Engineering World-Class Compounds
Pensacola, Florida

Ascend Performance Materials® added significant compounding capability at its facility in Pensacola, Fla. The new assets and the underlying technology have demonstrated significant benefits in terms of process productivity and part quality.

vydyne pa 66™

www.ascendmaterials.com

New Pensacola Compounds

Ascend is a leading global provider of PA66 resin and compounds. Its fully integrated manufacturing assets are strategically located in the southeastern U.S., having close proximity to major sources of energy and key chemical feedstocks and easy access to sea ports to enable global trade. Ascend produces PA66 resin in Pensacola, Fla., and in Greenwood, S.C. Since 2005, Ascend has more than doubled its resin capacity, primarily in Pensacola, making it the largest PA66 resin producer in the world. Since 2010, Ascend has additionally focused capital and resources on producing high quality Vydyne® PA66 compounds.

In 2013, Ascend added a world-scale compounding line (30 kmt/yr) in Pensacola. The new line adds state-of-the-art capabilities for producing unique, high-performance compounds.

Ascend's global compounding strategy is based on the following components:

- **Quality:** Ascend's innovative process to produce Vydyne compounds will deliver class-leading consistency, cleanliness and performance.
- **Reliability:** Ascend offers a highly reliable global network of compounding assets and logistics to ensure uninterrupted supply.
- **Scale:** Ascend's new high-capacity compounding assets near Pensacola polymer production use scale and integration of the PA66 resin production site.
- **Geography:** Ascend integrates its compounding center of excellence with resin and R&D assets in the southeastern U.S. In addition, customers in Europe, Africa and Asia who prefer local manufacturing benefit from Ascend's strategic compounding partnerships in those regions.

Differentiated Compound Quality

Reduced part variation resulting from precise viscosity control

Product capability in injection molding is typically measured in terms of shot-to-shot variability in critical process and product attributes. Robust process control systems have product characteristics such as aesthetics, dimensions and mechanical/thermal/electrical performance systematically linked to quantifiable process attributes, such as cavity pressure. The control of cavity pressure is dependent on equipment capability—both mold and machine—and variation within the viscosity of the incoming polymer melt stream.

Vydyne 30% Glass-Filled Compound (R530H)

FIGURE 1

Compound Viscosity

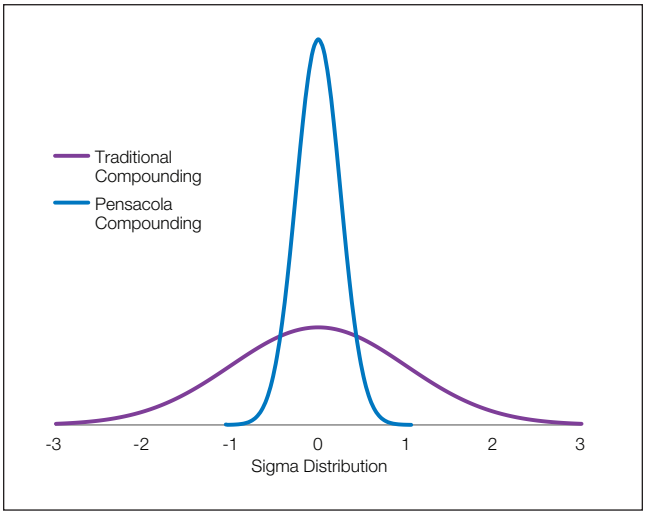
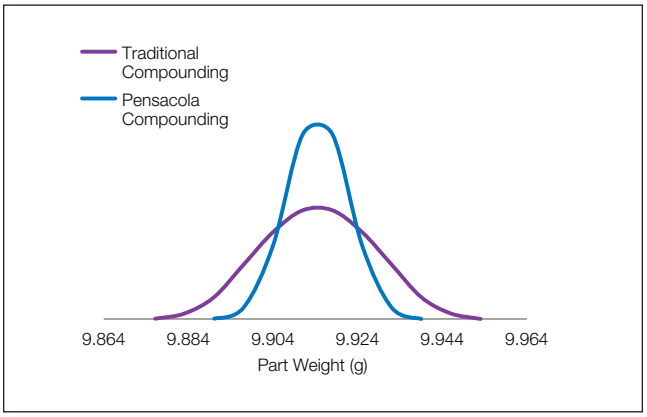


FIGURE 2

Injection-Molded Part Weight



The scale of the Pensacola compounding assets combined with proprietary PA66 feedstock leads to industry-leading control of compound viscosity (**Figure 1**). This improvement in viscosity control delivers larger injection-molding processing windows and a reduction in part weight variation (**Figure 2**).

Precise control over part weight minimizes dimensional inconsistencies, short shots, flash and overall yield loss.

