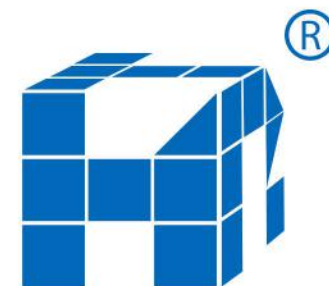


# 山东海瑞特新材料有限公司

Shandong Hairuite New Materials CO., LTD.



Professional supplier for Foaming  
Technology  
Foaming Agent  
Foaming Additive  
Functional Agent

**山东海瑞特新材料有限公司**  
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# Company

## Introduction

### 企业简介



Shandong Hairuite New Materials CO., LTD. is located in Laiwu district, Jinan city, Shandong province and founded in 2010. We are a professional rubber and plastic raw material supplier specializing in research, development, production and sales of plastic foaming agents and foaming aids. Our main products include foaming agents, rubber and plastic additives and functional agents etc. We have high-middle-low foaming agent series, expansion microsphere foaming series, environmental foaming agent series, foaming aids etc. Our company has its own R & D team and after-sales service team. We provide one-step foaming technology service and professional foaming solutions according to customer needs.

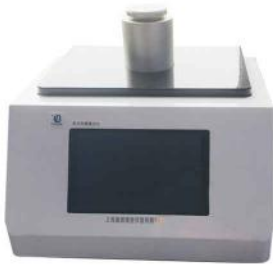
"Honesty pragmatism, customer orientation, quality focused, science and technology as the source" is our business policy. We imported advanced technology, strict quality inspection mechanism and advanced management concept, with stable product quality, excellent product performance, perfect after-sales service, to serve the customer and get a win-win situation.



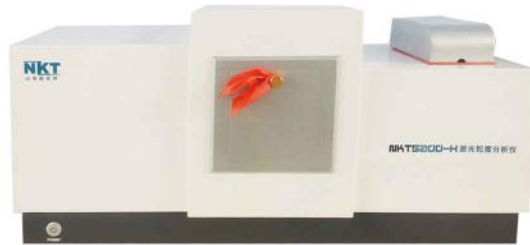


# Test Equipment

检测设备



Heat meter



Particle size of instrumentv



Thermal Deformation Vicat Softening Point Temperature Tester



Rheometer



Universal Sampling Machine(I type)



Gas Chromatograph





# Quality Control

质量控制





# Foaming Agent Product

## Content

### 发泡剂产品目录

PRODUCTS	MODEL	APPLICATION	NOTE
NC FOAMING AGENT	NC120	PVC foam board, Mat, Floor, WPC, Shoe sole etc.	Economy
	NC210	White foamed products	Standard
	NC220	Super white foamed products	High Quality
AC FOAMING AGENT	High Temp. Foaming Agent AC-DN4、6、8、10	Foam board, PP board, Shoe sole, Mat etc.	High foaming ratio and stability
	Heat Balance Foaming Agent AC165	Wall panel, WPC, Construction board	Economy
	Heat Balance Foaming Agent AC110S	Wall panel, WPC, Construction board	Popular
	Heat Balance Foaming Agent AC110	Wall panel, WPC, Construction board, Foamed pipe	Standard
	Low Temp. Foaming Agent AC170	High temperature easy shrinking and bubble broken foamed products	Decomposition temperature: 170℃
	Low Temp. Foaming Agent AC-150	Low temperature processing foamed products	Decomposition temperature:: 150℃
WA Series Non-Ammonia Foaming Agent	WA-160、180、200	Indoor foaming, Mat, Products export to USA, EU.	Environmental
MS Expansion Microsphere Foaming Agent	MS3000	Shoe sole, space mud, wallpaper, car interior, etc	Controlled
NSR Foaming Aid	BK533	Adjust foaming, vulcanization	Vulcanization and foaming





# NC(white) Foaming Agent

## NC白发系列发泡剂

NC series is a group of inorganic compounds, is well known as effective foaming and nucleating agent for plastics such as PVC, PS, ABS, PE, PP and modified PPO. Usual foaming agents are exothermic systems which liberate large amounts of heat during decomposition. This ordinarily leads to irregular cell structure. C-series has endothermic decomposition characteristics. NC series is white, odorless, non-toxic and free-flowing powder and releases carbon dioxide and water vapor during thermal decompositions, it gives no incrustation against screw and hoppers

NC series meet FDA regulations and can be used for food stuffs.

