

Catalog & Technical Data Sheet



Introduction to Flyho Anti-Drip Solutions

Eversun Polycarbon Sci&Tech Corp.,LTD.

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Flyho Anti-Drip brief introduction

Flyho Anti-Drip“ is a brand of anti-drip solution created by EVERSUN for customer optimization. The product is made through the use of selected materials and a special method made 217-nanometer polytetrafluoroethylene emulsion with a highly matched coating material, produced by a PLC automatic control system. The product logo is “Flying Monkey Clouds”, as a new member trademark of EVERSUN family.

Flyho Anti-Drip, trademark



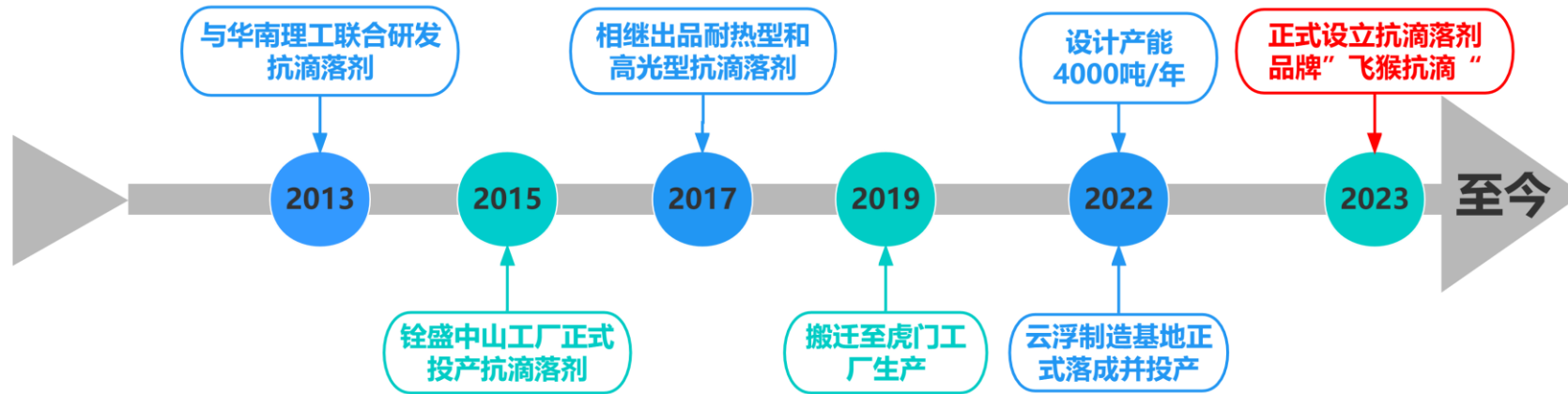
Research and development: A team of four doctoral graduates led the research and development, which lasted a year and a half, and conducted in-depth research on domestic and foreign antidrip products. The formula system and production process were comprehensively upgraded from micro to macro scales, as well as in the application field, and the quality has reached the industry's leading standards.

Instrumentation: Seven imported precision testing instruments and a central control system, as well as eight PLC automatic production equipment.

Product features: weather resistance, high gloss, high efficiency, and long durability

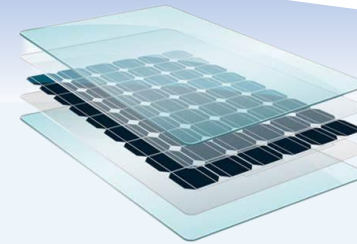
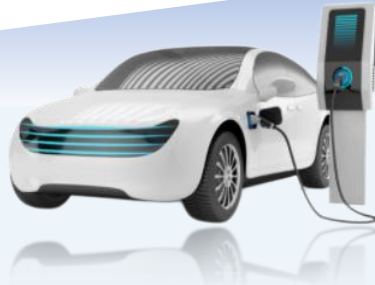
Flyho Anti-Drip brief introduction: Our Growth Journey

- 2013 EVERSUN collaborated with South China University of Technology to develop an anti-dripping agent.
- 2015 EVERSUN's Zhongshan plant has officially started production of the anti-dripping agent.
- 2017 EVERSUN has successfully developed heat-resistant and high-gloss anti-dripping agents, successively.
- 2019 EVERSUN relocated our production to the Humen factory.
- 2022 EVERSUN'S Yunfu manufacturing base has officially been completed and is now in operation, and designed production capacity is 4,000 tons per year.
- 2022 EVERSUN has officially designed the anti-dripping agent brand named "Flyho Anti-Drip".

