

# Advances in Synthetic Closure Technology January 29, 2007



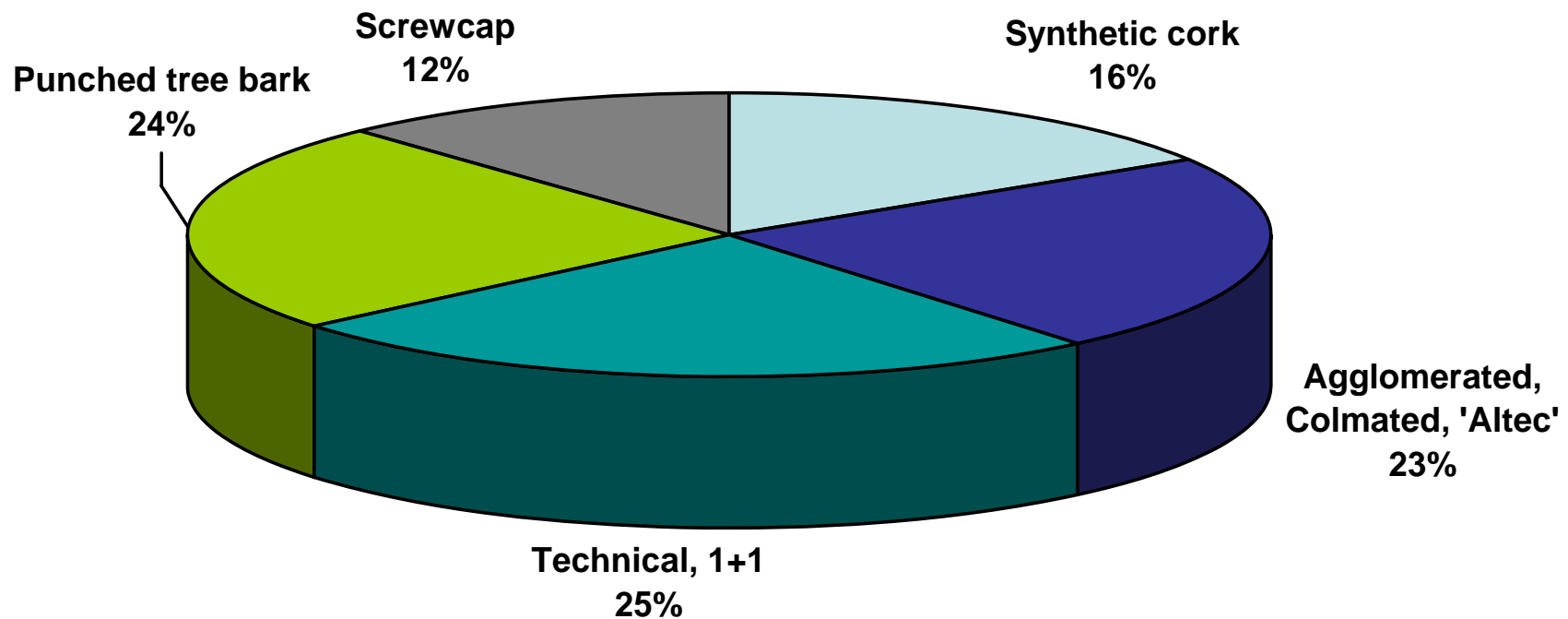
# Presentation Outline

- Current state of the wine closure industry
- Types of synthetic closures.
- What to look for in selecting a supplier.
- Performance characteristics.
- Coordinating closures with the package
- Closure-based promotional mechanics

# Current closure market shares

## *by Closure Type - Unit Volume*

*(17 Billion Closures)*



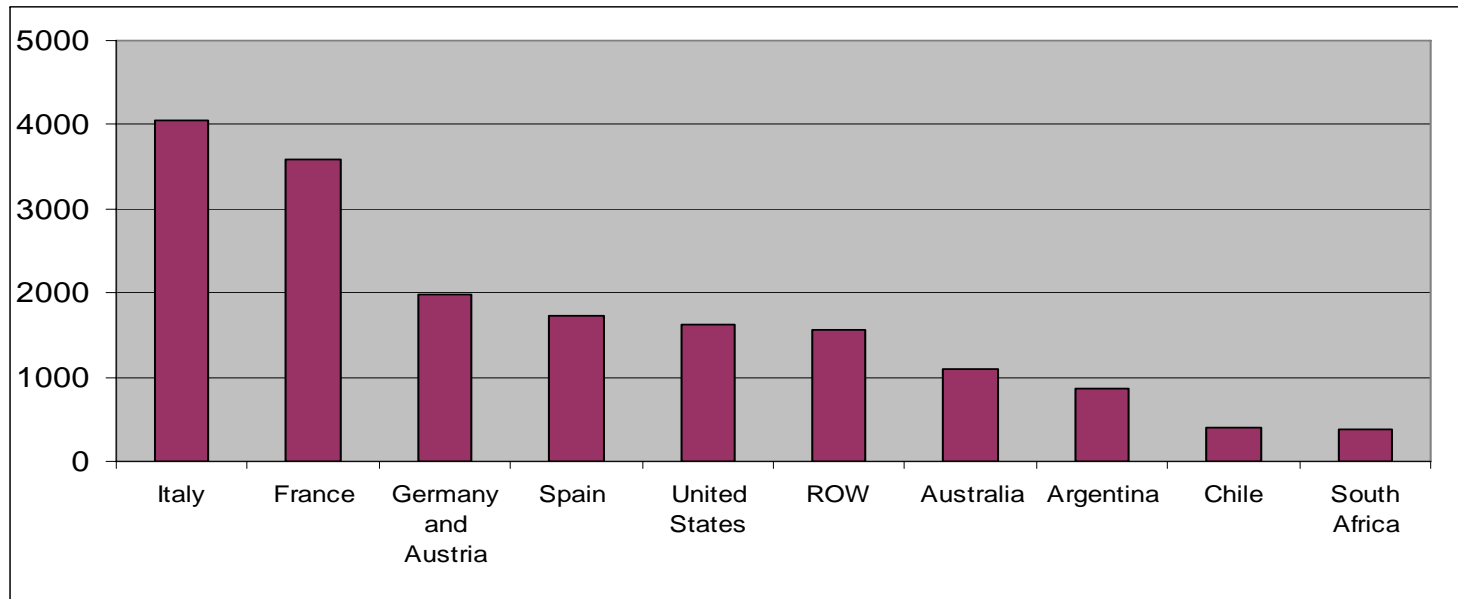
Cork / Cork Composites market share = 72%