## Properties

Features			
Model	NC210	NC220	NC120
Chemical name	Specially coated sodium bicarbonate and citric acid	Surface coated carbonate	Modified carbonate
Appearance	Fine white powder or light yellow powder	White powder	White powder
Decomposition temperature(°C)	150-210	180-240	140-180
Gas volume (ml/g at 25°C)	150-170	150-170	120-150
Average particle size(μm)	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 NC series

## NC系列分解

NC series is decomposed endothermically. The decomposition range is 140-220°. The use of activators is neither necessary nor possible. Decomposition only depends on the quantity of heat and processing condition. E.g. friction and pressure.

## Applications

NC series allows smaller cells with regular distribution (by nucleating effect) and smooth surface (easy lacquer coating) than AC. It is free from discoloring troubles.

NC series can be used in both extrusion and injection molding system. The recommended dosage level is 0.2-1.5% by weight. In practical usages, the processing temperature of 180-220°C is suitable.

NC series can be also widely used as a nucleating agent to directly gas thermoplastics such as polyolefine, polystyrene, EVA and PVC using Freon, pentane, butane, nitrogen and carbon dioxide. It will nucleate the high pressure gases into fine cellular structure in many different thermoplastics such as PVC PS, ABS, PE, PP and modified PPO by the processes of injection and extrusion system

## NC series selection guide

Model	PS	LDPE	HDPE	PP	ABS	PVC
NC120	○	○	○	○	○	○□
NC210	○	○	○	○	○	○□
NC220	○□	○□	○□	○	○	○□

○As foaming agent

□As nucleating agent





## AC Foaming Agent

AC series is well known as the most widely used and effective foaming agent for plastic and rubbers, such as PVC, PP, PE, EVA, ABS, PS, EPDM, SBR, NBR AND TPR.

HRT series AC foaming agent can be modified to be suitable to almost all of the rubbers and plastics by additives like activators. AC series is non-toxic and self-extinguishing material and has relatively high decomposition temperature and evolves a large gas volume. Therefore they can be used more safely than any other colorless and it can produce white, micro-cellular structures.

## Decomposition of AC series

Decomposition mechanism of AC series is complex and depends on the heating range and the process condition.

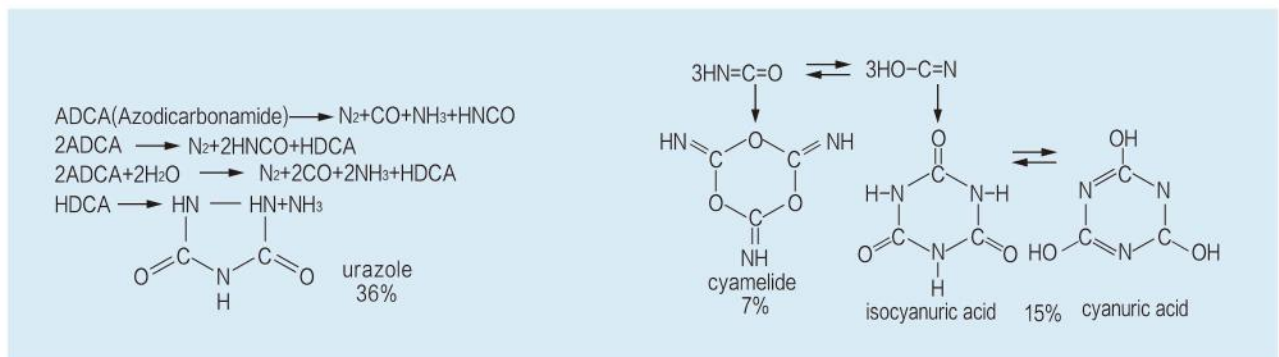
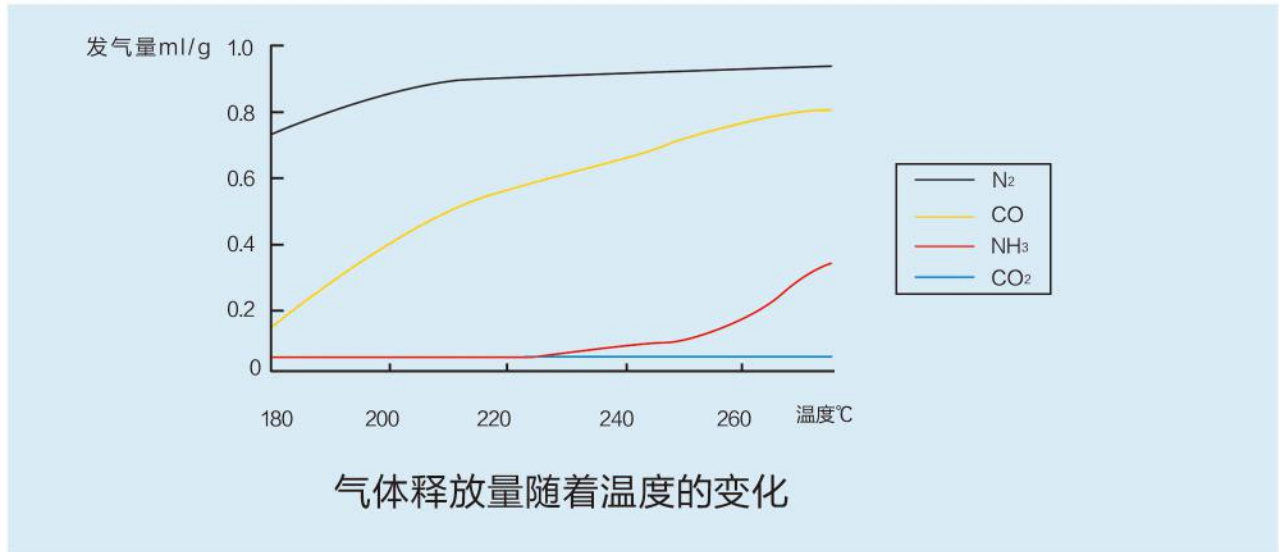
By these reactions, AC series is decomposed and evolved gases several kinds of gases as following:

