

POKETONE FOR PLASTIC TOYS



**Non Toxic
 High Efficiency**

*Acrylate Free
 Melamine Free
 Bisphenol A Free
 Formaldehyde Free
 Lead/ Chrome/ Free
 Phthalate Free*

Global Warming Potential

• PA6	6.70	
• PA66	6.40	
• PC	3.40	
• POM	3.20	
• ABS	3.10	
• PK	3.08	(kg CO ₂ eq)

• Other ETP data is based upon the Eco-profiles data from www.plasticseurope.org

• PK Data is based upon Korea LCI database and Ecoinvent database.



POKETONE?

HYOSUNG POKETONE is a new class of engineering thermoplastics which are composed of carbon monoxide, ethylene and propylene, it is called as aliphatic polyketone. As a kind of semi-crystalline plastic, POKETONE can be used for a broad range of applications in toy industry with eco-friendly and it contains no harmful and toxic substances.

POKETONE PROPERTIES FOR TOYS

Properties	Unit	POKETONE M330F(F-S)	POKETONE M630F
Density	-	1.24	1.24
Melt Index	g/10min	60	6
Tensile Strength	MPa	60	58
Elongation at Break	%	> 240	> 240
Flexural Strength	MPa	57	53
Flexural Modulus	MPa	1,500	1,350
Impact Strength	KJ/m ²	8	17

CERTIFICATION

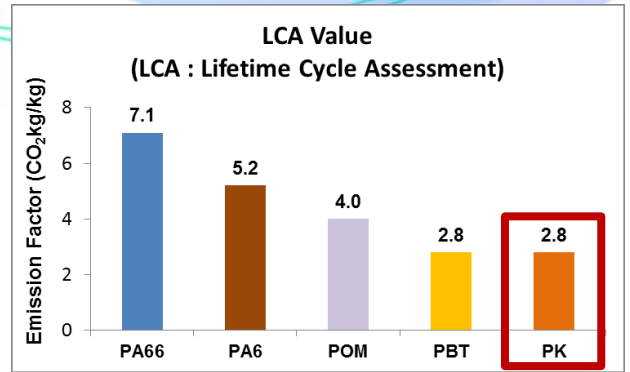


All F grades of POKETONE comply with FDA, EN71-3, PAHS and a variety of certifications. They guarantee chemical safety of POKETONE.

■ Eco-friendly material

- POKETONE™ is eco-friendly with low Global Warming Potential. (lower than PA66, POM)
- POKETONE™ is Non-toxic:
no VOCs (Volatile Organic compounds), free of formaldehyde, heavy metal and acrylonitrile
- Perfect for baby toys, food contact and MEDICAL applications. All F grades of POKETONE are satisfied with FDA, NSF 51,61, and USP Class VI.

Auftraggeber: Client:	FERRERO TRADING LUX S.A. FINDEL BUSINESS CENTER COMPLEXE B, RUE DE TRÈVES, L-2632 FINDEL, Luxembourg
Prüfgegenstand: Test item:	Toy for children
Bezeichnung / Typ-Nr.: Identification / Type No.:	FERRERO "Green List" - Resin "POK M330F-S" Supplier: Hyosung Corporation
Wareneingangsdatum: Date of receipt:	30.07.2019
Prüfmuster-Nr.: Test sample No.:	A000238316
Prüfzeitraum: Testing period:	30.07.2019 – 14.08.2019
Ort der Prüfung: Place of testing:	Toy testing Nuremberg
Prüflaboratorium: Testing laboratory:	TÜV Rheinland LGA Products GmbH
Prüfergebnis: Test result:	Pass



* Reference
LCI DB Data (2015)
WECOS Simulation Data (2016) : PK 50,000MT/Y



SAMPLE DESCRIPTION: One (1) group of submitted sample said to be Hyosung Corporation Polyketone M630A
 Sample received date: December 1, 2017
 Date of testing started: December 1, 2017
 Date of testing ended: December 7, 2017

TEST CONDUCTED:
AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

Tested Samples	Standard	Result
Submitted sample	McDonald's Restricted Substances Standard Revision 9 - Heavy Metal Test	For your information
	McDonald's Restricted Substances Standard Revision 9 for Monomers Requirement - Total Bisphenol - A Content	Pass

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TOTAL 3 PAGES

LCA (Lifetime Cycle Assessment) is a methodology for assessing environmental impacts associated with all the stages of the life-cycle of a commercial product, process, or service. The LCA value of POKETONE is lower than polyamide and polyoxymethylene, it means that POKETONE has better eco-friendly properties in the manufacturing process in terms of consumption of energy.

POKETONE is satisfied with a variety of chemical safety requirements which are based on EN71, EU Directive 2009/48/EC and ASTM F963-17 (US CPSC) in toy application.

ANY SUCCESSFUL STORIES ? REFERENCE?

McDonalds RSS Pass : M330F, M630F (Distributor : Polymer Solution)

Ferrero Rocher Green List Pass : M330F-S (Distributor : Chi Bond HK Limited)

HASBRO SRS Pass : POKETONE Base Grade

· POKETONE commercial Plant in South Korea, Ul-san City, Production capacity : 50,000 MT/Year



· Excellent Wear Resistance · Low Noise · Low abrasion loss (no particle) · Excellent chemical resistance

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Further Information
www.poketone.com

POKETONE
HYOSUNG POLYKETONE

+Note : The data contained in this publication are based on our current internal knowledge and experience, these do not imply any guarantee of certain properties. Most images are from googling image researching, which is considered as public open information.