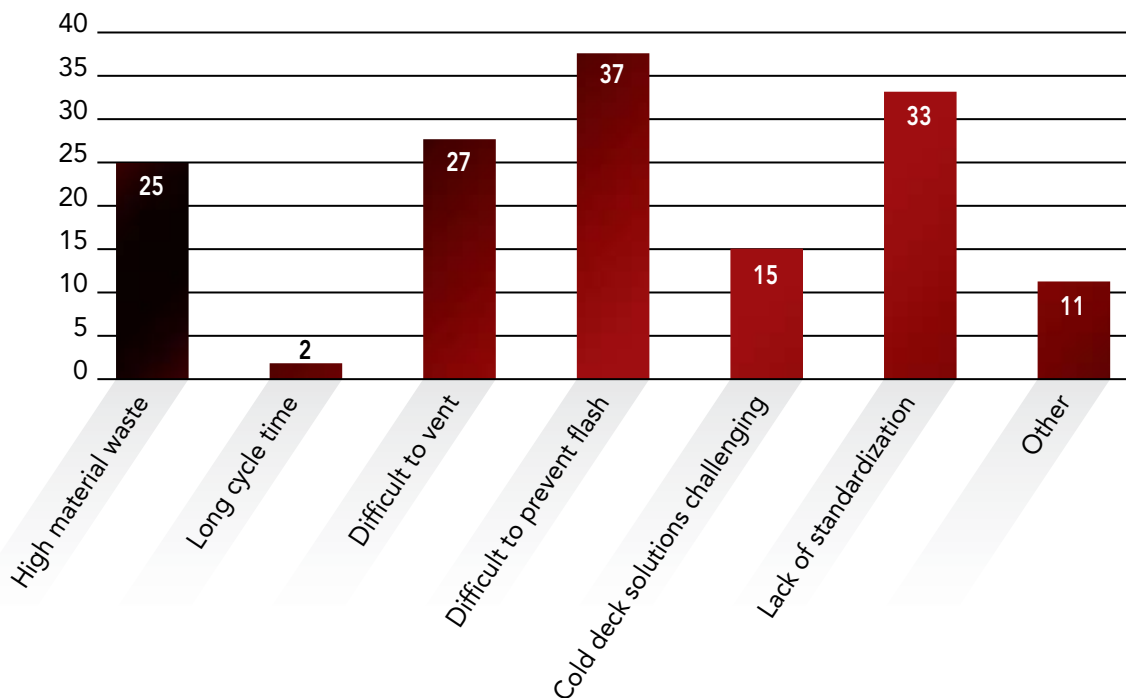
## How rubber and plastics processors can move forward to integrate LSR

Although many molders and moldmakers recognize the opportunity LSR can provide in expanding services, the utilization of LSR requires specialized processing, including specialized tooling, pumps and injection presses. Successful integration will depend on a commitment to learning and a relationship with an experienced supply partner.

### Current Challenges in Processing

Unlike plastics that are injected at high temperatures and then cooled inside the mold, liquid silicone rubber is injected at a cooler temperature and then cured by heating the mold. And since flashing for elastomers has a much tighter tolerance, manufacturers must use equipment that allows for higher cavity density and flash prevention.

Many rubber molders and moldmakers who work with LSR have modified existing equipment to accommodate these unique challenges, though results have been less than ideal. The lack of standardization with modified equipment can lead to long cycle and setting times and an inability to easily replace parts. Additionally, equipment that isn't designed to specifically accommodate LSR can result in a high degree of waste and material costs, preventing processors from cost-effectively maximizing market demands and stifling their efforts to compete in global markets.



*Rubber processors who currently work with LSR identified a number of processing challenges when using self-modified equipment to process elastomers.*

## **Processing Solutions**

As more rubber and plastics molders and moldmakers enter the LSR processing arena, it will be increasingly important for supply partners to provide specialized tooling to meet their customers' growing business needs.

Standardized cold runner technology has a proven track record in Europe, with more than 650 systems working in the field since the 1990s. A cold runner system can improve production efficiency by decreasing wasted material through minimization of leftover sprue, reducing cycle and setting times and producing a finished part that can be used immediately on its own, or in an assembly process. Although cold runner systems can be customized, off-the-shelf standardization appeals to more processors looking to improve production, simplify part replacement, and reduce downtime.

Based on our online survey, 77 percent of rubber molders and moldmakers are looking to streamline their LSR efforts through a standardized cold runner system, suggesting yet again that this is a high-growth market.

### **Characteristics of molds designed specifically for LSR:**

- Rod heated and thermocouple controlled
- Vents measured in tenths rather than thousandths
- Hardened steel (minimum 50-52 HRC for cavity plates)
- A vapor-honed or straight EDM surface finish for optimal part release
- Small runners – a good cross-section is half-round 3/32" or 1/8" diameter and approximately 0.050" deep

### **Characteristics of cold runners designed specifically for LSR:**

- Fully balanced
- Provide sprueless production
- Direct injection
- Valve unit
- With chokes

## Conclusion

Despite processing challenges and need for further education, the future is bright for moldmakers and molders alike to grow and expand into this emerging market.

Tips on how most companies succeed in implementation of LSR into their current business:

- Identify growth markets and products for LSR your company is interested in pursuing
- Research and purchase the correct equipment; no shortcuts
- Work closely with supplier of LSR material, tooling and machine
- Build proper LSR molds
- Have dedicated and trained personnel
- Have designated areas separate from other types of molding operations