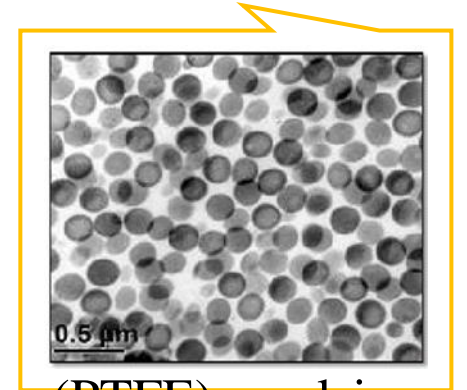
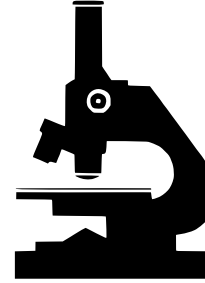
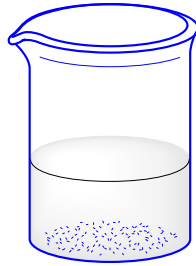
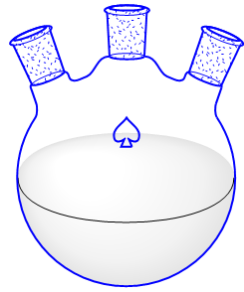


Application Overview

- FR-PC、FR-PC/ABS、FR-ABS、FR-HIPS、FR-PC/PBT market
- Flyho Anti-Drip series of products are widely used in various industries such as smartphones, new energy vehicles, home appliances, office equipment, electronics, and electrical equipment. In these applications, our anti-dripping agents are required to have the following performance requirements:
- Flame retardancy: Able to synergistically flame retard and effectively prevent combustion and dripping;
- Processing: Characteristics of no hemp spots, no silver streaks, high gloss, and easy processing.
- We are committed to providing customers with safer and more reliable anti-dripping agents to meet the demand for high-quality products in various application areas.



Flyho preparation structure and production

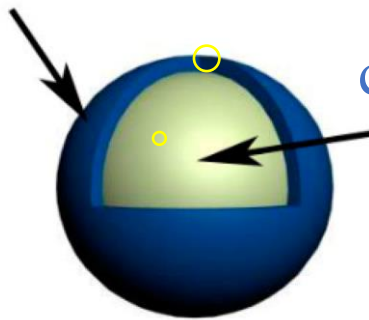


217nm

EVERSUN carefully selects a polytetrafluoroethylene (PTFE) emulsion with a uniform particle size of 217 nanometers, and innovatively uses Acrylic/X, MS/X, and AS/X resins. Through sophisticated synthesis processes and PLC-controlled production equipment, we produce the Fei Hou Kang Di (Flying Monkey Anti-Drip) product with a "core-shell" structure. This product has the

