



# **SYNTHETIC CLOSURES**

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**How Good Is Your Seal?**  
**Rutherglen**  
**22 September 2005**

# Closure Choice:

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## Concept of Benefit and Risk:

### Benefits:

- Maximise benefits

### Risks:

- Understand the risks
- Evaluate risk impacts
- Manage the risks



# Risks and Benefits:

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- Comments are generalisations
- Synthetic closures vary from supplier to supplier – polymers, blowing agents, production methods, surface treatments
- Ensure that the performance characteristics of each synthetic are well understood before use



# Risks and Benefits:

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## **Benefits:**

- Cost effective
- Stable price
- No taint....
- Consistent product
- Easy to apply with current equipment
- Market acceptance
- No reduction issues
- Colours and print
- Internal seal
- Consistent performance
- Upright storage OK



# Risks:

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- Oxidation
- Scalping
- Extraction
- Removal from corkscrew



# Oxidation:

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- Oxtrans of synthetics is higher than most other closure types
- Differences between different synthetics
- Performance is usually consistent for each closure type – polymer, density
- Red wine can be enhanced in medium term by higher oxygen exposure

# **Synthetic Closures:**

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**Manage bottled stock age  
to manage oxidation risk**



# Oxidation - Improvements:

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- Oxtrans happens by diffusion
- Increase density – extraction issues
- Higher barrier polymers – may lose other positive properties
- Oxygen absorbers – blowing gas, other materials
- Barrier layers – high oxygen barrier



# Scalping:

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- Scalping driven by affinity of polymers for aroma molecules
- Impact of scalping – only significant if:
  - the wine contains susceptible compounds
  - lowering their concentration causes sensory changes
- No issues in many wine styles
- Polyethylene and terpene-rich aromatics (Riesling, Gewurztraminer, Muscat) do not mix....



# Scalping - Improvements:

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- Polymer change – but may lose other positive properties
- Barrier layers – prevent migration of molecules from wine into the closure



# Extraction:

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- Early synthetics were often difficult to extract
- Synthetic producers were still learning the art of surface treatment
- Density impacts – attempts to maximise oxygen barrier by increasing density contributed to extraction difficulties



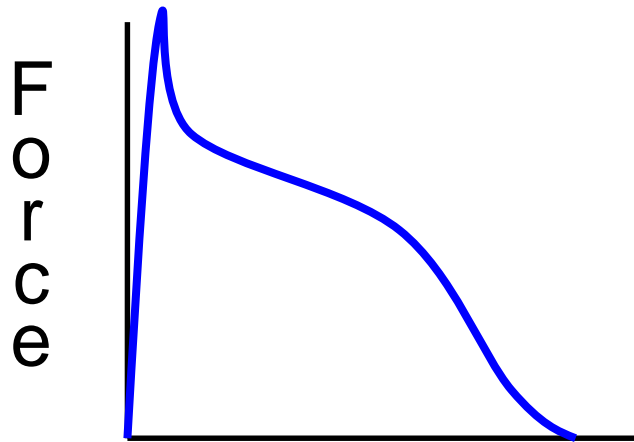
# Extraction - Improvements:

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- More controlled surface treatment application
- Density control
- Quality assurance – extraction testing
- Note – extraction force curve for synthetics is different from cork. Peak force is only required for a short time

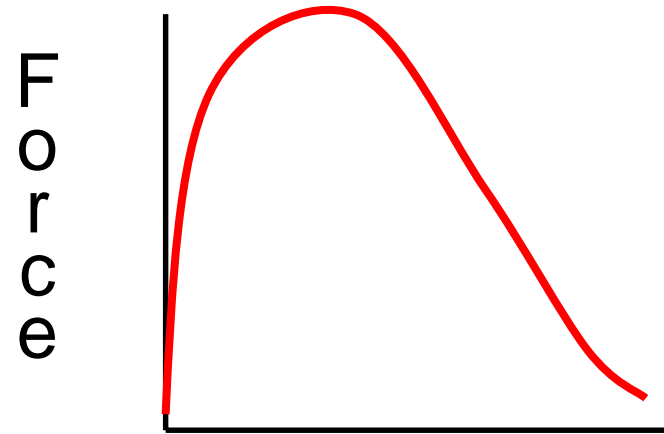
# Extraction:

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mm extraction

Synthetic  
Extraction Curve



mm extraction

Cork  
Extraction Curve



# Removal From Corkscrew:

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- Significant issue with consumers
- Caused by high density
- Excessive friction between polymer and cork screw worm

## **Improvement:**

- Controlled density
- Lower density in closure centre = less friction



# Taint:

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- Polymers used are inert, but.....
- Raw material taint is possible
- Acquired environmental taint is possible e.g. TCA
- Manage by raw material control, processing and storage conditions
- Producer specific

# Synthetics:

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- Cost effective
- Appropriate quality when risks are managed
- High uptake – USA and Europe
- Producer range narrowing
- Development opportunities
- Likely to be a significant closure market option in the future