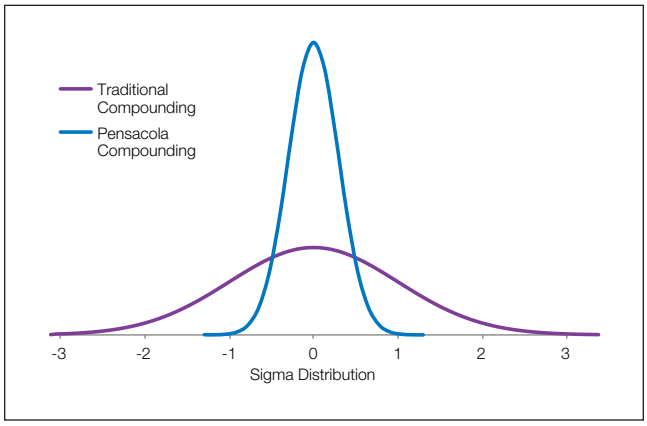
Customers with complex geometries, long flow paths and thin-wall parts benefit from consistent compound viscosity.

Consistent physical properties that enable design flexibility

Pensacola compounds are setting a new standard for quality in physical properties. The combination of a pure PA66 feedstock with a state-of-the-art compounding process are delivering marked improvement in the consistency of many important physical measures. Figure 3 illustrates this benefit in notched izod impact resistance. Compared to a traditional compounding process running at a controlled 1.33 Ppk, 30% glass-filled products made at the Pensacola compounding facility enable a Ppk increase to 4.45 (assuming the same process control limits).

FIGURE 3

Notched Izod (30% glass-filled PA66)



Ultra clean compounds that enable long, trouble-free molding runs

The injection-molding process is often burdened by mold deposits—also referred to as plate-out. At typical PA66 processing temperatures (280 to 320° C), there is a gradual buildup of volatiles that precipitate out of the polymer melt and condense on the relatively cold mold surface. High shear rates result in localized super-heating within the melt stream that drives out volatiles. This is especially true in thin-walled applications such as connectors, where exceptionally high shear rates are commonly generated during injection molding. Excessive plate-out leads to operational inefficiencies from increased mold maintenance, poor venting and increased cycle times.

Materials produced on the new line in Pensacola combine the benefits of pure feedstock with a unique compounding process to significantly reduce the volatiles and enable a clean injection-molding operation. Figure 4 illustrates comparative evaluation of plate-out related maintenance required in high-volume injection-molding operation.

The cleaner Pensacola material produced significantly less plate-out. The two molders who participated in the validation trials experienced a significant reduction in maintenance down-time associated with plate-out, resulting in potential savings equivalent to $0.02–0.10 per pound of PA66 consumed per year.

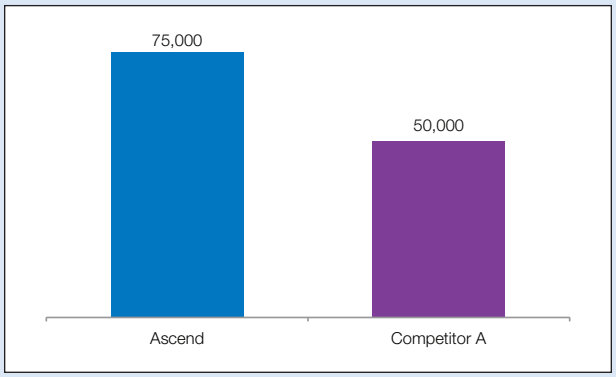
FIGURE 4

Customer Case Study I

CUSTOMER SEGMENT: Automotive
CUSTOMER REGION: North America
APPLICATION: Relay Housing
CYCLE TIME: 24 seconds

Maintenance Intensity

Number of shots between plate-out maintenance

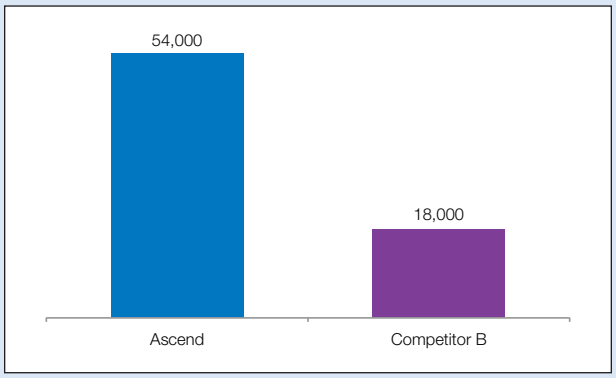


Customer Case Study II

CUSTOMER SEGMENT: Electrical and Electronic
CUSTOMER REGION: North America
APPLICATION: Connectors
CYCLE TIME: 22 seconds

Maintenance Intensity

Number of shots between plate-out maintenance



Summary

Ascend's new Vydyne compounds offer customers class-leading consistency, cleanliness and performance. Customers can experience improvements in dimensional stability and consistency in part weight, as well as longer, uninterrupted production runs.

Please contact your local Ascend sales representative for additional information and to arrange a sample.

North America

600 Travis Street, Suite 300
Houston, TX 77002
USA

+1 713 315 5770

Europe

Watson & Crick Hill Park
11, rue Granbonpré - Bâtiment H
B-1435 Mont-St-Guibert
Belgium

+32 10 60 8600

Asia

Unit 3602, Raffles City
No. 268, Xizang Road (M),
Shanghai, China 200001

+86 21 6340 3300

Find more information or contact us at www.ascendmaterials.com