TFC BLOWING AGENT

TFC-AZP Series

TFC-AZP Series is a chemical blowing agent which have high performance and universally used for rubbers and kind of Polyolefine plastics(PE, PP, EVA, PVC, PS, ABS etc.)

TFC-AZP Series have excellent stability in head end process of a foam through high decomposition temperature. Also it is able to control decomposition temperature freely by using decomposition accelerator, so it can be used in a wide range of manufacturing. And because the color of decomposition residue is white, it is excellent in whiteness and can get fine and uniform foam.

TFC-AZP Series is a self-extinguishing substance so there is no risk of fire. As a non-toxic, odorless and non-polluting substance, there is no degradation in physical properties while stored in dry and cool space for a long period.

Grade		AZP0204	AZP0305	AZP0608	AZP0810	AZP1012	AZP1215	AZP1619
Appearance		Lemon yellow fine powder						
Decomposition temperature (℃)		200 ~ 210						
Gas Amount (㎖/g)	STP	215 ~ 225						
	In air	290 ~ 300						
Average particle size (㎛)		2.0 ~ 4.0	3.0 ~ 6.0	6.0 ~ 9.0	9.0 ~ 11.0	10.0 ~ 14.0	12.0 ~ 15.0	15.0 ~ 20.0
Moisture Content (%)		0.3 Max.						
Chemical Name		Azodicarbonamide (Azobisformamide)						
Molecular weight (g/mole)		116.08						
Specific Gravity		1.65						
Solubility		Insoluble in normal organic solvent, soluble in very small amount of DMSO and DMF						

TFC-ACPE & AZP Series

TFC-ACPE & AZP Series is a ADCA reforming chemical blowing agent, which has excellent performance and can be used for cross-linked PE and PP blowing agent foam.

TFC-ACPE Series is used for foaming cross-linked organic peroxides and it is excellent in stability.
So it is used for extracting uniform and bubble structured high resolution foaming foam with the balance of effective cross-linked and foaming speed.

TFC-AZP Series is a chemical blowing agent which is used for PE and PP Irradiated cross-linked foam. It is excellent in thermal stability and dispersibility with resins, so it is effective in manufacturing white product.

1. Chemically cross-linked PE foam (ACPE Series)

Grade		ACPE	ACPE(T)	ACPE(ES)	ACPE(S)	ACPE(LHQ)
Appearance		Lemon yellow fine powder				
Decomposition Temperature (℃)		193 ~ 197	195 ~ 200	195 ~ 200	196 ~ 200	179 ~ 189
Gas Amount (㎖/g)	STP	210 ~ 230	210 ~ 230	210 ~ 230	210 ~ 230	200 ~ 220
	In air	280 ~ 290	280 ~ 290	280 ~ 290	260 ~ 270	275 ~ 285
Average particle size (㎛)		18.0~20.0	18.0~20.0	18.0~20.0	11.0~14.0	12.0~15.0
Moisture Content (%)		0.3 max.				
Applying field		Chemically Cross-linked PE foam				

2. Irradiated cross-linked PE&PP foam (AZP Series)

Grade		AZP1400E	AZP2400P
Appearance		Lemon yellow fine powder	
Decomposition Temperature (℃)		200 ~ 204	204 ~ 208
Gas Amount (㎖/g)	STP	220 ~ 240	220 ~ 245
	In air	280 ~ 290	280 ~ 290
Average particle size (㎛)		11.0 ~ 14.0	24.0 ~ 26.0
Moisture Content (%)		0.3 max.	
Applying field		PE Irradiated Cross-Linked	PP Irradiated Cross-Linked

TFC Chemically crosslinked PE foam Masterbatch

TFC-ACPE(MB) is a masterbatch product in chemically crosslinked PE foam and it improves shatter-resistant and dispersibility with resins.

TFC-LDDCP is a masterbatch product in crosslinked agent(DCP). It forms uniform bubble through excellent dispersibility with resin.

TFC-LDFL is a masterbatch product in charring agents. It is excellent in dispersibility with resins, so can get uniform effect in resistance to flame.

