

Advanced Recycling Issues



Project Consultants & Associates, Inc.

Ping-Pong Anyone?



The Advanced Basics

- Safely
- Product
- Process
- Raw Materials
- Economics

Safety, Health & Environmental

- Understand the materials
- Understand your process
- Employees training
- Employee PPE
- Housekeeping
- Do Not Assume

Defining a Raw Material

- Product –
 - What is the product
 - Raw material needs
 - Required performance

Defining a Raw Material

- Process
 - New vs. existing
 - Raw material handling needs
 - Raw material processing needs
 - Value add analysis

Defining a Raw Material

- Raw Material
 - Substitution value
 - Form
 - Physical properties
 - Chemical properties

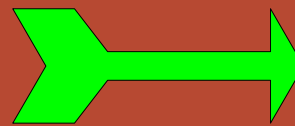
The Valuable Raw Material

WASTE CARPET



LANDFILL

RECYCLED CARPET

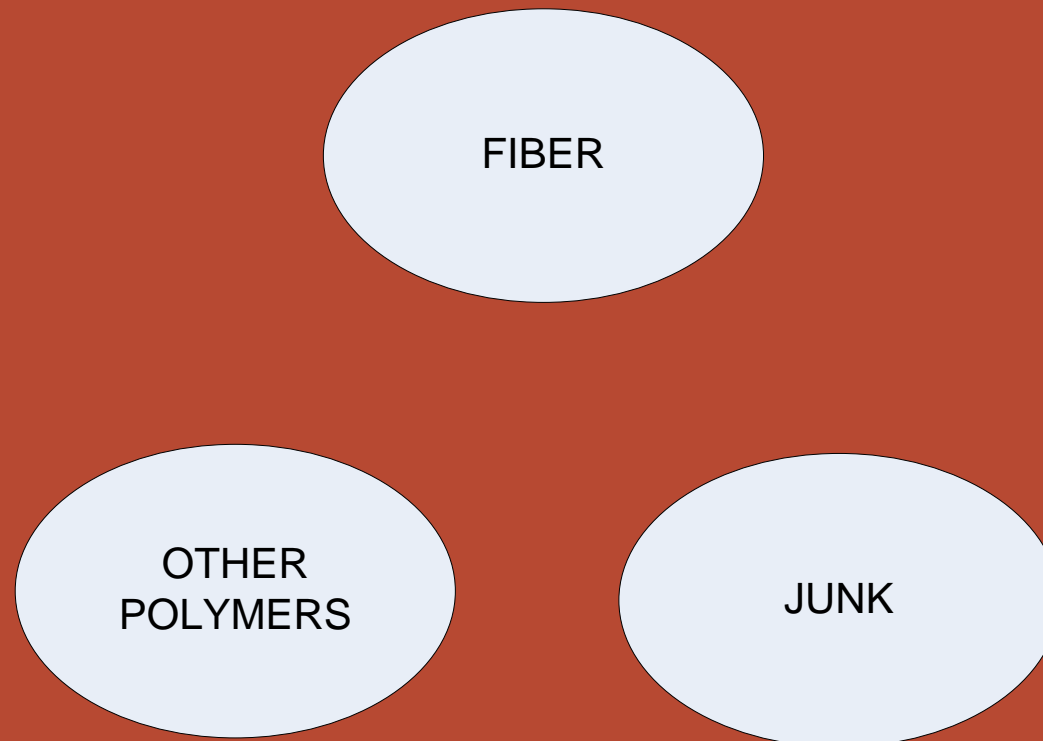


RAW MATERIAL

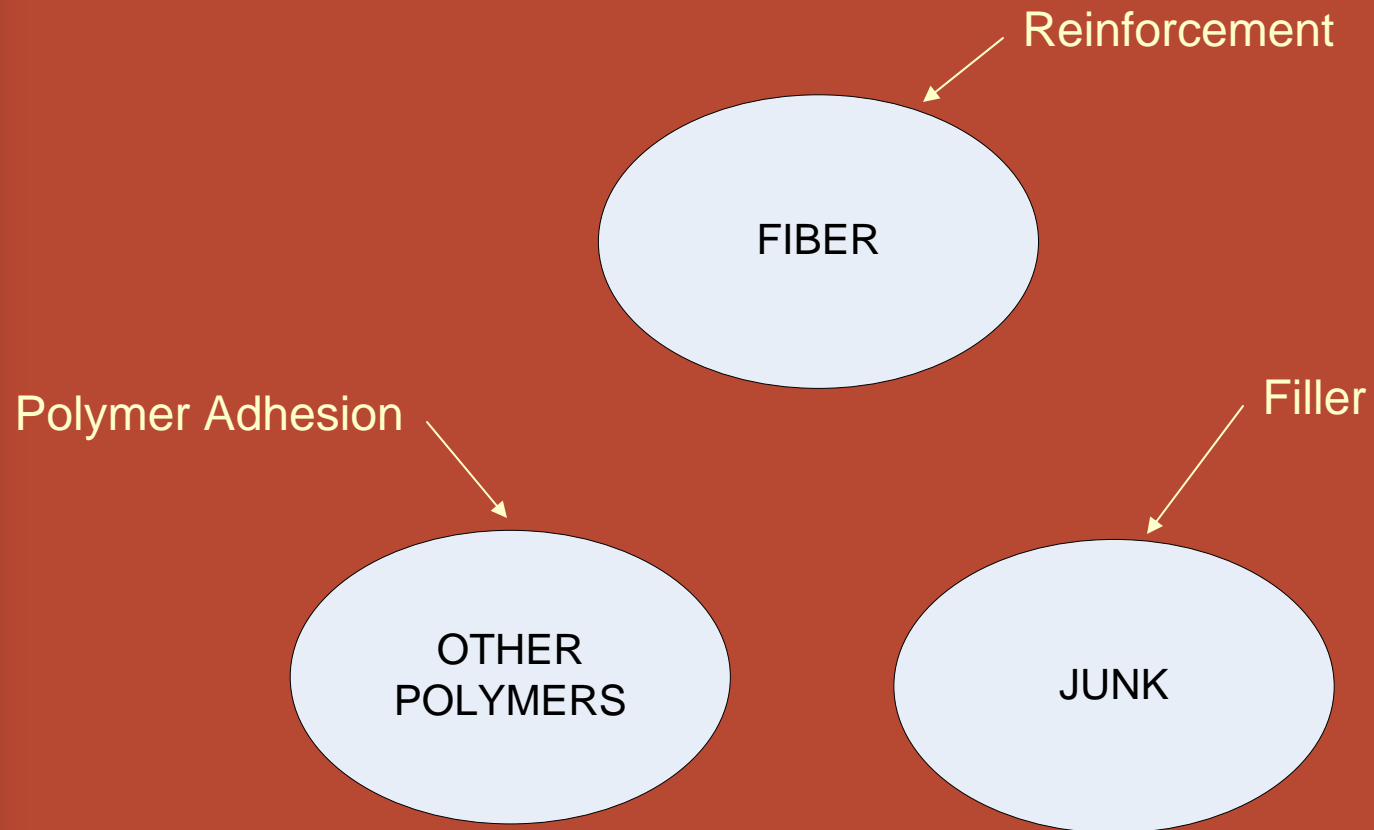
Raw Materials Cost Money!