## AC series selection guide

		Low temperature	Heat balance	High temperature
Gas/Temperature		150~198℃	180~220℃	220~280℃
Gas evolution ( ml/g )		185~218	180~210	220~280
Residue after decomposition ( % )		42.5~66.7	61.3~68.0	46.9~56.5
Gaseous after decomposition ( % )		23.3~27.5	32.0~38.7	43.5~53.1
Released gas	N <sub>2</sub> ( % )	70.8~72.9	53.9~58.8	42.6~48.9
	CO ( % )	26.0~26.5	32.9~33.1	36.2~40.8
	NH <sub>3</sub> ( % )	0~0.9	7.4~12.0	8.2~19.1
	CO <sub>2</sub> ( % )	1.0~1.8	0.7~1.2	2.1~2.2









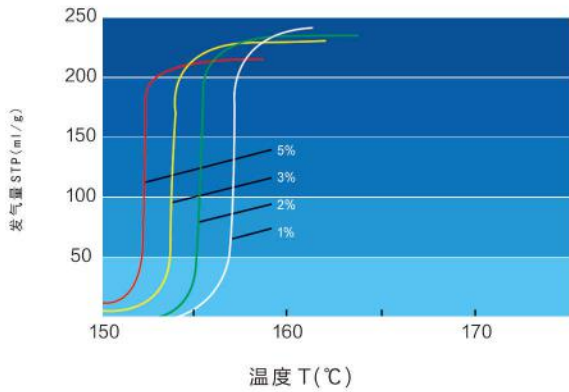
# AC Foaming Agent

## Decomposition Characteristics of

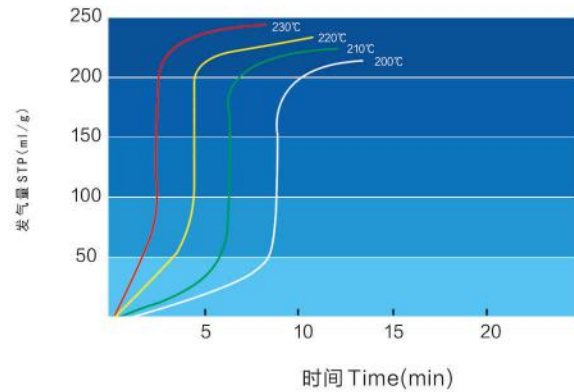
### AC发泡剂分解特性

The decomposition characteristics of AC foaming agent are influenced by many factors, such as crystal shape and size, processing temperature, the dosage of foaming regulator and other additives.

