

# INDUSTRIAL DE Aluminum Canning Handbook





#### WHO WE ARE



• Ovens

Decorators
Neckers

Omniseal Solutions<sup>™</sup> is a global engineering leader with over 65 years of historical legacy, relentlessly dedicated to the design and manufacture of precision sealing and material solutions that protect critical applications in the most demanding environments and passionately driven to push "Beyond the Boundaries of Possible".

This pioneering spirit has led us to be specialists in engineering many precision solutions such as the self-lubricating composite materials used for Aluminum Food & Beverage canning equipment.

These composite parts are included in the following applications and can also be reworked for a customer's existing application.

- Presses
- Bodymakers
- Trimmers
- Inside Sprays

Aside from the canning industry, Omniseal Solutions<sup>™</sup> also provides other composite solutions for high-temperature and long-life applications in industrial and aviation applications. This knowledge was gained as a result of the acquisition of HyComp, LLC in 2018, an expert in advanced composite technology.

Originally founded in 1986, HyComp, LLC initially focused on business development in the North American steel / aluminum rolling mills, aluminum canning and aerospace markets, later shifting globally in the mid-1990s. In 2001, SMS bought HyComp, LLC for its material technology and processing capabilities, creating a new pattern and direction towards the industrial market, which continues to grow with emerging business in the aluminum beverage and food canning equipment market.

### WHAT WE OFFER

- With over 30 years of successfully designing and manufacturing parts for both OEMs and end users in the canning industry, we fully understand the tolerances, clearances, and overall level of quality required in this business.
- Proven processes include injection, compression, and transfer molding with press sizes ranging from 150 to 500 tons.
- > We have the ability to design, build, and modify injection and compression mold tooling and fixtures, which allows us to offer a start to finish solution under one roof.
- Machining capabilities and experience is longstanding with technical and complex solutions for long and short fiber engineered thermoplastics and thermoset composites using CNC machining and CNC turning services, as well as CNC ID / OD grinding, surface grinding, honing, and lapping.





#### **HIGH-PERFORMANCE MATERIALS**

Omniseal Solutions<sup>™</sup> produces self-lubricating composites for a wide array of applications including the can making industry.

Wearcomp<sup>®</sup> and Meldin<sup>®</sup> 7500 (formerly known as Fibrecomp<sup>®</sup>) materials are a blend of polyimide resin, carbon and graphite fillers. These materials have superior mechanical strength and wear characteristics, combined with a low co-efficient of friction and excellent dimensional stability.

Property Description	Degrees	Units	Wearcomp®	Meldin <sup>®</sup> 7500
Raw Material Type			SMC	ВМС
Specific Gravity		g/cm	1.55	1.50
Mechanical Properties				
Tensile Strength	23°C (73°F)	MPa (PSI)	220 (32,000)	83 (12,000)
	260°C (500°F)	MPa (PSI)	186 (27,000)	55 (8,000)
Flexural Strength	23°C (73°F)	MPa (PSI)	345 (50,000)	103 (12,000)
	260°C (500°F)	MPa (PSI)	310 (45,000)	83 (15,000)
Compressive Strength	23°C (73°F)	MPa (PSI)	517 (75,000)	248 (36,000)
	260°C (500°F)	MPa (PSI)	345 (50,000)	172 (25,000)
Thermal Properties				
Temperature Range			315°C (600°F)	315°C (600°F)
Wear Characteristics				
Co-efficient of Friction			0.15-0.20	0.10-0.20
Limiting PV (unlubricated)		MPa•m/s	2.8 (80,000)	4.2 (120,000)
General				
Reinforcing Materials			Carbon Fiber	Carbon Fiber/ Graphite
Resin Matrix			Polyimide	Polyimide

Bushings, manifolds, wear bands and liners manufactured with our composite materials provide extended life as compared to traditional materials such as nylon, PTFE, PEEK and lubricated bronze. As a result, can manufacturers are ensured higher productivity, clean operations and overall lower cost of ownership.



#### **BENEFITS**

- Self-lubricating material eliminates the need for constant lubrication / greasing, saving mess and cost.
- Extended life improves productivity due to low wear rate, providing at least 4 times longer life compared to traditional materials such as nylon, PTFE, PEEK and bronze.
- Continuous operating temperature capability of 316°C (600°F)
  - Light weight, excellent dimensional stability and high impact resistance

#### HOW WE WORK

## Through co-development and a collaborative spirit, your specific challenges can be solved!

- Internal and external requirements are met during every aspect of product realization and part qualification.
- The entire process is managed from design concept to full scale production.
- Engineers work concurrently with your technical team to assist in all phases of the product development process.
- Repeatable, consistent, and stable processes are established, producing high quality products that extend service life as well as save time and cost.