Grade	ACPE(MB)	LDDCP	LDFL
Appearance	Lemon yellow Pellet	Fine white Pellet	Fine white Pellet
Decomposition Temperature (℃)	195 ~ 200	-	-
Gas Amount (㎖/g)	90 ~ 95	-	-
Melting point(℃)	-	39 ~ 40	-
Specific gravity	1.05 ~ 1.10	0.80 ~ 0.90	1.200 ~ 1.250
Apparent specific gravity (g/㎖)	0.55 ~ 0.60	0.45 ~ 0.50	0.70 ~ 0.80
Moisture (%) @ 1hr./105℃	0.035 ~ 0.040	0.0025 ~ 0.0035	0.015 ~ 0.025
Content (%)	33	4.7	45
Application	Blowing agent Masterbatch	Cross linking agnet Masterbatch	Charring Masterbatch

TFC-W Series

TFC-W Series is a mixture of 2 kinds of chemical blowing agents (OBSH and ADCA) which is developed for PVC wall coverings.

TFC-W Series is a chemical agent which is excellent in dispersibility and increases whiteness of a foam.

There is no smell of Ammonia when processed in high temperature and it does not decompose rapidly, so it is excellent in stability while processing.

Grade	W1015	W1017	W1018	W1039	W1040	W1046	W3000
Appearance	Lemon yellow fine powder						
Decomposition Temperature (℃)	160 ~ 168	140 ~ 146	150~ 155	140 ~ 148	145 ~ 150	140 ~ 145	148 ~ 155
Gas Amount (㎖/g) @STP	198 ~ 200	190 ~ 198	170 ~ 180	190 ~ 198	180 ~ 190	180 ~ 190	180 ~ 190
Average particle size (㎛)	3.0 ~ 5.0	3.0 ~ 5.0	3.0 ~ 5.0	3.0 ~ 5.0	3.0 ~ 5.0	3.0 ~ 5.0	3.0 ~ 5.0
Moisture Content (%)	0.5 max.						
Chemical Name	Reforming Azodicarbonamide						
Applying field	PVC Wall coverings						

TFC-E Series

TFC-E Series is ADCA reforming chemical blowing agent which is excellent in molding under pressure and injection molding of EVA and rubber(natural, synthesis).

TFC-E Series is a chemical blowing agent with an advantage of improving physical properties like tensile strength, dimensional stability and wear resistance.

TFC-E Series does not decompose rapidly due to the work stability of head end process. So can gain uniform foam.

TFC-E Series MB is a masterbatch products in chemical blowing agent that is developed especially for foaming under pressure of EVA and injection. It is excellent in prevention of arsenic acid and dispersibility with resins so it has the advantage of reducing roll mixing milling time, whiteness, uniform bubble and storage stability.

1. TFC-E Series

Grade		TFC-EM140	TFC-EM145	TFC-EI150	TFC-EO155	TFC-KEM165	TFC-DEM175
Appearance		Lemon yellow fine powder					
Decomposition Temperature (℃)		138 ~ 148	138 ~ 148	150 ~ 160	152 ~ 158	152 ~156	146 ~ 150
Gas Amount (㎖/g)	STP	130 ~ 145	130 ~ 145	130 ~ 145	135 ~ 150	135 ~ 146	127 ~ 137
	In air	165 ~ 175	165 ~ 175	165 ~ 175	170 ~ 180	170 ~ 176	167 ~ 172
Average particle size (㎛)		8.0~10.0					
Moisture Content (%)		0.3 max.					
Applying field		EVA Shoes, Rubber foams					

2. TFC-E Series MB

Grade		TFC-EM145MB	TFC-EO155MB	TFC-KEM165MB	TFC-DEM175MB
Appearance		Lemon yellow fine masterbatch			
Decomposition Temperature (℃)		138 ~ 148	152 ~ 158	152 ~ 156	146~ 150
Gas Amount (㎖/g)	STP	80 ~ 90	85 ~ 95	78 ~ 89	75 ~ 85
	In air	115 ~ 125	120 ~ 130	110 ~ 120	110 ~ 120
Average particle size (㎛)		50	50	50	50
EVA VA Content (%)		21			
Applying field		EVA Press & Injection Molding			

TFC-ERB Series

TFC-ERB Series is a chemical blowing agent that can extract fine and uniform foam, which is processed ADCA with decomposition accelerator and stabilizer etc. to make it appropriate for foaming under pressure of EVA and Rubber(natural, synthesis). It improves properties like antiwear and weather proof.

TFC-ERB Series is appropriate for processing low density white foam because it is fast in thermal decomposition and has low amount of gas quantity.