The influence of foaming regulator to AC decomposition

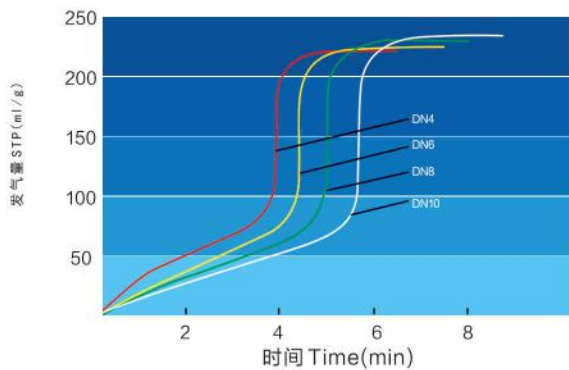


The influence of temperature on AC decomposition

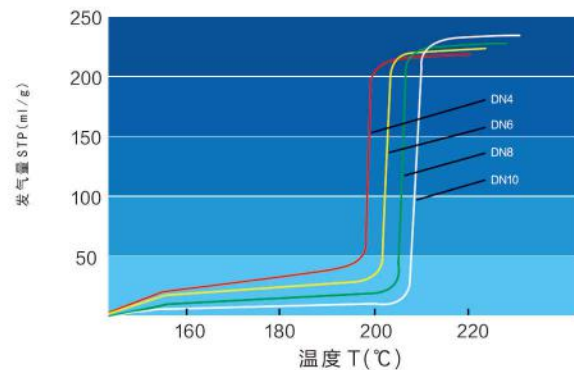


The influence of the diameters on AC decomposition

Constant temperature curve characteristics



Heating curves features





# WA Series Non-Ammonia Foaming Agent

无氨发泡剂WA系列

Through processing of polymers, AC foaming agent will decompose gas with bad smell. The gas mainly includes ammonia and others which come from curing process. It is bad for health. So some developed countries from European and the USA stipulate in explicit terms of the NH<sub>3</sub> content in foaming ware. WA series foaming agent will not decompose NH<sub>3</sub>, cyanuric acid and methyl amide. So, it can be used in toys, indoor wallpaper, high grade sports shoes, car ornament and environmentally friendly products.

## Features

- Environment-friendly, no ammonia smell, no methyl amide
- Stabilized foaming ratio, excellent dispersing property
- Products with excellent mechanical properties
- Can be offered as foaming masterbatch

## Technical data

Product model	WA160	WA180	WAS200
Solubility	Insoluble in any solution	Insoluble in any solution	-
Appearance	Easy dispersed white powder	Easy dispersed white powder	White sticky mash
Decomposition temperature °C	140-160	160~180	180~190
Gas evolution ml/g	STP ≥150	155~160	105~115
Particle size(μm)	8-10	8-10	-
Application	TPR. EVA. PE. PVC. PS. POM. TPR	TPR. EVA. PE. PVC. PS. POM. TPR	Synthetic rubber, PVC.PA.PE. PP. TPR. PC. ABS
Package	Pe bags or carton	Pe bags or carton	Drum