*NEAR IN INCHES* 

Manufacturing Specialists



**Collaborative Design Partners** 

#### THE FIRST BREAKTHROUGH

In 2001, a can maker came to Omniseal Solutions<sup>™</sup> with a wear problem on their necker star wheel manifold. The manifold was made of PTFE material. Due to the high speed operation, the star wheel warped and wore unevenly. The can maker spent hours replacing the manifold, which caused production losses.

Omniseal Solutions<sup>™</sup> offered a star wheel manifold, which surpassed the can maker's expectation.

Extended life makes a critical impact on this industry since aluminum can manufacturers produce millions of cans each day. They rely on highspeed equipment and can making is economical only if they can run the plant uninterrupted. In these situations, composite solutions provide low wear, dimensional stability, great reliability, and reductions ins downtime and maintenance costs.

#### ALUMINUM CAN PRODUCTION: WHERE COMPOSITE MATERIALS GO BEYOND



#### 1. BODY MAKER RAM CARTRIDGES

Body Maker Ram Cartridges are upgraded with Hycomp<sup>™</sup> composite bushings for reduced shaft clearance, which provide better alignment and reduce wear and tear to your tooling. These type of bushings allow the shaft to make contact with the bearing surface without scratching, maintaining alignment and reducing amount of hydrostatic pressure needed. This will preserve your pumps and seals!





#### 2. TRIMMER SPINDLE HOUSINGS

Trimmer Spindle Housings are lined with Hycomp<sup>™</sup> composite materials to significantly improve trimmer performance through the elimination of grease, improved shaft (and tool) alignment, and prevention of metal on metal galling that causes the tool head to stick.





#### **3. DECORATORS**

Decorators are expensive to service and run for long periods of time once set up. Any upgrades that can extend its service life are invaluable. Hycomp<sup>™</sup> composite air manifolds are prime examples of this type of upgrade. Our materials run and maintain shape for longer periods, which improve air seal, maintain alignment, and reduce maintenance downtime.





#### 4. IC SPRAY MACHINES

Hycomp<sup>™</sup> composite air manifolds and wear rings improve service life on this spray application. As a continuously operated and simpler machine, you want to be able to let it run with confidence without any maintenance issue. Our materials are dimensionally stable and offer extended service life, so you can set this machine up and move on to other more labor intensive projects.





#### **5. NECKER RAM HOUSINGS**

Necker Ram Housings on both pusher and tooling sides are lined with Hycomp<sup>™</sup> composite materials. Our material stability quadruples service life and improves alignment, protecting your tooling and reducing scrap. Because composites have low friction, customers can completely eliminate automatic grease feeds, which either clog up (leading to shaft seizure) or over-lubricate. A huge mess is averted!



**6. LIGHT TESTERS** 

Light Testers must maintain perfect balance or measurements will be off and good cans could be scrapped. If you can maintain machine alignment, you can maintain a quality product and reduce scrap. Hycomp<sup>™</sup> manifolds are designed and engineered to achieve this alignment. They do not deform under load and maintain shape for longer service cycles, allowing you to 'set-and-forget' your parts and the function they serve.



#### ONE GLOBAL TEAM... A DEDICATED CUSTOMER FOCUS



#### **GLOBAL & LOCAL PRESENCE**

With 17 manufacturing facilities in 10 different countries, Omniseal Solutions<sup>™</sup> is a diverse group that is committed to being customer centric.

#### Contact our industrial team of experts for more information. We have local resources to support you!

- North America, Mexico & Canada: Patrick McSweeney; patrick.mcsweeney@saintgobain.com; Mob: +1 216 849 3210
- South America: Rodrigo Boscolo Costa; rodrigo.boscolo@saint-gobain.com; Mob: +55 19 99417 1644
- Northern & Western Europe: Roland Wagner; roland.wagner@saint-gobain.com; Mob: +49 177 386 9254
- Central Europe: Regina Schaade; regina.schaade@saint-gobain.com; Mob: +49 172 232 5371
- Southern & Eastern Europe: Alessio Romiti; alessio.romiti@saint-gobain.com; Mob: +39 334 698 1366
- India: Hitesh Chawhan; Hitesh.chawhan@saint-gobain.com; Mob: +91 97316 00711
- China: Sam Xu; sam.xu@saint-gobain.com; Mob: +86 137 01093921
- South East Asia: George Boey; George.boey@saint-gobain.com; Mob: +65 9630 1351

#### www.omniseal-solutions.com

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