Synthetic Cork Growth – 10 to 15% per year

# Total Driven Closure Market by Country

## 17 Billion Closures

France, Italy, Germany/Austria =  
57% of market



- 95% of wine consumed within eighteen months of bottling
- 99% of wine consumed within 24 hours of purchase
- 70% of wine purchased from supermarket chain/ discounter

# Synthetic closures - overview

- Two key production processes

- Extrusion / Co-Extrusion –

- Nukorc



- Nomacorc



- Injection Molding

- e.g. SupremeCorq



# Synthetic closures

## -Material overview-

Numerous materials

- Polyethylene – e.g. Nukorc, Nomacorc
- Expanded polyvinyl – e.g. Co-plast
- Ethyl Vinyl Acetate – e.g. Integra
- Thermoplastic Elastomer – e.g. SupremeCorq

*All are petroleum-based products coated with a food grade silicon.*

# Overview of synthetic closure sector

- Approximately 50 producers
- Two key players – SupremeCorq & Nomacorq – have c.50% market share
- Three ‘second-tier’ global producers
- 45 regional/national/local producers
- 80% injection-molders, 20% (co-)extruders
- 80% of producers based in Italy
- 10% of the production capacity in Italy

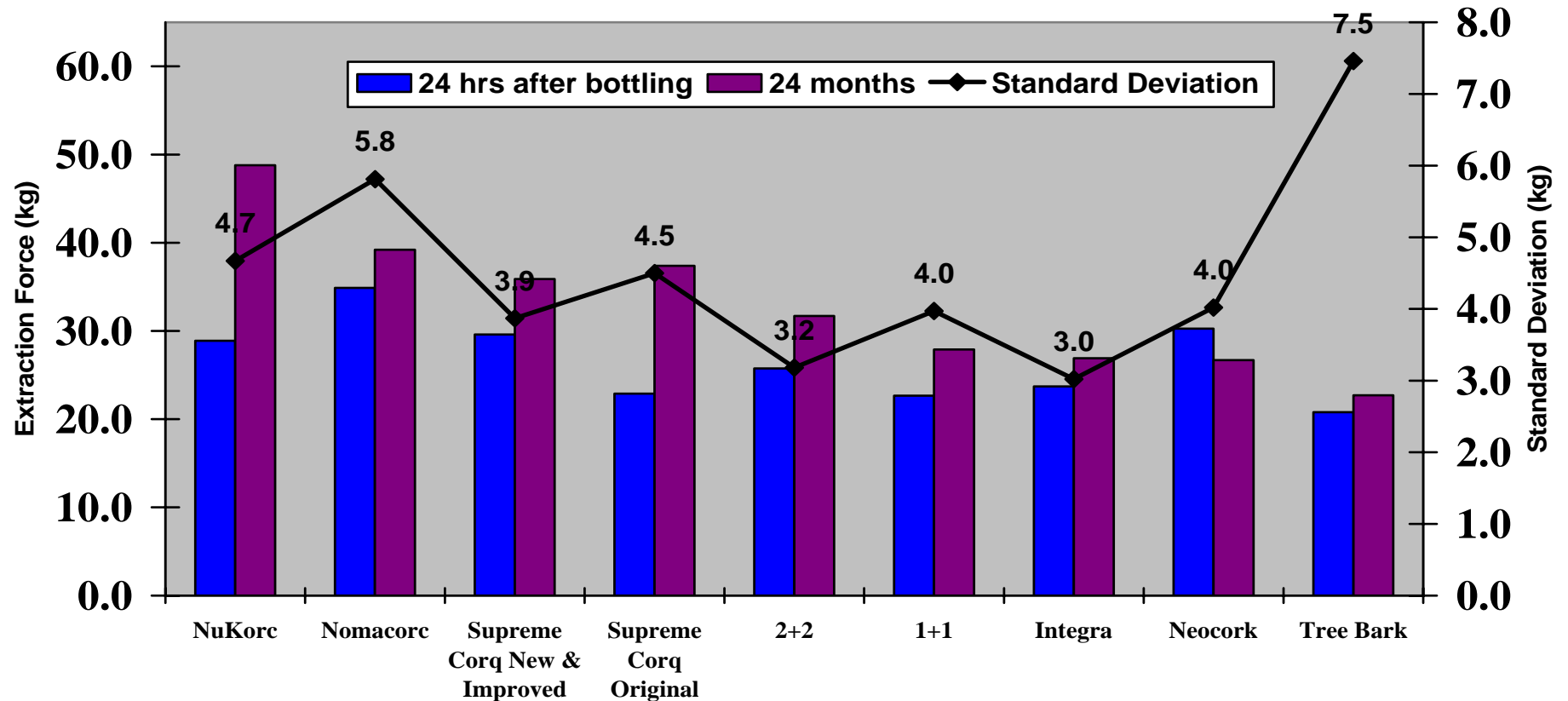
# Overview of synthetic closure sector

- Big differences between product offerings:
  - Extraction force
  - Oxygen barrier performance
  - Ability to re-insert after opening
  - Print quality
  - Service – lead time
  - Quality and consistency
  - Investment in product development