Shell

core

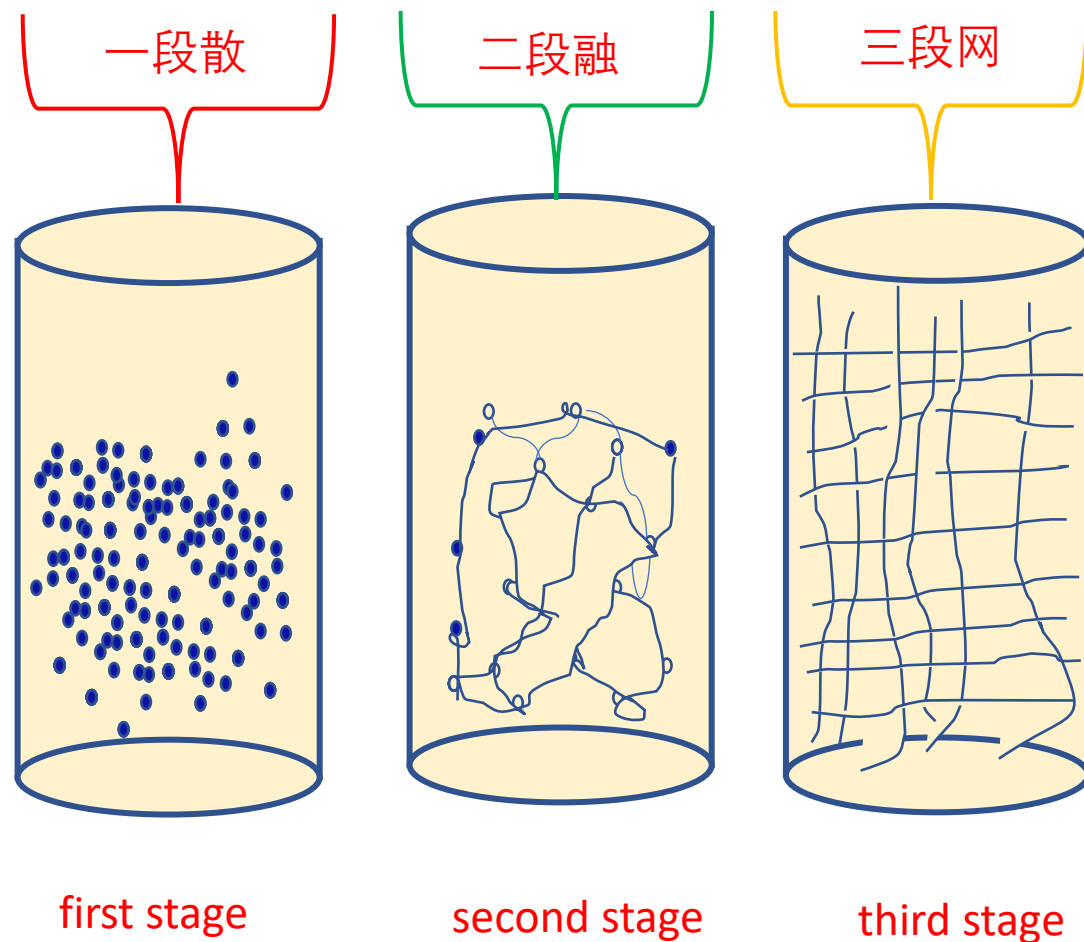
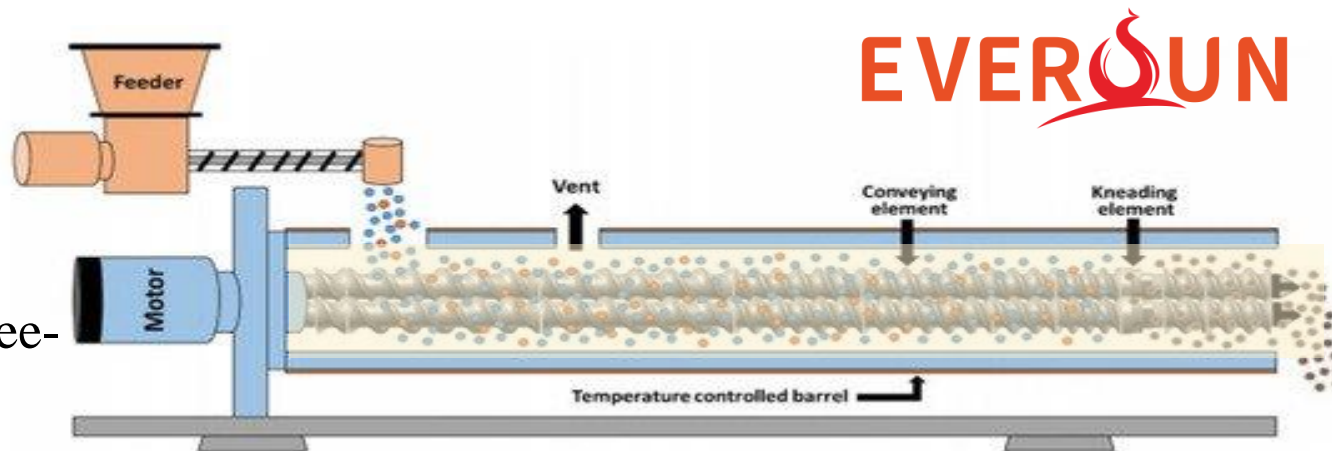


characteristics of "first stage dispersion, second stage melting, and third stage network" during use, which makes, it have excellent dispersibility and stable anti-dripping effect.