Grade	ERB200	ERB300
Appearance	Lemon yellow fine powder	
Decomposition Temperature (℃)	133 ~ 137	145 ~ 150
Gas Amount (㎖/g) @STP	135 ~ 145	135 ~ 145
Average particle size (㎛)	8.0 ~ 10.0	8.0 ~ 10.0
Moisture Content (%)	0.5 max.	
Applying field	EVA, EVA/PE Blending, PE & Rubber Press Molding	

TFC-OBSH

TFC-OBSH has a good compatibility with rubber(natural, synthesis) and thermoplastic resin. After decomposition, residue is composed of polymeric materials, so it forms fine bubble and is excellent in whiteness. Especially it is excellent in electrical isolation so it is effective in manufacturing kind of wire clothings.

TFC-OBSH has no toxicity, contamination and intoxication. Also it is a white, eco-friendly and high grade chemical blowing agent, which doesn't affect the color of final foam.

Grade	OBSH
Appearance	Fine white powder
Decomposition Temperature (℃)	158 ~ 164
Gas Amount (㎖/g) @STP	125 ~ 140
Average particle size (㎛)	6.0 ~ 10.0
Moisture Content (%)	0.5 max.
Chemical Name	p,p'-Oxybis(benzenesulfonylhydrazide)
Molecular weight (g/mole)	358.39
Specific gravity	1.55
Solubility	Generally insoluble in organic solvent, dissolve in DMSO

TFC-TSH

TFC-TSH is a low temperature chemical blowing agent, which is appropriate for rubber chemical blowing agent that requires uniform and fine bubble structure. And can manufacture excellent foam without promoting decomposition in foaming under normal pressure

TFC-TSH is low in contraction when exposed to light and heat, so it is applied to thermosetting polyesters and PVE sealants etc.

Grade	TSH
Appearance	Fine white powder
Decomposition Temperature (℃)	143 ~ 148 (Melting point : 100~110)
Gas Amount (㎖/g) @STP	120 ~ 130
Average particle size (㎛)	-
Moisture Content (%)	0.5 max.
Chemical Name	P-Toluenesulfonylhydrazide
Molecular weight (g/mole)	186.2
Specific gravity	1.42
Solubility	Dissolve in alcohol, DMF etc.

TFC-DPT

TFC-DPT produces a lot of gas per unit mass, so it is economically feasible chemical blowing agent. And it is used for natural rubber and foaming under pressure of synthetic rubber.

TFC-DPT is used with accelerator of ureameter decomposition to make it fit for the condition of vulcanization of rubber. Process ability and storage stability is improved by mixing it with mineral fill packing because it is sensitive to acid and heat

Grade	DPT
Appearance	Light yellow fine powder
Decomposition Temperature (℃)	184 ~ 195
Gas Amount (㎖/g) @STP	220 ~ 230
Average particle size (㎛)	-
Moisture Content (%)	0.5 max.
Chemical Name	N,N'-Dinitrosopentamethylene tetramine
Molecular weight (g/mole)	186.17
Specific gravity	1.45
Solubility	Insoluble in most organic solvent and there is a danger of explosion by strong acid, strong alkali and other oxidizing agent

TFC-HHBK/BM/TM(Foaming accelerator)

TFC-HHBK is a ureameter foaming accelerator which is applied for adjusting the temperature that is suitable for the conditions of processing ADCA and DNPT. Especially it improves stability of DNPT when mixed with DNPT. Also it eliminates the odor and contamination of a foam by eliminating formaldehyde which is generated while decomposition of DNPT.

TFC-BM/TM is a foaming accelerator of ADCA which is really high in vitality. It has an advantage of improving production speed, prevent decline in physical properties and discoloration caused by furious flames.

Grade	HHBK	BM	TM
Appearance	Fine white powder		
Melting point (℃)	110 ~ 115	218 ~ 228	255 ~ 265
Average particle size (㎛)	4.0 ~ 5.0	3.0 ~ 5.0	3.0 ~ 5.0
Moisture Content (%)	0.3 max.	4.0 max.	4.0 max.
Chemical Name	surfaced urea derivative	Zinc-dibenzenesulfinate	Zinc-ditoluenesulfinate
Applying blowing agent	DNPT, ADCA	ADCA	ADCA

TFC-PTSS

TFC-PTSS is high temperature white chemical blowing agent, so it is applied for foaming Resins which has high processing temperature like ABS, HIPS, HDPE, Polyamide and rigid PVC.

TFC-PTSS improves the surface of a foam in pressing out and injection processing.

Grade	PTSS
Appearance	Fine white powder
Decomposition Temperature (℃)	227 ~ 235
Gas Amount (㎖/g) @STP	135 ~ 145
Average particle size (㎛)	-
Moisture Content (%)	0.5 max.
Chemical Name	P-Toluenesulfonylsemicarbazide
Molecular weight (g/mole)	229.25
Specific gravity	1.44
Solubility	Soluble in alcohol. Insoluble in DMSO

TFC-PY Series

TFC-PY Series is a Endothermic Blowing Agent that has surface treatment for the prevention of moisture absorption.