# Key Performance Characteristics

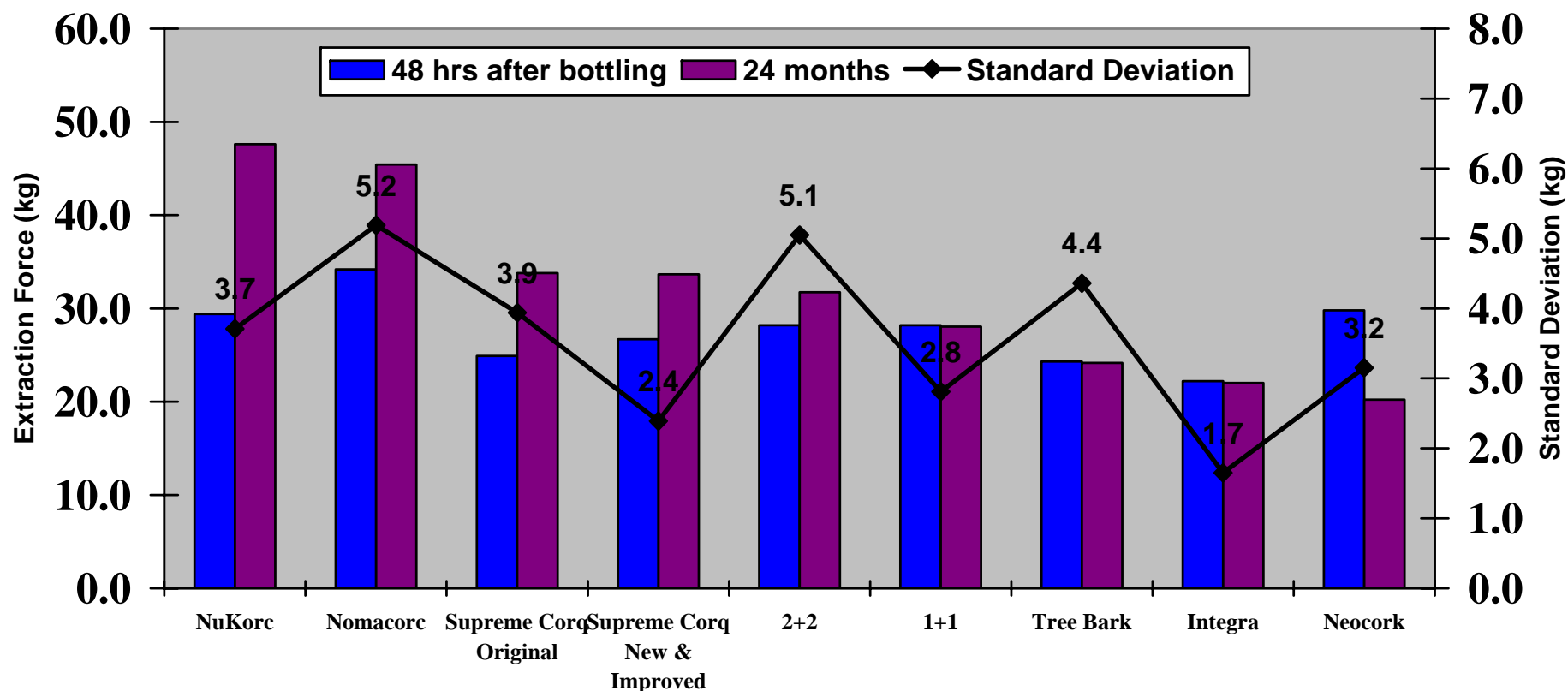
- Extraction
- Barrier Properties
- Removal from a Corkscrew
- Reinsertion
- Push Test

# Extractions after 24 Months Ambient (73°F/23 °C)



**Methodology:** Bottled commercial red wine with various closures. Stored all wine horizontally in 55°F/ 13°C and 50-75% Relative Humidity (RH) at a controlled wine storage facility. After 9 months the bottles were turned to an upright position to replicate retail shelf conditions. After 24 months the bottles were stabilized to 73°F/ 23°C for 24 hours and extraction values were measured using the ISO 9727 method (Dillon TC2 Extraction Unit). In addition, the standard deviation was calculated and averaged.