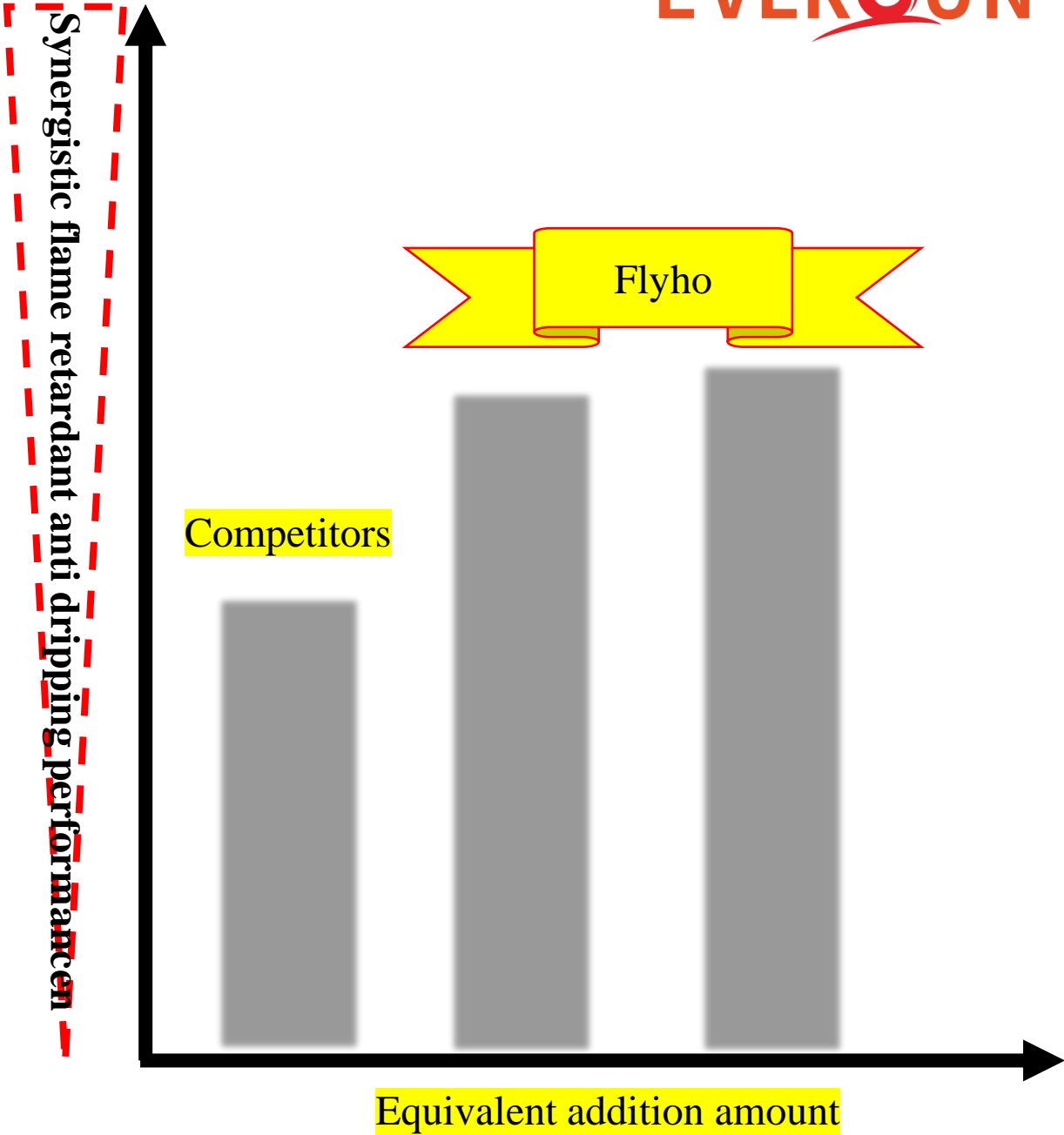
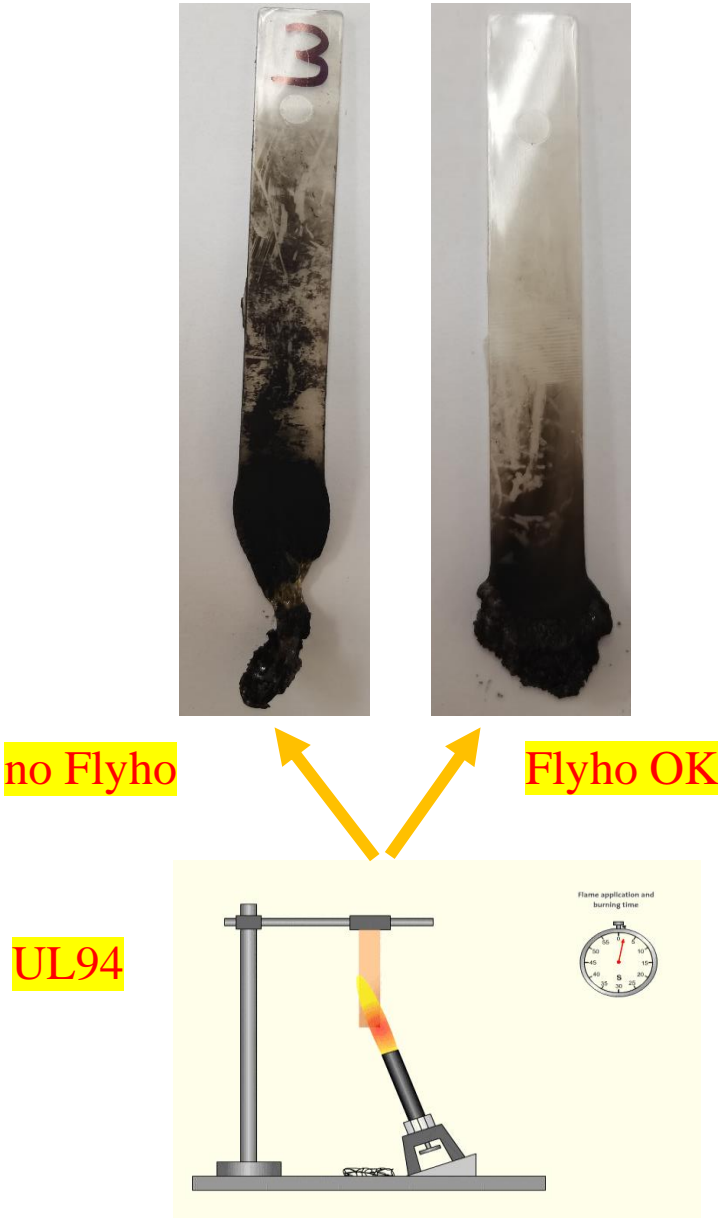
Flyho how to work

During the screw granulation process, Flyho Anti-Dripping achieves its anti-dripping effect through a three-stage process:

In the first stage, based on the characteristics of the Flyho Anti-Dripping shell material, it will disperse in the substrate. *In the second stage*, based on the uniform 217-nanometer particle size of the Flyho Anti-Dripping nucleus and the shell material, it uniformly distributes in a molten state with the substrate, maintaining a capsule-like microstructure and gradually forming a chain-like structure. *In the third stage*, the capsule-like Flyho Anti-Dripping undergoes shear and forms an interwoven and coherent mesh structure



Flyho efficacy



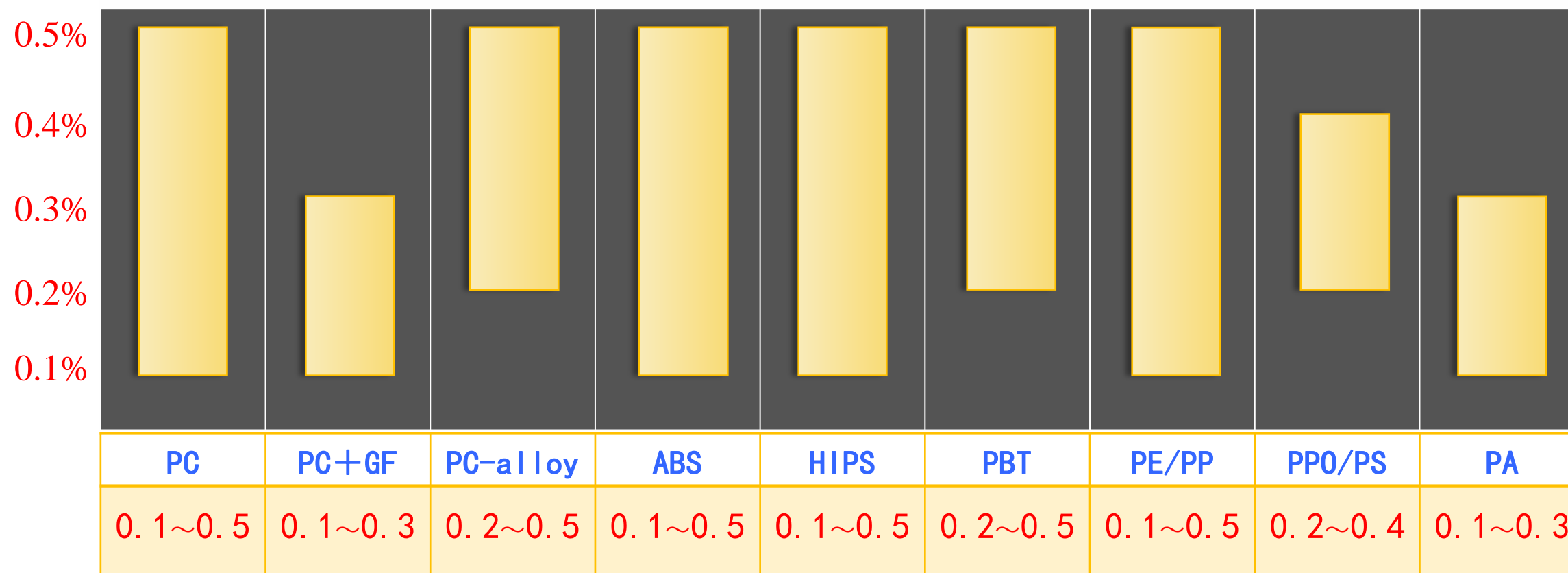
Flyho Application recommendation



Item	Type	Flyho 1	Flyho 2		Flyho 3		
		K-PT107	K-PT201	K-PT202	K-PT301	K-PT302	K-PT303
Structrue	Shell-material	acrylic	MS	MS	acrylic	AS	MS
	Core cont, wt %	50	50	50	50	60	70
	Mole-weight, Mn	++++	+++++	++++	++++	++++	++++
Effect	PC	+++++	+++++	+++++	+++++	+++	+++
	PC+GF	+++++	+++++	+++++	+++++	+++	+++
	PC-Alloy	+++++	+++++	+++++	+++++	+++	+++
	ABS	++++	+++++	+++++	+++++	+++++	+++++
	HIPS	++++	+++++	+++++	+++++	+++++	+++++
	PBT	+++	++++	++++	+++++	+++++	+++++
	PE/PP	++	+++	+++	+++	++++	+++++
	PPO/PS	++	++++	++++	+++++	+++++	+++++
	PA	++	+++	+++	++++	+++++	+++++
Feature	Dispersibility	○○○○	○○○○	○○○○○	○○○○○	○○○○	○○○○
	Timeliness	○○○○	○○○○○	○○○○	○○○○○ ○	○○○○○	○○○○○
	Gloss	○○○○	○○○○	○○○○○	○○○○○	○○○○○	○○○
	Thermo-toleran	○○○○	○○○○○	○○○○	○○○○○	○○○○○	○○○○
	Anti-dripping	○○○○	○○○○	○○○○	○○○○○	○○○○○	○○○○○
Environ-test	PFOA、PFOS、OP、OPEO、NP、NPEO	ND	ND	ND	ND	ND	ND
	REACH	pass	pass	pass	pass	pass	pass
	RoHS	pass	pass	pass	pass	pass	pass