\$18.50	GROSS COST PRODUCTION LABOR INCLUDING TAXES (\$/HR)	
\$18.50	GROSS COST MATERIAL HANDLING LABOR INCLUDING TAXES (\$/HR)	
\$18.50	GROSS COST QUALITY CONTROL LABOR INCLUDING TAXES (\$/HR)	
\$18.50	GROSS COST MAINTENANCE LABOR INCLUDING TAXES (\$/HR)	
1	UNIT WEIGHT OF Carpet Pellet (LBS)	
1		
\$0.080	RAW MATERIAL #1 COST - PC Carpet IN BALE (\$/LB)	
\$0.320	RAW MATERIAL #2 COST - Chemical #2 (\$/LB)	
\$1.170	RAW MATERIAL #3 COST - Chemical #3 (\$/LB)	
\$0.190	RAW MATERIAL #4 COST - Chemical #4 (\$/LB)	
\$0.000		
25.0%	PERCENT OF PC Carpet IN PRODUCT (%)	
25.0%	PERCENT OF Chemical #2 IN PRODUCT (%)	
25.0%	PERCENT OF Chemical #3 IN PRODUCT (%)	
25.0%	PERCENT OF Chemical #4 IN PRODUCT (%)	
0.0%		
100%	PERCENT OF PRODUCTION FOR Carpet Pellet (%)	
0%		
0%		
0.50%	WASTE FACTOR (%)	
\$0.0709	SELLING PRICE OF Carpet Pellet (\$/UNIT)	
\$0.0000		\$0.0709
\$0.0000		\$0.0000
	PRICE PER POUND Carpet Pellet (\$/LB)	\$0.0000
		82%
	PERCENT OF TOTAL EQUIPMENT CAPACITY USED (%)	82%
	PERCENT OF EQUIPMENT CAPACITY ON Carpet Pellet (%)	0%
		0%

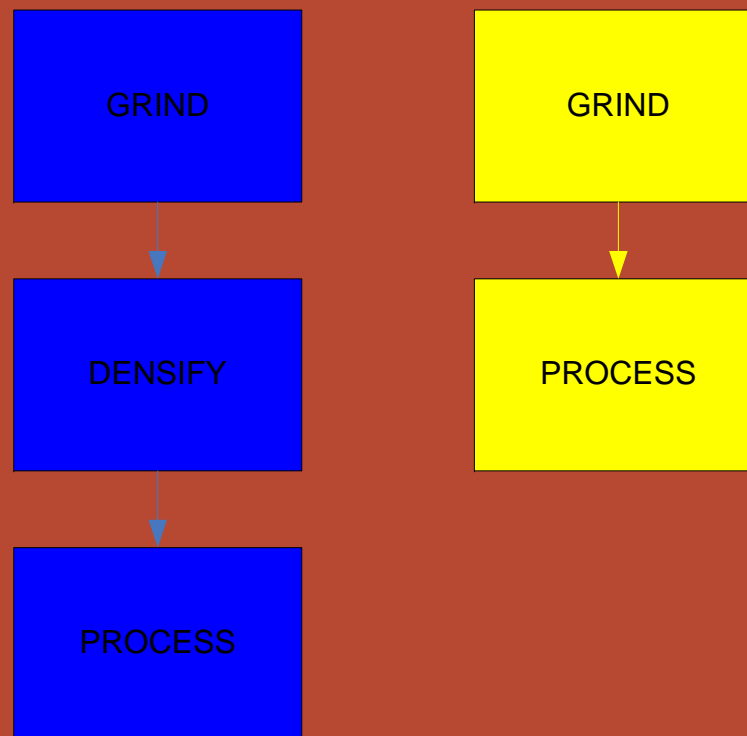
Carpet Make-Up



Carpet Use



Value Add Processing



100% Recycling

- No material separation
- Must target final product
- Must hit final product quality requirements
- Identify “non-value adds” in process
- The raw material **MUST** be available and of consistent quality

Products

- Wood composite (plastic) lumber – pull-trusion
- Plastic rail ties – push-trusion, molds
- Plastic pallets – injection molded
- Highway off-set blocks – push-trusion

The Future

Success is not final, failure is not fatal:
it is courage to continue that counts.

Winston Churchill