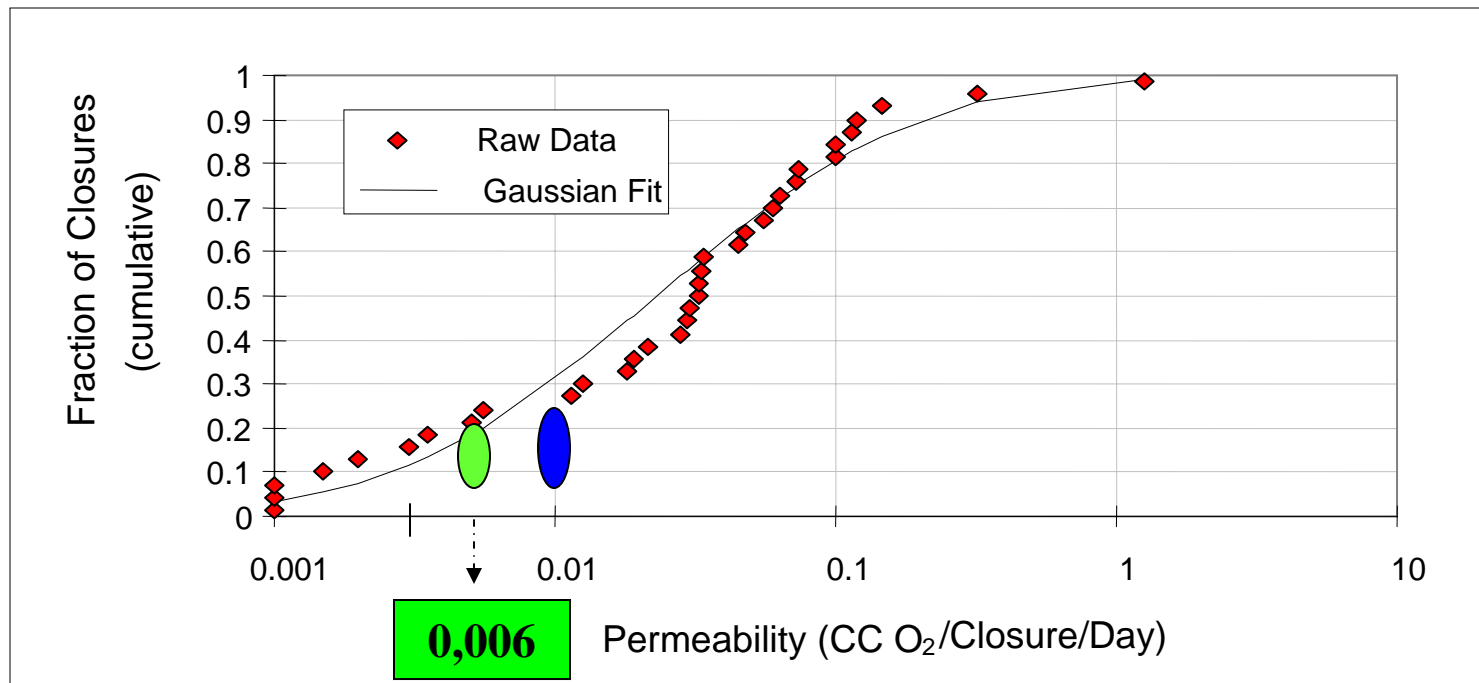
# Extractions after 24 Months - Chilled (43°F/6 °C)



**Methodology:** Bottled commercial white wine with various closures. Stored all wine horizontally in 55°F/ 13°C and 50-75%RH at a controlled wine storage facility. After 9 months the bottles were turned to an upright position to replicate retail shelf conditions. After 24 months, the bottles were chilled to 43°F/ 6°C for 24 hours and then the extraction values were measured using the ISO 9727 method (Dillon TC2 Extraction Unit). In addition, the standard deviation was calculated and averaged.