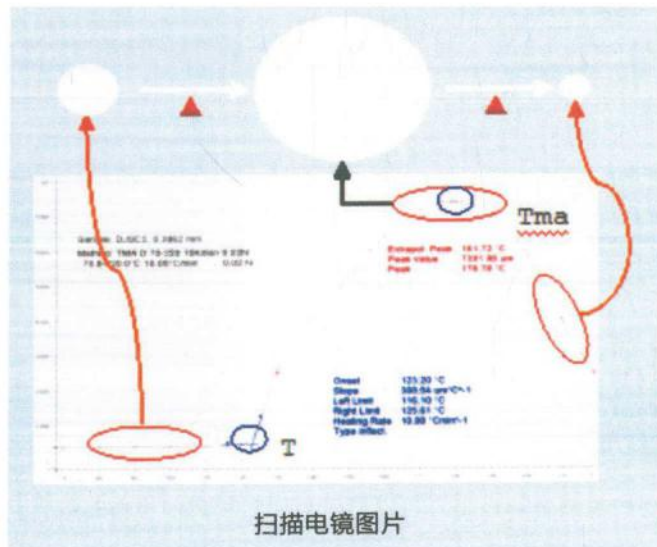


# MS Series

MS系列

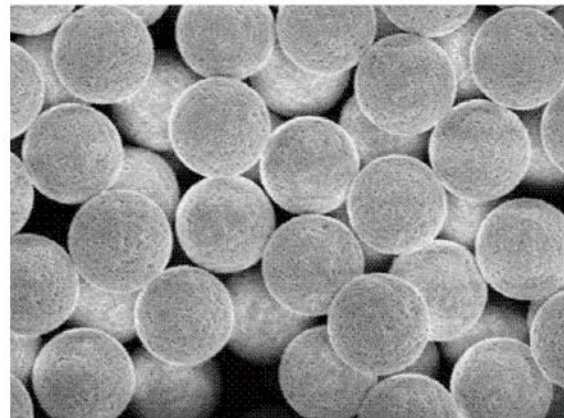
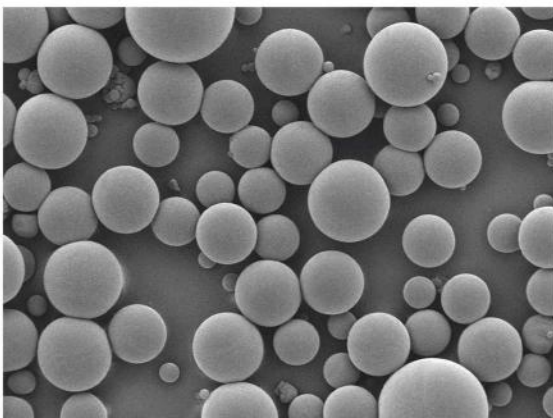
## Expansion Microsphere

Expansion microsphere is a kind of tiny spherical plastic particles, which have the shell of the polymer and the gas which is wrapped in it. The shell will soften and the gas will expansion when heated, and the sphere's volume will grow incredible.



## Features

- Excellent expandability and thermal stability
- Excellent solvent resistance
- Various grades and wide choice, suitability for customers' demands





## Choice of expansion microsphere

### Dry Powder

Description					
Model	Average particle size (μm)	Soften Point (°C)	Max. Temperature (°C)	Moisture (%)	APP
MS140DS	15±5	90±5	120±5	2.0MAX	1
MS140D	25±5	90±5	120±5	2.0MAX	1
MS161D	20±5	115±5	140±5	2.0MAX	1, 2
MSH65D	65±5	115±5	140±5	2.0MAX	2
MS2002D	25±10	115±5	160±5	2.0MAX	2
MS22TA30D	25±10	115±5	160±5	2.0MAX	2
MS4002D	10-43*	123±8	180±5	2.0MAX	4
MS4004D	10-43*	123±8	168±8	2.0MAX	4
MS4600D	25±5	123±8	181±5	2.0MAX	5
MS4600FD	40±5	115±5	180±5	2.0MAX	2, 5
MS4600FSSD	15±5	123±8	181±5	2.0MAX	5
MS12D	30±5	139±5	183±5	2.0MAX	3
MS190D	30±5	160±5	194±4	2.0MAX	3
MS191D	30±5	160±5	195±5	2.0MAX	3
MS07CD	24±4	169±3	193±3	2.0MAX	3
MS200D	30±	140±5	200±5	2.0MAX	3
MS3001D	28-40*	161±5	214±6	2.0MAX	3, 6

### Wet Powder

Description					
Model	Average particle size (μm)	Soften Point (°C)	Max. Temperature (°C)	Moisture (%)	APP
MS130W	15±5	85±5	120±5	17-20	1
MS140WS	15±5	90±5	120±5	17-20	1
MS140MS3W	15±5	90±5	120±5	30	1
MS140W	23±8	90±5	120±5	15-20	1
MS3000AW	59±5	192±5	210±5	20	6





## PACKAGES

- 1. 25KG/Plastic Bags
  - 2. 25KG/Carton
  - 3. 25KG/Paper drum
- Special packing can be customized

## Attentions

Storage: Dry and ventilated, warehouse temperature not exceeding 50°C , no fire. Store separately from oxidants, acids, bases and other chemicals.

Transportation: Forbid mixing transportation with acid, alkali and oxide, Forbid contact with fire or heat sources, avoid high temperature transportation and prevent sunlight exposure.

Processing: Enhance ventilation in processing places to prevent dust hazards. Avoid stacking large quantities in processing places.

Special note: When AC decomposes abnormally, it should be separated from other non-ignited products immediately. Must wear respirators and protective clothing in fire rescue.

Specific Reference MSDS





# System Solutions

系统解决方案

As a supplier of plastic processing additives, we provide systematic solutions for plastic products enterprises while making good products. We have established a professional team of technical services with profound professional knowledge, rich practical experience and quick response. We always satisfies the customer's needs, guarantees the customer's interests, provides qualified and cost-effective products. We also provide debugging services, special customization service of plastic additives and inspection and analysis of plastic products. Cooperate with customers to solve technical problems in production process in time, help customers improve product quality, reduce production costs and create enterprise benefits. We will continue to provide the latest raw materials market and related information, and strive to maintain close collaboration with customers, interdependence and common development of partnership.

HIGH QUALITY & EFFICIENCY  
ENVIRONMENTAL PROTECTION

