



PCR / PIR

Granulation



Key Technology

Complete Formulation

Engineering Plastics

PC/ABS Nano Alloy Modified Material

- Formula :
1. PC off-grade 58%
 2. ABS clean scrap 40%
 3. 3300 BK 1%
 4. GY-9090 1%
 5. **YT-886 0.4 phr**



PC off-grade



ABS clean scrap



3300 BK



PC/ABS alloy
modified material

PC/ABS Nano Alloy Modified Material

Test Report

Material : PC/ABS

	Density	Melt Flow	Impact 2.75	Impact 7.5	Tensile		
		260° C 2.16 kg	IZOD	CHARPY	Max Load	Elongation	Tensile Strength
Unit	g/cm ³	g/10 mins.	kJ/m ²	kJ/m ²	N	mm.	MPa
1	1.10	22	32	45	2230	14	223
2	1.10	22	33	42	2226	16	222
3	1.11	21	34	45	2220	15	222
4	1.11		32	46	2234	11	223
5	1.10		38	43	2225	15	222
Mean	1.10	22	34	44	2227	14	222

PBT 301A Nano Fireproof Modified Material

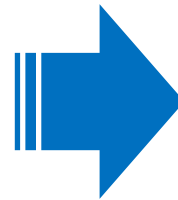
- Formula :
1. PBT + 30%GF fireproof scrap 99.5%
 2. 3300 BK 0.5%
 3. **YT-886 0.6 phr**
 4. **YT-1818 0.15 phr**
 5. Glass fiber reinforcement



**PBT + 30%GF
fireproof scrap**



3300 BK



**PBT + 30%GF
Fireproof Modified
Material**



FR engineering plastics granulation Data comparison

**Production
Capacity (12 hrs)**

Before 4T / After 4.6T ↑ 15%

Temperature

Before 250°C / After 230°C ↓ 20°C

Defect Rate

Before 10% / After 3% ↓ 7%

**Power Consumption
USD/ton**

Before 0.06 / After 0.04 ↓ 33%

**Labor Wage
USD/ton**

Before 68 / After 50 ↓ 26%

**Selling Price
USD/ton**

Before 800 / After 1,200 ↑ 50%

PBT 301A Nano Fireproof Modified Material

Scraps



Finished Products



PET 5050 CBK Nano Modified Material

- Formula :
1. PET scraps 85.2%
 2. Glass fiber 14%
 3. 2200 BK 0.8%
 4. **YT-886 0.6 phr**
 5. **YT-1818 0.15 phr**

Scrap



Finished Products



PET 5050 CBK Nano Modified Material



Nylon Nano Modified Material

Scraps



PA silk



PA fabric



PA ribbon



PA webbing

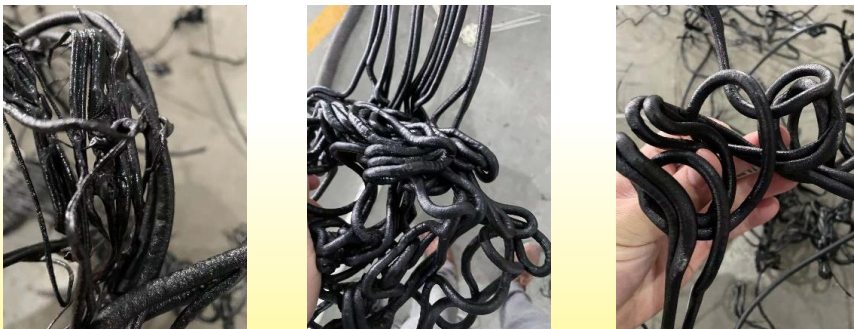
Turning Nylon Scrap Around

Before

Various complicated and inferior scraps



Pelletizing failure, unstable production



After

Complete formulation
YT-886 0.2 phr + YT-1818 0.2 phr



- 1. Stable production**
- 2. Standard quality**
- 3. Market acceptance**

Nylon Nano Modified Material

Finished Products



Commodity Plastics

**Effectiveness
1**

**Complete
compounding**



Before



After

Effectiveness 2

Reduce processing temperature



Before

↓ 5°C

↓ 10°C

Nano-effect



- * Processing setting 245°C, temperature before adding additives is 256°C, which is considered an appropriate machine. In other words, if temperature lower than 245°C, the machine needs to be adjusted. Most manufacturers do not know this part.
- * After adding additives, temperature turns up to 284°C, which is due to the increase in thermal energy caused by nano-effect. The processing temperature can be adjusted to 220°C, production will be more stable.