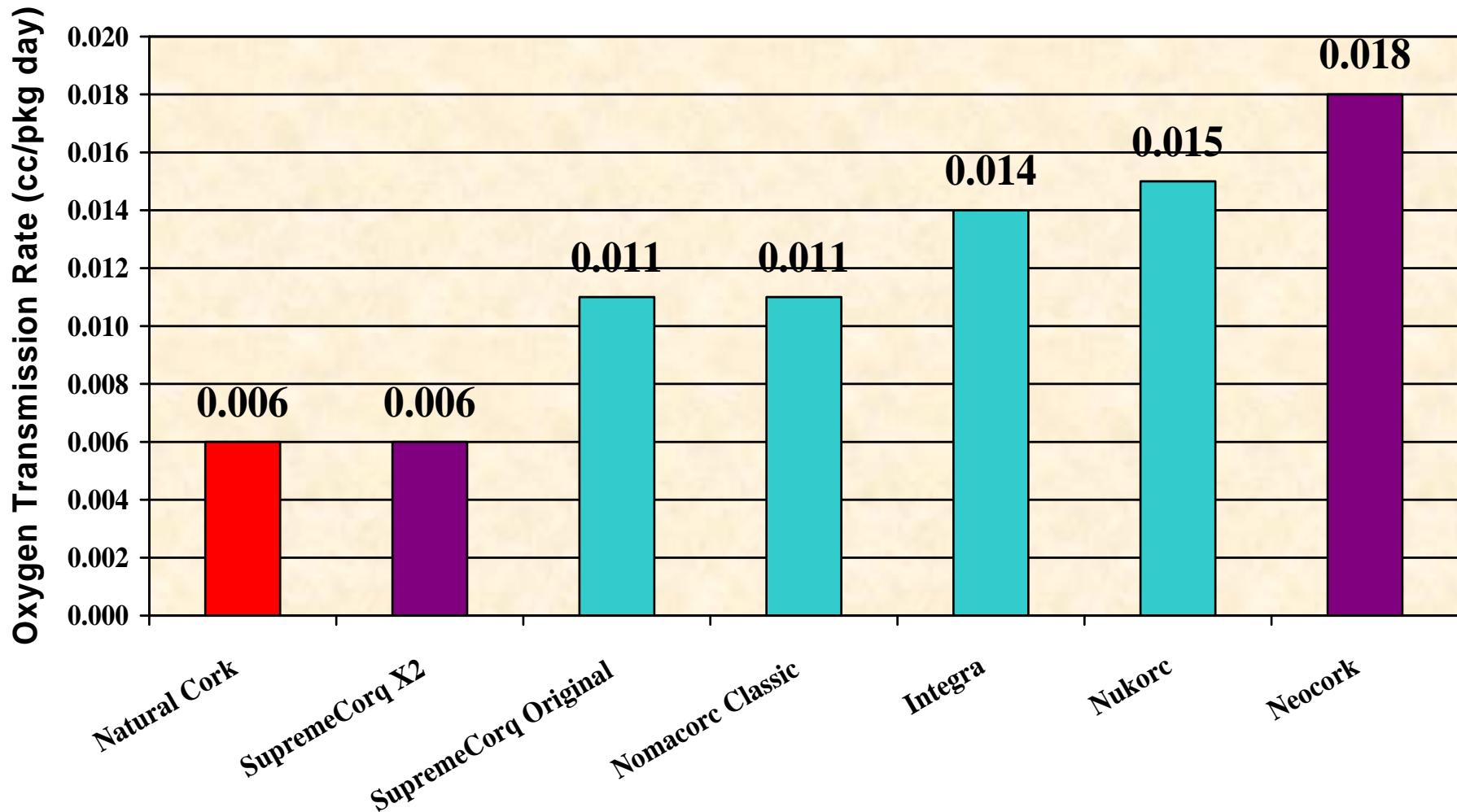
# Permeability of Closures

Tested by Southcorp Packaging, Australia, presented at 2005 ASEV Conference by Richard Gibson



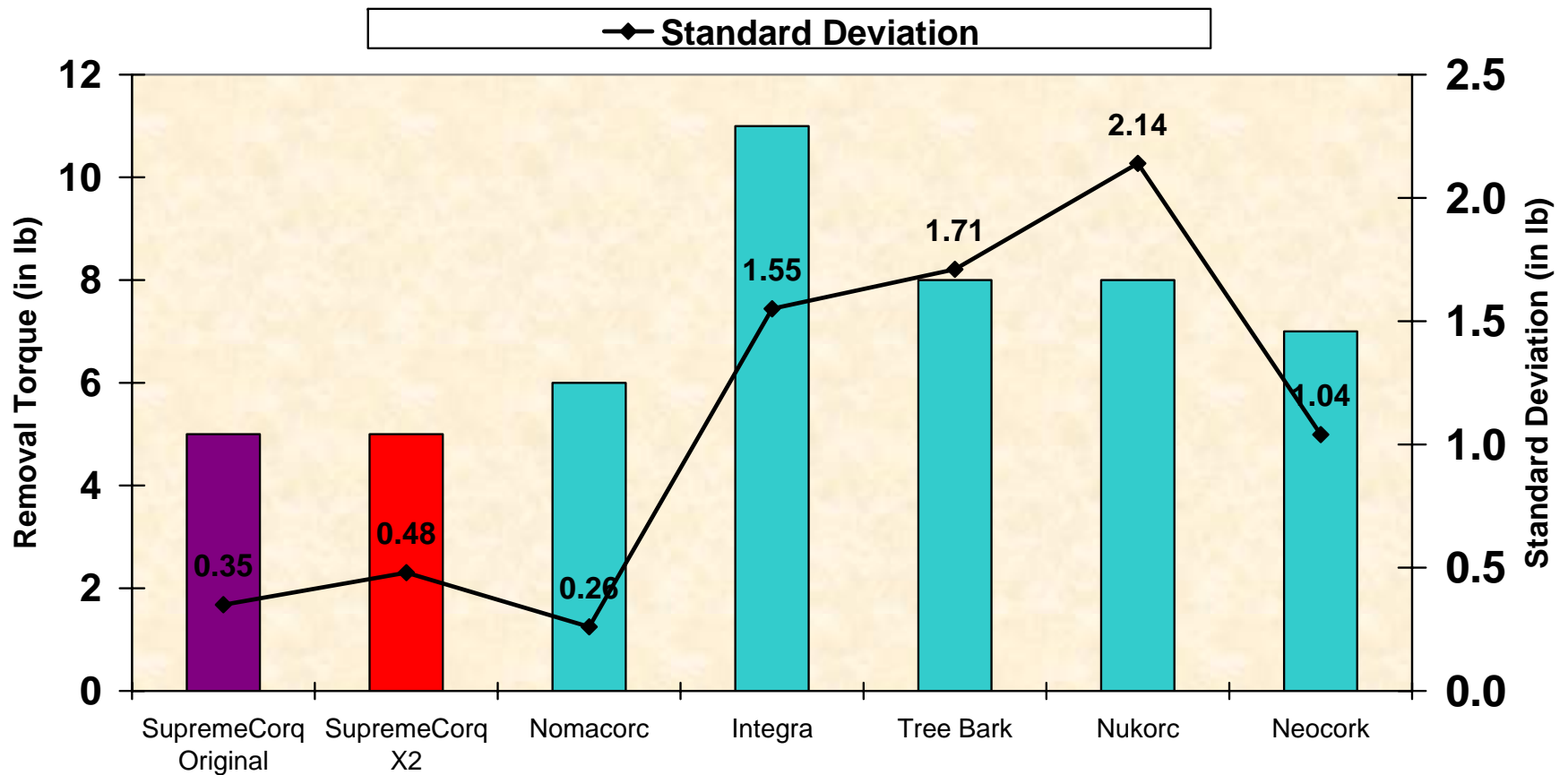
- ◆ 35 randomly selected 44x24 ref 2 natural corks
- Synthetic corks
- SupremeCorq X2

