

# HALLGREEN® P-55 GC

**HallGreen® P-55 GC is a game-changer in PVC film calendaring, offering a holistic solution that elevates efficiency, quality, and sustainability**

When processing PVC calendared film, the occurrence of 'gas check' surface defects is a common quality problem that is costly and time consuming to fix. These flaws, often described as specks, air bubbles or flecking, loom as a significant challenge that can compromise product quality and mechanical integrity. They not only mar the film's surface but incur substantial costs due to material wastage and recycling.

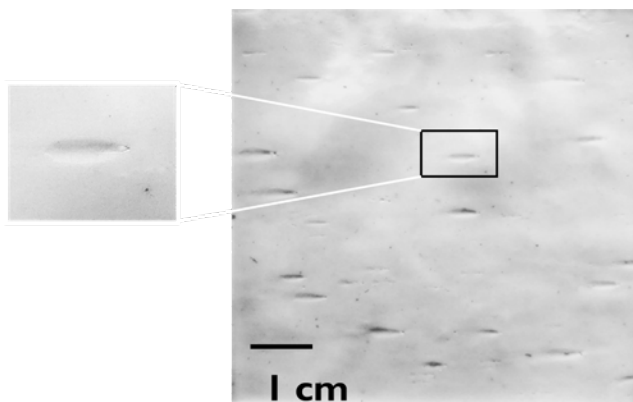
Traditionally, mitigating gas checks has been a laborious journey of tweaking processing parameters or resorting to the cumbersome method of laminating thinner films together. Such endeavors are not only time consuming, but generate considerable scrap, adding to operational inefficiencies.

Enter HallGreen® P-55 GC, a cutting-edge bio-based modifier developed through a collaboration between Hallstar and the prestigious McGill University in Montreal, Canada. This proprietary chemical additive is poised to revolutionize the landscape of PVC film production by effectively eliminating gas check formation.

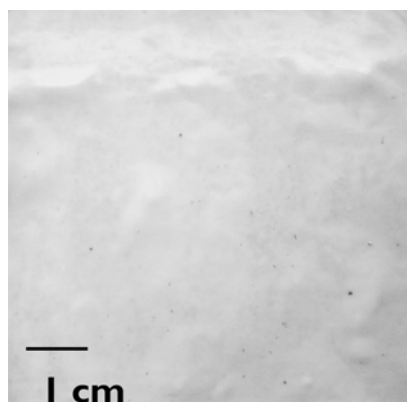
Incorporating HallGreen® P-55 GC into the PVC formulation at typical concentrations of around 5 parts per 100 (pph) can mitigate gas checks by an impressive 40-100%. Remarkably, this breakthrough additive exerts its influence while maintaining the inherent physical properties of the PVC film, ensuring uncompromised quality.



**PVC film with gas check imperfections**

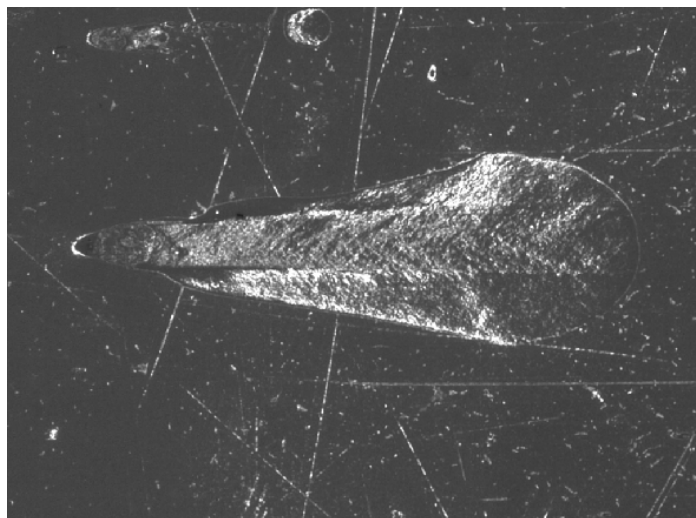
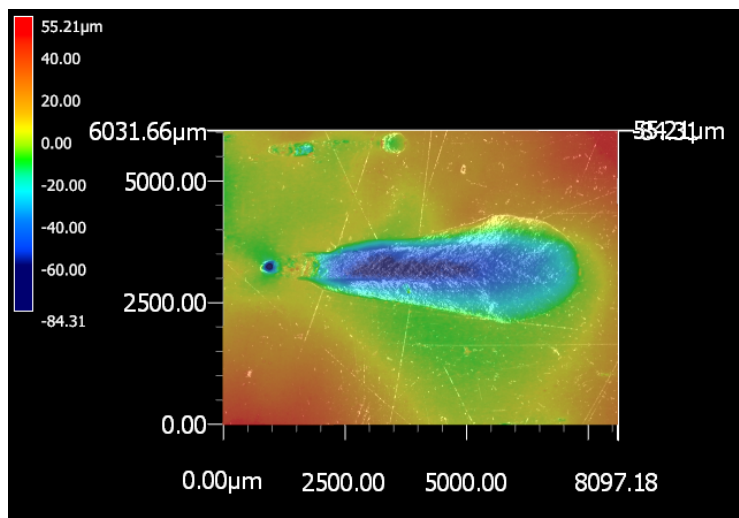


