Glass Interleavants

Brands with a strong heritage and proven track record

Lucite International has been supplying high quality, cost effective interleavant powders to the world’s glass plants since the early 1980s. Our brands, Colacryl® and Lucite®, stand for quality, reliability, and service. There are several key factors contributing to our success:

• Reliable supply from an integrated production process: we are the only interleavant supplier that manufactures acrylic monomers and polymer in-house. We produce acrylic polymer in all major regions of the world and can offer security of supply.
• High quality products: because we manufacture polymer in-house we are able to tightly control the most important characteristics of our products, such as particle size.
• Broad range of products: we offer the most comprehensive range of acrylic products for float and specialty glass. Our range has been developed by working with major glass producers over many decades.
• Flexible approach: our experienced in-house technical team enables us to offer a bespoke service, allowing products to be tailored to specific customer needs. By building direct relationships with glass producers we have been able to develop a wide range of bespoke products, which continues to grow.

What does a glass interleavant do?

Surface degradation of stacked sheets of float glass can occur during storage in humid environments. For this reason, it is standard practice in the float glass industry to employ interleavant coatings [1]. The primary function of an interleavant is to separate the stacked glass sheets in order to prevent glass-to-glass contact and thus eliminate capillary adhesion. A second important function is to inhibit corrosion by alkalis. This has led to the introduction of acid modified interleavants.

Why choose acrylic?

The use of acrylic (commonly known as PMMA) interleavant is a proven, cost effective way of protecting glass during storage and transport. A PMMA system has significant benefits over other types of interleavants as follows:

• It is the only system where particle size is controlled. This reduces the number of pressure points on the glass and therefore reduces losses due to breakage.
• Prevention of surface-to-surface abrasion in transit is superior to organic flours.
• Easily accepts electrostatic charge to minimise powder fall-off when stacked vertically unlike other interleavants, such as polyethylene.
• Easy to wash off prior to downstream processing unlike polyethylene, which is hydrophobic and is preferentially attracted to glass in water.
• PMMA is denser than water and therefore sinks in plant washing systems unlike polyethylene. This allows the PMMA waste to be easily collected and avoids the formation of scum.
• Order of magnitude cheaper than paper.
• Compared to paper, less waste to be disposed of.
• PMMA can easily be modified with acid to reduce staining, while paper cannot.
• PMMA is a clean interleavant unlike organic flours, which can leave residues on the glass.
• Paper can contain process chemical residues, which may cause damage to glass surfaces.

Why have acid modification of an interleavant?

Acid modified interleavants help prevent any permanent staining of newly produced glass sheets. In Stage One Corrosion, sodium ions on the surface of the glass react with hydroxyl ions from water in the air. This causes an increase in alkalinity as sodium hydroxide is formed at the surface of the glass. If this continues for sufficient time the pH level will increase and eventually reach pH9. At this point the alkaline environment begins to attack the surface of the glass and results in pitting; known as Stage Two Corrosion, which is irreversible. This is characterised by the appearance of an iridescent stain. Consequently it follows that in more humid atmospheres interleavants need to be capable of resisting increases in pH. This is typically achieved by having an acidic interleavant powder, which can neutralise the alkalinity.

Which acid?

Several acids are used within the industry to modify pH on the surface of the glass. The most common is adipic acid, but citric and boric acids are also used. Boric acid has become increasingly popular over recent years as it is relatively inexpensive. On a weight basis, the neutralizing capability of these three acids is almost equivalent [2].
This means that the selection of a specific acid system has so far been dictated by economic and environmental factors.

However, boric acid has been identified by the European Chemical Agency (ECHA) as a reprotoxin and was added as a substance of very high concern (SVHC) to the candidate list in June 2010.

At Lucite International, Safety, Health and the Environment are our top priority. We have developed a comprehensive range of acid modified grades based on adipic acid ahead of changes in guidelines, and have eliminated all boric acid based products from our range.

**Our glass interleavant grades**

We offer a wide range of acrylic Interleavants that are recognised world-wide for their ability to perform effectively and efficiently. Our extensive product range covers float, specialty coated and laminated glass and has been created using our extensive experience to provide the best choice and quality to our customers. We are also happy to work in partnership with our customers to develop bespoke products to match specific requirements.

Lucite® and Colacryl® Specialty Polymers are sold in 50kg fibreboard kegs. Other pack types are available to special order.

<table>
<thead>
<tr>
<th>Application</th>
<th>Recommended grades</th>
<th>Mean diameter (µ)</th>
<th>Adipic acid content (%)</th>
<th>Features and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmodified acrylic for float glass interleaving</td>
<td>Colacryl® DA100P</td>
<td>55-66</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colacryl® TS1588</td>
<td>80-105</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lucite® 47Gi</td>
<td>130-160</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Acid modified acrylic polymer for float glass interleaving</td>
<td>PBM</td>
<td>55-66</td>
<td>10</td>
<td>Range of particle sizes and acid content to suit different climatic conditions</td>
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<tr>
<td></td>
<td>Colacryl® TS2060</td>
<td>55-66</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colacryl® TS1693</td>
<td>55-66</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colacryl® TS1897</td>
<td>80-105</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Hard coated glass</td>
<td>Lucite® 1192</td>
<td>75-100</td>
<td>0</td>
<td>Ultra high molecular weight PMMA</td>
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<tr>
<td>Soft coated glass</td>
<td>Colacryl® TS2050</td>
<td>50-60</td>
<td>0</td>
<td>Very tight particle size distribution to reduce damage to coating</td>
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<tr>
<td>Additional transport protection for soft coated glass</td>
<td>Colacryl® TS1894</td>
<td>55-67</td>
<td>0</td>
<td>Contains anti-static agent to reduce static build up and hence reduce damage due to static discharge</td>
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<tr>
<td>Mirror</td>
<td>Colacryl® DA100P</td>
<td>55-66</td>
<td>0</td>
<td>Higher application rate recommended</td>
</tr>
<tr>
<td>Laminated</td>
<td>Colacryl® P2608</td>
<td>80-125</td>
<td>0</td>
<td>Cross linked polystyrene grade</td>
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</tbody>
</table>
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References

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