

UNICELL-C Series

Description

UNICELL-C series, a group of inorganic compounds, is well known as an effective foaming and nucleating agent for plastics including PS, ABS, PE, PP, and modified PPO.

Most foaming agents are exothermic systems that release large amounts of heat during decomposition, resulting in irregular cell structures and localized overheating, particularly in the marginal zones. In contrast, **UNICELL-C** series exhibits endothermic decomposition characteristics.

UNICELL-C series is a white, odorless, non-toxic, free-flowing powder that releases carbon dioxide and water vapor during thermal decomposition. It produces no incrustation on the screw or hopper, allowing the extruder to operate for extended periods before cleaning is required.

Properties of UNICELL-C series

Item	Specification							
Grade Name	C # 850	C # 309	C # 129	C # 709	C # 850MT	C # 709MT	DX820	DX920
Chemical Name	Specially coated Sodium bicarbonate				C# grade Masterbatch		Modified Sodium bicarbonate	
Appearance	Fine White Powder				White Pellet		Pale Yellow Powder	
Decomposition Temperature (°C)	150~220	155~165	155~165	155~165	150~220	155~165	150~180	140~170
Gas Volume (ml/g, at 25°C)	110~130	140~160	140~160	140~160	35~45	45~50	120~160	110~150
Average Particle Size (µm)	5.2~6.2	6.0~7.0	6.0~7.0	6.0~7.0	-	-	-	-
Solubility (g sample/100ml solvent)	Soluble in water and insoluble in organic solvents							

Decomposition of UNICELL-C series

UNICELL-C series decomposes endothermically within a temperature range of 150~220°C. Activators are neither required nor applicable. Decomposition depends solely on heat input and processing conditions, such as friction and pressure. No ammonia odor is generated; only carbon dioxide and water vapor are released, leaving a white decomposition residue.

Applications

UNICELL-C series provides smaller cells with a more uniform distribution (due to its nucleating effect) and a smoother surface (facilitating easy lacquer coating) than azodicarbonamide. It is free from discoloration issues.

UNICELL-C series is suitable for both extrusion and injection molding processes. The recommended dosage is 0.2–1.0% by weight, and a processing temperature of 180–230°C is recommended for practical applications.

UNICELL-C series can also be widely used as a nucleating agent for the direct gas foaming of thermoplastics such as polyolefins, polystyrene, EVA, and PVC using blowing gases such as freon, pentane, butane, nitrogen, and carbon dioxide. It nucleates high-pressure gases into a fine cellular structure in various thermoplastics, including PS, ABS, PE, PP, and modified PPO, during injection molding and extrusion processes.

Table. Selection guide for **UNICELL-C** series

Grade Name	PS	LDPE	HDPE	PP	ABS	PVC
UNICELL- C # 850	○	○	○	○	○	○□
UNICELL- C # 850MT	○	○	○	○	○	○□
UNICELL- C # 309	○□	○□	○□	○	○	○□
UNICELL- C # 129	○□	○□	○□	○	○	○□
UNICELL- C # 709	○□	○□	○□	○	○	□
UNICELL- C # 709MT	○□	○□	○□	○	○	□

○ : as a foaming agent

□ : as a nucleating agent

*Surface coated Citric acid and Sodium bicarbonate

*Specially designed foaming agents for cellular plastics