# 38mm - Oxygen Permeability



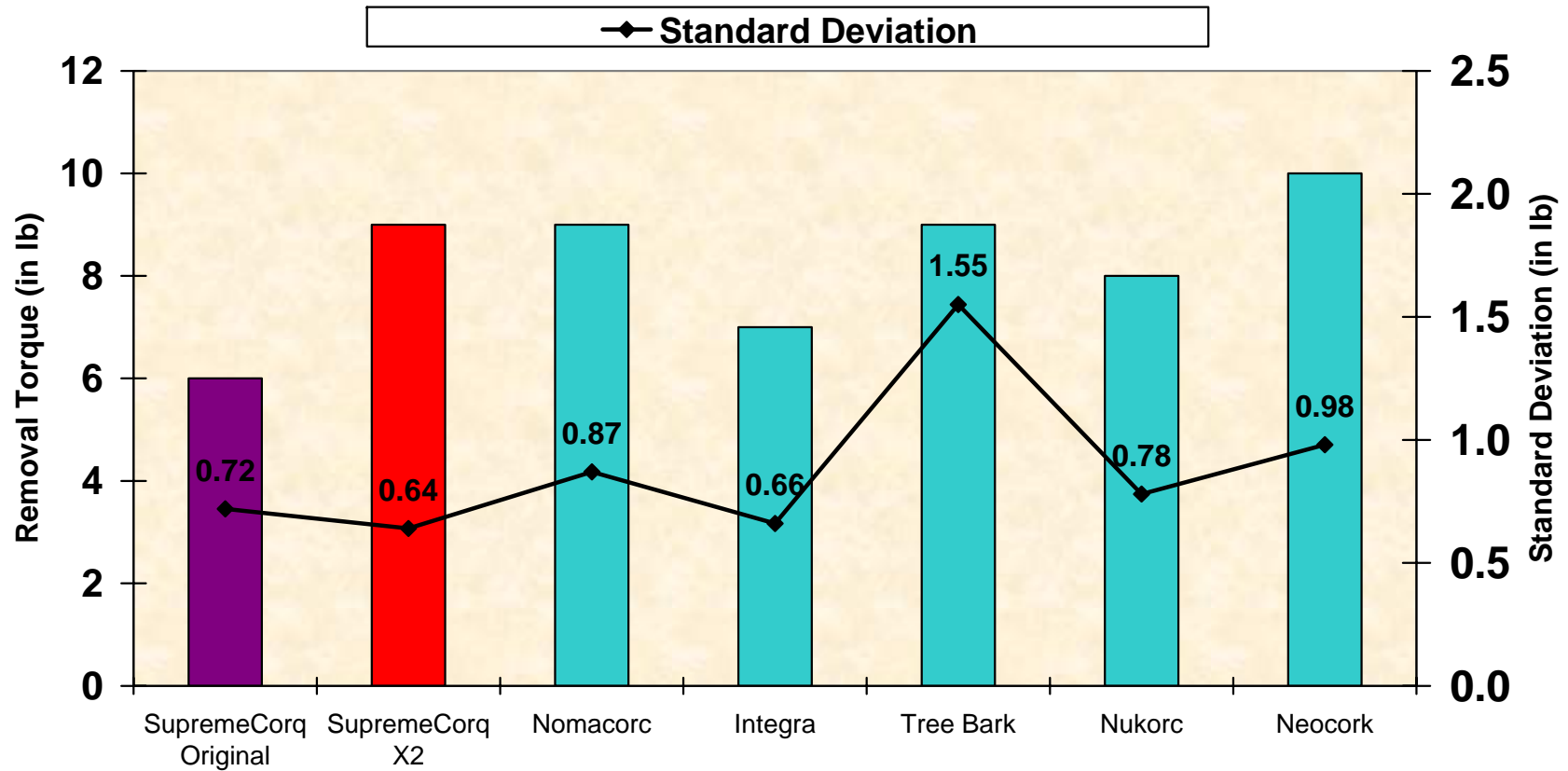
**Methodology:** Testing was performed on an Ox-Tran 2/20 (MOCON, Inc.) at Impact Analytical (Midland, Michigan, USA) per ASTM F1307.

