



### **The question is their enough material available to AFBG?**

There are two consideration in looking at the answers:

- Existing fiberglass items that have out lived their purpose
- New fiberglass being produced each day that has “built in waste in their process”
- From the new material produce for the industry, each of the customer's they sell to and the fiberglass parts they make will produce waste.

The purpose of this report is to take a look at the total lbs of new material manufactured each year.

If we take a “snap shot” of just this waste stream we can get a better understanding of new virgin material produced, the available lbs of material available to AFBG/AMOUR

Fiberglass –Composite manufacturing requires 2 main parts Resin and fiberglass (cloth material) .The charts below allow us to take a look at the total lbs of resin produced and if this is matched by up to 50% in fiberglass you can get a feel for the magnitude of the available waste stream on just the new manufacturing or items process. This material plus the “outlived their purpose” items will allow us to see the available material to AFBG/AMOUR.

The report does not include data on the number of lbs of cloth, strands fiberglass.

However based on the 50% match up, you can get the feel for the number of lbs of hard material.

## 1. Resin

Millions of pounds of resin are produced each year by the six largest manufacturers of polyester resins and reinforced plastics. Resin is processed in facilities with miles of piping that require changeovers and flushing between different resin productions. These changeovers yield “off-spec” or transitional resins. This “off-spec” product is not sold as first quality material and is designated as Odd Lot Resin. Odd Lot Resin is composed of in-house waste and the transition flush between batches and types of resin. The reported actual waste from the manufacturing process is 1% - 2% of the total produced.

These six largest resin manufacturers report the actual pounds of resin produced on a quarterly basis to the American Composites Manufacturers Association (ACMA). By looking at the total pounds of resin produced, a snapshot of new products being built and the available quantity of “off-spec”, or waste resin, can be seen. Below is Table 1 showing the total pounds produced per quarter of polyester resin as reported by the six largest resin manufacturers to the ACMA.

Table 1. Total Pounds Produced per Quarter

<b>Year</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>4<sup>th</sup></b>	<b>YTD Total</b>	<b>% Change vs. prior year</b>
<b>2007</b>				357,727	1,606,595	
<b>2008</b>			335,642	256,055	1,345,783	-16.2%
<b>2009</b>	229,208	244,437	250,293	226,785	950,723	-29.4%
<b>2010</b>	249,532				249,532	8.9%

(Thousands of Pounds)

In terms of available product for AFBG use, if we look at the first quarter pounds of resin manufactured in 2010, calculate the 2% waste factor, this would leave AFBG with 1,663,547 lbs per month of available raw material resin from processing!

However, there is more available product for AFBG's use than just manufacturing's transition production waste resin. All the resin that was sold to new part manufacturers also yields an available raw material stream for AFBG. Marine transportation manufacturers, car and automotive manufacturers, and distributors all purchase the resin and have waste resin and products available. The accepted industry standard for waste is 10% at the new product manufacturing level. If we assume that the industry sold all the available new resin that they manufactured in the first quarter of 2010, and we subtract the 2% waste accounted for above, that leaves 81,513,786 lbs of resin sold per month. Using the accepted 10% waste factor from the new product manufacturers, this yields an additional 8,151,379 lbs of available raw materials for AFBG's use.

Below is Table 2, which shows annual purchase quantities, broken down by industry, for the last four years. **Note:** 2010 data is for first quarter only.

Table 2. Quantities purchased by Industry (Thousands of Pounds)

<b>Industry</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Reinforced Plastics</b>	1,226,477	1,008,664	707,007	189,107
<b>Marine and Marine Acc.</b>	268,452	183,712	86,097	30,856
<b>Transportation</b>	148,659	117,254	87,846	25,446
<b>Construction</b>	681,586	589,092	445,058	110,456
<b>Electrical/Electronic</b>	47,060	55,671	41,581	9,498
<b>Consumer Goods</b>	52,107	30,081	17,537	4,578
<b>Other</b>	28,703	32,854	28,888	8,273
<b>Non-Reinforced Plastics</b>	380,118	337,119	243,716	60,425
<b>Transportation/Body Putty</b>	34,380	35,908	35,570	9,075
<b>Construction</b>	232,209	188,799	131,983	32,831
<b>Consumer Goods</b>	29,275	21,449	15,861	3,670
<b>Gel Coats/Surface Resins/Protective Coatings</b>	74,371	79,606	40,432	12,413
<b>Other</b>	9,883	10,357	9,870	2,436

There is also a third source of available raw material for AFBG. The final source is resin that is out-of-date, returned by a new product manufacturer, or considered un-usable by a manufacturer or distributor. This raw material stream costs distributors and manufacturers up to \$400 per 55-gallon drum for disposal. The industry uses a 3% figure

for this waste stream. If we take the 81,513, 786 lbs of resin sold, calculate the expected 3% waste, we would have 2,445,414 lbs of potential waste resin. Resin is sold in 55-gallon drums at approximately 500 lbs per drum. The quantity of potential waste drums available from this third source is approximately 4,890 drums.

Manufacturers and distributors are required by law to dispose of this waste stream by approved methods. These disposal methods cost can cost companies up to \$400 per drum for disposal. By offering these companies the services of AFBG, we would not only receive the more than 2 million pounds of resin for our recycling process, we would also generate a potential revenue stream of up to \$1,956,000.

As you can see, the potential for raw material capture and revenue generation is very promising. With more than one avenue available for the supply of our raw materials, revenue generation potential is unlimited. As even more sources are found and optimized, raw material acquisition and revenue growth will be further secured.