Flyho recommended usage and dosage

Flyho recommended usage and dosage (%)



Flyho dosage of PC and flame retardancy



Raw PC	111BR	75%		
	1250WP	25%		
Retardants	KFR-KKS-A2	0.5%		
Anti-dripping	Flyho 1#	Flyho 2#	竞品3	竞品4
Dosage	0.1%			
T1+T2 (S)	48.35	39.82	30.82	36.17
UL94	V2	V2	V2	V2
Dosage	0.3%			
T1+T2 (S)	48.9	36.85	48.9	65.61
UL94	V0	V0	V2	V1
Dosage	0.5%			
T1+T2 (S)	33.35	31.28	37.56	35.85
UL94	V0	V0	V0	V0
Dosage	0.7%			
T1+T2 (S)	27.14	25.89	30.63	31.39
UL94	V0	V0	V0	V0
Dosage	1%			
T1+T2 (S)	38.27	36.41	41.81	44.61
UL94	V0	V0	V0	V0

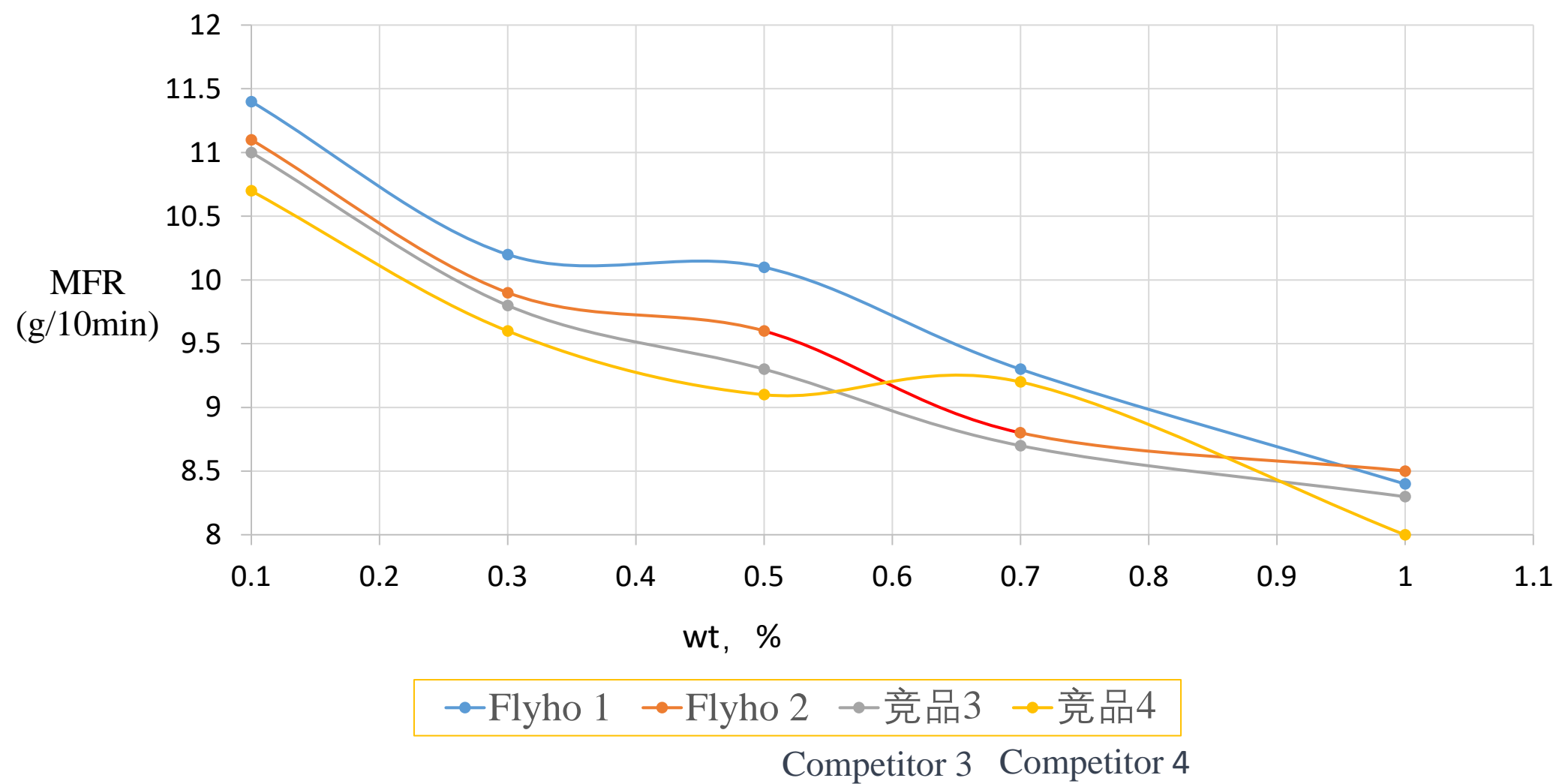
Flyho relationship between dosage and properties