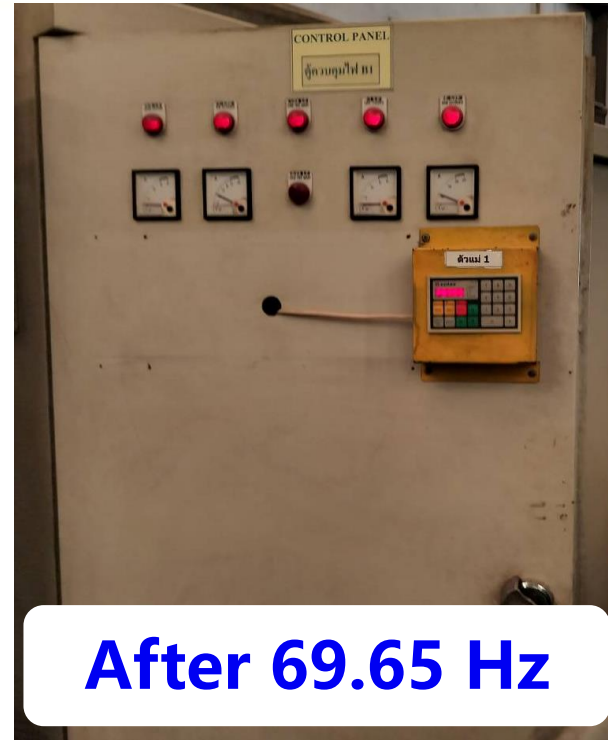
Effectiveness 3

Improve production speed



Before 66.00 Hz

Before



After 69.65 Hz

After

Effectiveness
4

**Color rendering,
glossy**



Before



After

Effectiveness 5



**Eliminate odor of
recycled materials
60% ~ 100%**

Effectiveness

6

**Eliminate unmelted
resin spillage**



**Effectiveness
7a**

Solid pellets



Before



After

**Effectiveness
7b**

Solid pellets



Before - brittle



After - tough

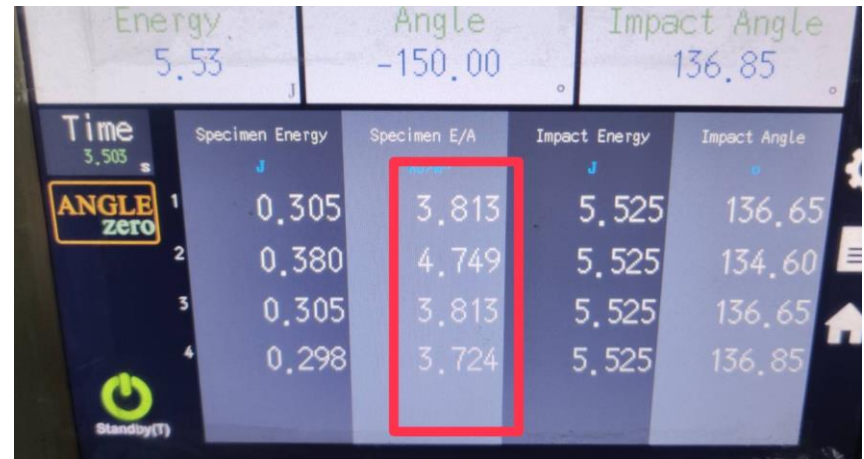
Maintain Physical Properties

Stable production, physical properties maintained >39%



Time	Specimen Energy	Specimen E/A	Impact Energy	Impact Angle
3.532				
1	0.230	2.869	5.525	138.80
2	0.206	2.570	5.525	139.50
3	0.231	2.891	5.525	138.75
4	0.240	2.999	5.525	138.50
5	0.250	3.129	5.525	138.20

Before



Time	Specimen Energy	Specimen E/A	Impact Energy	Impact Angle
3.505				
1	0.305	3.813	5.525	136.65
2	0.380	4.749	5.525	134.60
3	0.305	3.813	5.525	136.65
4	0.298	3.724	5.525	136.85

After

* Trying to make up for physical properties loss 39% by adding 3~5% of impact modifier, is an unnecessary and painful increase in cost !



**53 years of industry experience, 6 years of integration
we found that there is a common fact in the industry**

Improper processing !

Stop loss is the beginning of profit !