TFC-PY Series is applicable for chemical blowing agent and nucleating agent. Unlike other organic blowing agent, it can manufacture uniform bubbles, because it is processed through decomposition of heat absorption, so there is no expansion, contraction and destruction of bubble due to the heat. Also It is harmless to the body so it is widely used for foaming of packing materials of food.

Grade	T670	T670A	PY660N	PY1000	PY2000	PY3000	PY4000	PY5000
Blowing Agent	Endothermic Blowing Agent			Endothermic + Exothermic Blowing Agent				
Appearance	Fine white powder			Lemon yellow fine powder				
Decomposition Temperature (℃)	155 ~ 165	150 ~ 220	150 ~ 200	150 ~ 200	150 ~ 200	150 ~ 200	150 ~ 200	150 ~ 200
Gas Amount (㎖/g)@STP	140 ~ 160	110 ~ 130	110 ~ 130	150 ~ 160	166 ~ 170	175 ~ 185	185 ~ 190	190 ~ 200
Average particle size (㎛)	200mesh pass			200mesh pass				
Chemical Name	Specially coated sodium bicarbonate			Reforming sodium bicarbonate				
Applying field	PE,(LDPE, HDPE), PP, PS(HIPS, GPPS) etc.			PS, PE, PP etc.				

TFC-LBN Series

TFC-LBN Series is a masterbatch product in Pellet of Endothermic Blowing Agent.

TFC-LBN Series has the advantage of uniform bubble of a foam and improves dimensional stability of a final foam through improving dispersibility with resins.

TFC-LBN Series is a masterbatch product in foaming agents for extrusion, which prevent arsenic acid, has time reduction in roll mixing milling and excellent in storage stability through fine dispersibility.

Grade	LBN301	LBN302	LBN303
Blowing Agent	Endothermic Blowing Agent		
Appearance	White Pellet		
Decomposition Temperature (℃)	155 ~ 165	150 ~ 220	150 ~ 210
Gas Amount (㎖/g) @STP	45 ~ 50	35 ~ 45	35 ~ 45
Chemical Name	Masterbatch products in inorganic chemical blowing agent.		
Blowing agent content(%)	30	20	20
Applying field	PE,(LDPE, HDPE), PP, PS(HIPS, GPPS) etc.		

TFC-Microsphere Series (DU/WU/DE/WE/MB/T)

TFC-Microsphere Series is a capsule-type expandable microsphere used as a lightweight functional filler for plastic and rubber applications. It consists of a thermoplastic shell and a volatile core, expanding 80–100 times upon heating to form a uniform closed-cell structure with ultra-low density, enabling effective weight reduction.

TFC-Microsphere Series is compatible with various materials such as PVC, PE, PP, ABS, rubber, and TPE, and provides excellent insulation, resilience, and surface quality. It can be processed by injection molding, extrusion, and coating without equipment modification, and is widely used in automotive parts, footwear, rubber, coatings, and building materials.

1. TFC-Microsphere Series (DU/WU/DE/WE/MB/T)

Grade	Product Series	Processing Temp.℃	Particle Size D(50), ㎛
Ultra-Low Temp	WU/DU	90-110	18-23
Low Temp	WU/DU	120-150	8-15, 15-25
Medium Temp	DU	150-170	8-13, 15-25, 30-50
High Temp	DU/MB	180-220	20-35
Ultra-High Temp	DU	210-240	15-25
Pre-Expanded	DE/WE/T	No Heating Required	20-40, 40-60, 60-80, 50-70(T)

TFC-SL200M(Silicon Bead)

TFC- SL200M is a high performance light diffuser, which has low refractive index with silicon bead of small particle form

TFC-200M has fine thermal stability and optimal surface characteristics.

Property	Unit	SL200M
Mean diameter	㎛	2
C.V	%	15 ~ 20
Decomp. Temp.	℃	400 ↑
Moisture content	%	1 ↓
True Density	g/㎖	1.32
Bulk Density	g/㎖	~ 0.40
Refractive Index	a. u.	~ 1.43
Oil absorption	㎖/100g	50 ~ 60
10% K-value	kg/㎟	580
Angle of Repose	deg.	40 ~ 45
Heavy metals	ppm	N.D
Surface property	-	Hydrophobic