Raw PC	111BR	75%										
	1250WP	25%										
Retardant	KFR-KKS-A2	0.8%										
Anti-dripping	Flyho 1#	Flyho 2#	竞品3	竞品4	Flyho 1#	Flyho 2#	竞品3	竞品4	Flyho 1#	Flyho 2#	竞品3	竞品4
Dosage	0.1%				0.5%				1.0%			
MFR (g/10min)	11.4	11.1	11.0	10.5	10.1	9.6	9.3	9.9	8.4	8.5	8.8	8.8
ASTM D256 (J/m)	796	801	839	850	828	845	815	843	872	829	866	856
GB/T1843 (KJ/m²)	74.5	73	76.3	74.7	72.9	78.7	75.9	71.8	77.8	79.4	80.4	73.3
Tensile (MP)	70.9	70.1	70.5	70.3	70.1	68.9	69.9	69.3	71.9	71.2	69	68.4
Elongation(%)	141	141	138	141	139	138	139	139	148	145	136	135
Dosage	0.3%				0.7%							
MFR (g/10min)	10.2	9.9	9.8	10.5	9.3	8.6	8.7	9.3				
ASTM D256 (J/m)	848	858	855	843	796	829	832	819				
冲击国标 (KJ/m²)	76.0	74.8	74.3	75.6	76.1	76.6	76.1	75.1				
拉伸强度 (MP)	69.3	68.5	67.3	72.2	68.6	68.7	65.2	69.4				
断裂伸长率(%)	137	133	128	130	138	140	126	131				

Equivalent addition,Flyho has better retention of physical properties

Flyho Relationship between dosage and physical properties



Flyho series of products have better physical properties at an equal dosage

Flyho thermal resistance

Before baking



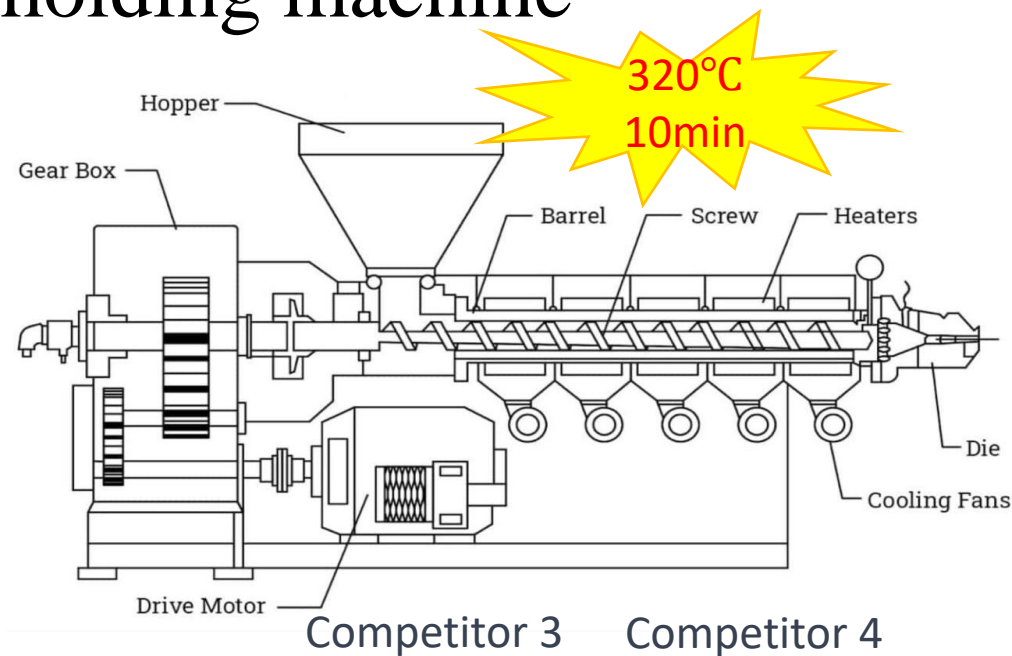
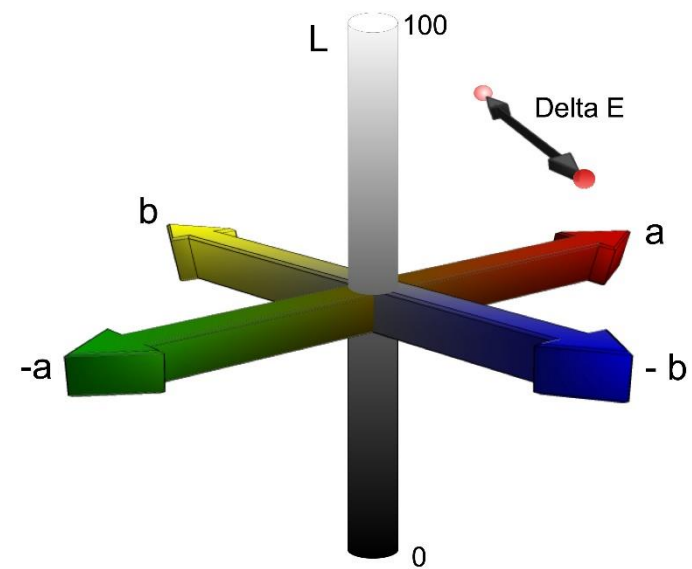
200°C 4hr