# Torque to Remove from Corkscrew Ambient Temperature (70°F/21°C)



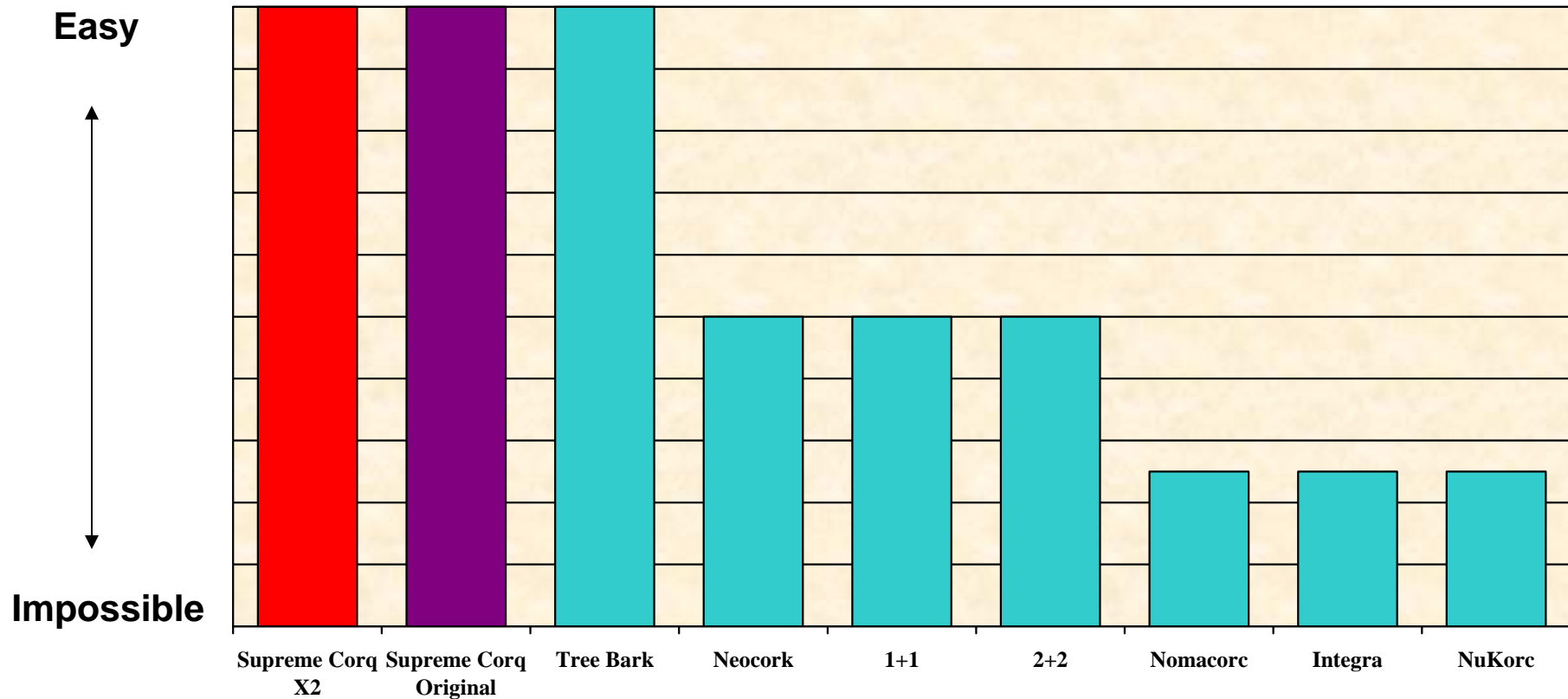
**Methodology:** A “Waiter’s Friend” type corkscrew with a pigtail style auger was inserted into each of the five closures setup in the Electronic Torque Tester, manufactured by Secure Pak, Inc. The torque required to remove the corkscrew from the closure was measured from the digital reader in inch pounds. The five readings were averaged.

# Torque to Remove from Corkscrew Chilled Temperature (42°F/4°C)



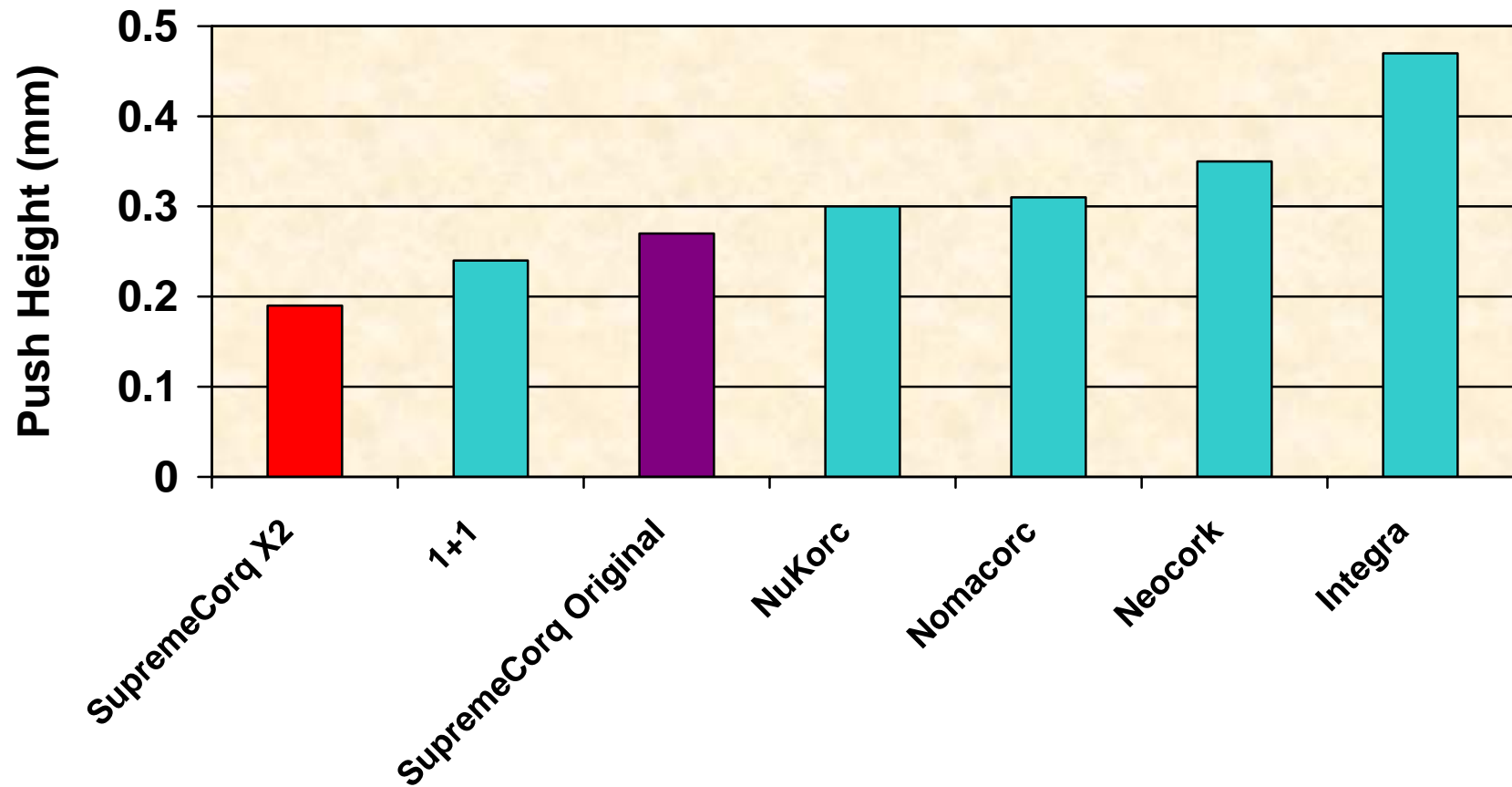
**Methodology:** A “Waiter’s Friend” type corkscrew with a pigtail style auger was inserted into each of the five closures setup in the Electronic Torque Tester, manufactured by Secure Pak, Inc. The torque required to remove the corkscrew from the closure was measured from the digital reader in inch pounds. The five readings were averaged.