**PVC film using HallGreen® P-55 GC (gas checks eliminated)**



HallGreen® P-55 GC offers sustainability benefits as well as quality solutions. By substantially reducing rework and scrap rates, it curtails material wastage, aligning with eco-conscious practices. Moreover, this innovative modifier facilitates the production of thicker films in a single pass, eliminating the need for multiple laminations and thereby streamlining processing time.

With a raw material composition that is remarkably 55% bio-based, HallGreen® P-55 GC exemplifies a commitment to environmentally responsible innovation. It boasts regulatory approvals from TSCA and REACH, ensuring compliance and peace of mind for operators.



**Figure 1.** Characterization of gas checks in PVC film through 3D microscopy

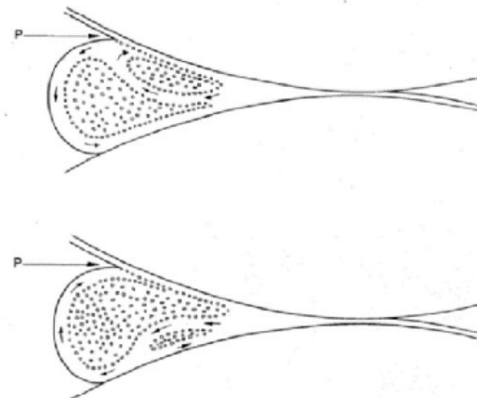
HallGreen® P-55 GC can be used in both *flexible* and *semi-rigid PVC film*. It is not a true plasticizer but does lead to *faster fusion* and *increased milling efficiency*.

### Key Operational Parameters

- **Film thickness:** Optimal at a minimum of 20 mils, though it works on thinner films with careful processing.
- **Processing efficiency:** Its positive effects on films >20 mils allow processing in one step, eliminating the need to laminate multiple thinner films and thus reducing process time and complexity.
- **Temperature management:** The modifier increases the mill's compound temperature due to enhanced material contact. It is recommended that you reduce starting temperature by 2-5°C.
- **Reactivity:** It appears to have no reaction with mixed metal heat stabilizers, organotin, or benzophenones.

### Usage Levels

- **Flexible films:** Start with 6-8 PHR. For films <5 mil, use 2-4 PHR, and reduce primary plasticizer by the amount of P-55 GC used.
- **Semi-rigid films:** If no primary plasticizer is used, start with 2-4 PHR. If there is a primary plasticizer, reduce it 1:1, as noted above, i.e., by the same amount of P-55 GC used.



**Figure 2.** Theory of gas entrapment causing defects to form during calendaring process.

Experience the future of PVC production today with HallGreen® P-55 GC. Contact us to request samples and embark on a transformative journey towards enhanced productivity and environmental stewardship.

### REQUEST A SAMPLE

Contact your Hallstar account executive

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