After baking



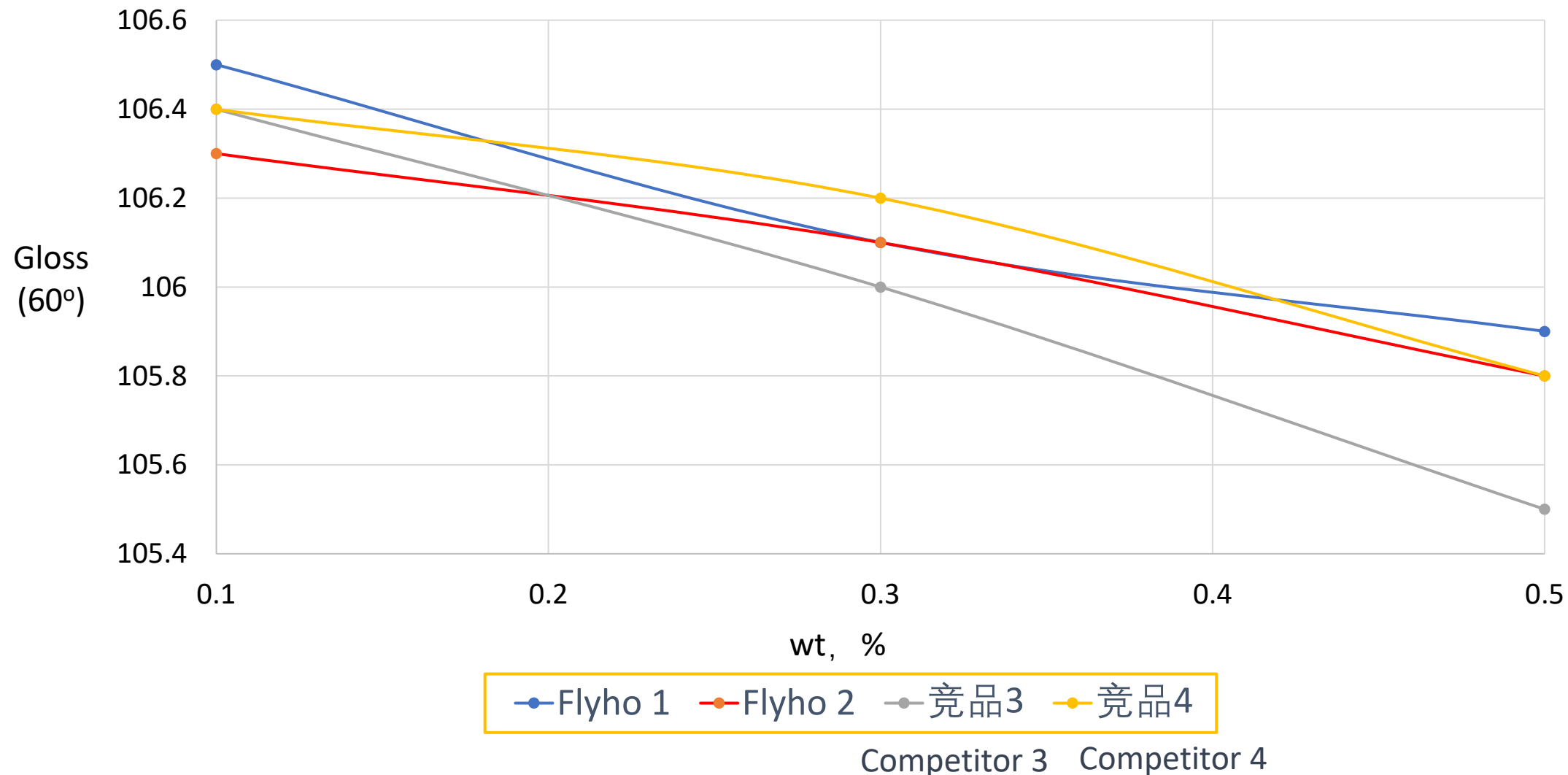
200°C 4hr Flyho ΔE mean value 29 and ΔE mean value 34.

Flyho 320°C heat stability during 10 minutes of retention time in the injection molding machine



Values	Flyho 1	Flyho2	竞品3	竞品4
ΔL	-3.1	-2.64	-3.16	-3.9
Δa	-0.37	0.48	0.1	0.46
Δb	1.99	2	4.31	3.85
ΔE	3.7	3.34	5.35	5.51

Flyho glossiness at 60° with varying levels of addition



Flyho more stable highlight performance with equivalent addition