

FORGING: ENHANCE SUSTAINABILITY BY TRANSITIONING FROM SAWDUST TO TAILORED WATER-GRAPHITE FLUIDS

By Mo Gharbi, Segment Leader Forging & Heat Treatment, EMEA Region

Introduction

Forging is a highly technical demand manufacturing process used across various industries to produce vital, durable components. Due to its availability and initial cost-effectiveness, Sawdust has been used as a lubricant in forging under a hammer. However, the drawbacks of using Sawdust, including environmental and health impacts, have prompted a shift towards more sustainable and efficient alternatives.

This white paper explores the advantages of transitioning from Sawdust to Quaker Houghton Tailored water-based graphite fluids, highlighting these modern lubricants' enhanced performance and sustainability.

Limitations of Sawdust in Hammer Forging

Sawdust-based lubricants have been integral to forging operations for decades. While they provide basic lubrication and release effect, their use is fraught with several significant disadvantages:

- **Environmental and Health Hazards:** Sawdust lubricants release high levels of smoke and particulates, worsening air quality and posing health risks to workers.
- **Increased Maintenance and Operational Costs:** The residue left by Sawdust lubricants requires frequent cleaning, leading to higher maintenance costs and downtime.
- **Inconsistent Quality of Forged products:** Lubrication variation can lead to defects and inconsistencies in the final products.
- **Regulatory and Compliance Challenges:** Increasingly stringent environmental regulations limit using high-VOC substances like Sawdust

Benefits of Water-Based Graphite Fluids

Switching to Quaker Houghton tailored water-based graphite fluids offers numerous advantages over traditional Sawdust application:

- **Reduced Environmental Impact:** These fluids are low in VOCs and produce fewer emissions, which aligns with environmental compliance and improves workplace conditions.
- **Enhanced Lubrication and Efficiency:** Water-based graphite fluids provide superior lubrication, reducing tools' wear and increasing the forging equipment's lifespan.
- **Lower Operational Costs:** Due to their efficient performance and lower residue, these fluids decrease the frequency of maintenance and cleaning.
- **Consistent Product Quality:** The stable lubrication properties ensure uniform quality across forged products, reducing waste and rework.

QH PRESSMAX™ FWG Family of Products

In response to the industry's need for more sustainable and effective lubricants, Quaker Houghton has developed a tailored FWG family of water-based graphite forging lubricants. These products are specifically formulated to perform exceptionally in high-temperature and high-load forging operations. QH PRESSMAX™ FWG series not only meets the environmental and safety standards of modern manufacturing but also enhances operational efficiency and product quality. Key benefits include:

- **Superior Thermal Stability:** maintain their properties under extreme temperatures, ensuring consistent application and protection.



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- **Reduced Smoke and Odor:** QH PRESSMAX™ FWG products contribute to a cleaner and safer working environment by minimizing fume emissions.
- **Versatility:** Suitable for a wide range of metals and forging processes, including lightweight alloys like titanium and aluminium, this family of products provides flexibility in application and adapts to specific operational needs.

Conclusion

The transition from Sawdust to Quaker Houghton water-based graphite fluids significantly advances forging technology. This shift addresses the environmental and health concerns associated with traditional lubricants and enhances operational efficiency and product quality. QH PRESSMAX™ FWG family of products exemplifies innovation in this space, offering forging operations a competitive edge in both performance and sustainability. As industries continue to evolve and prioritize efficiency and environmental responsibility, adopting advanced solutions like QH PRESSMAX™ FWG products becomes not just beneficial but essential.