# Ease of Manual Cork Reinsertion into Bottle (at Ambient Temperature\*)



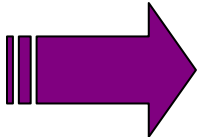
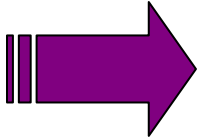
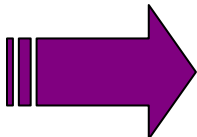
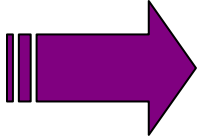
**Note:** 12 bottles of each closure were used. The closure was extracted and reinserted after a ½ hour. Rating of Ease of Manual Reinsertion methodology per AWRI study (Godden 1999).

# Corq Movement Under Heat Stress



**Methodology:** Bottles were filled with tap water and the closures were inserted into each bottle with a semi-automatic bottler and vacuum at  $-5$  psi ( $-0.34$  bar). The insertion height of each closure was measured before and after incubation for 24 hours vertically at  $100^{\circ}\text{F}/38^{\circ}\text{C}$ .

# Quality Assurance

<b>Guiding Principle</b>		<b>Program</b>
Food Safety		<ul style="list-style-type: none"><li>➤ American Institute of Baking (AIB)</li><li>➤ HACCP Program</li><li>➤ British Retail Packaging Standard (BRC)</li></ul>
Product Performance		<ul style="list-style-type: none"><li>➤ Quality Control &amp; Monitoring</li></ul>
Process Control		<ul style="list-style-type: none"><li>➤ ISO 9001:2000</li></ul>
Innovation		<ul style="list-style-type: none"><li>➤ Active R &amp; D Department</li></ul>

# Recap of Key Criteria for Closure Evaluation

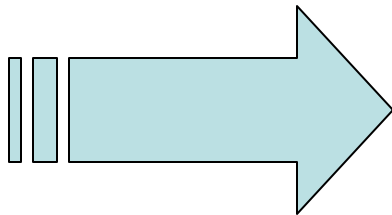
- **Technical performance**
  - Ease of use on bottling line – mechanical
  - Ease of removal—mechanical
  - Wine sealing characteristics—preservative
  - Food safety – quality control certifications
- **Consumer experience**
  - Must be easy to insert the corkscrew
  - Must be easy to extract from the bottle
  - Must be easy to re-insert into the bottle
  - Must not flake crumbs of material into the wine
  - Must look good!

# Marketing managers with Synthetic closures



# Packaging Design

- Brand managers often forget to design the closure
  - What colour? *Complement or contrast*
  - What length? *Technical and aesthetic choice*
  - What colour of ink? *Complement or contrast*



What to print on the corq?

# Examples of considered design

- Complementary colour choices
  - E.g. Cono Sur Vineyards & Winery, Chile



- E.g. Aresti Vineyard, Chile



# Communicate on the closure

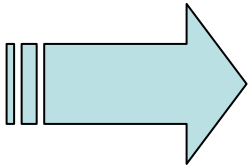
- Develop consumer relationship
  - Website or phone number on the closure
    - E.g. Domaine Bourillon Dorléans, France



***Closure links to the website, including tasting notes, winery history and closure information***

# Other Consumer Marketing Ideas

- Print a web address that links to a site with a promotion campaign or game
- Return 'x' number of corqs from a brand to receive a discount voucher
- Offer branded merchandise
- Co-promote with key retailers



***The only limit is your imagination!***



***Thank you for your attention!***



**Jim Cahill**

**Vice President North American Sales**

**Supreme Corq LLC**