

PChem® Acrylic Resins

Polymeric materials for coatings, inks, adhesives and other specialty applications

BM Series - Products produced by bulk polymerization process

MB Series - Products produced by suspension polymerization process



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The Passion for Polymers



| About Us

Pioneer Chemicals' history dates back to 1993, based on the core technology of high conversion free radical polymerization, with an emphasis on safety, health, and environment as a priority for sustainable development. "Professionalism, Integrity, Appreciation, & Implementation" are Pioneer's core philosophy and code of conduct.

Pioneer Chemicals is headquartered in Shanghai, China, with 3 production sites with a combined capacity of more than 23,000 tons/year. Our products are divided into 8 series and total more than 150 grades covering a wide range of applications, including coating, ink, adhesives, plastics, and many other applications.

Pioneer Chemicals is keen on providing customers with personalized service. During the past many years, through the growth of our successful partnerships, we have become a leading supplier of acrylic resins in Asia. Our technology and products are assisting our partners in improving product performance, cost-effectiveness and in enhancing value creation.

- Received ISO9001: 2008 quality management system certification

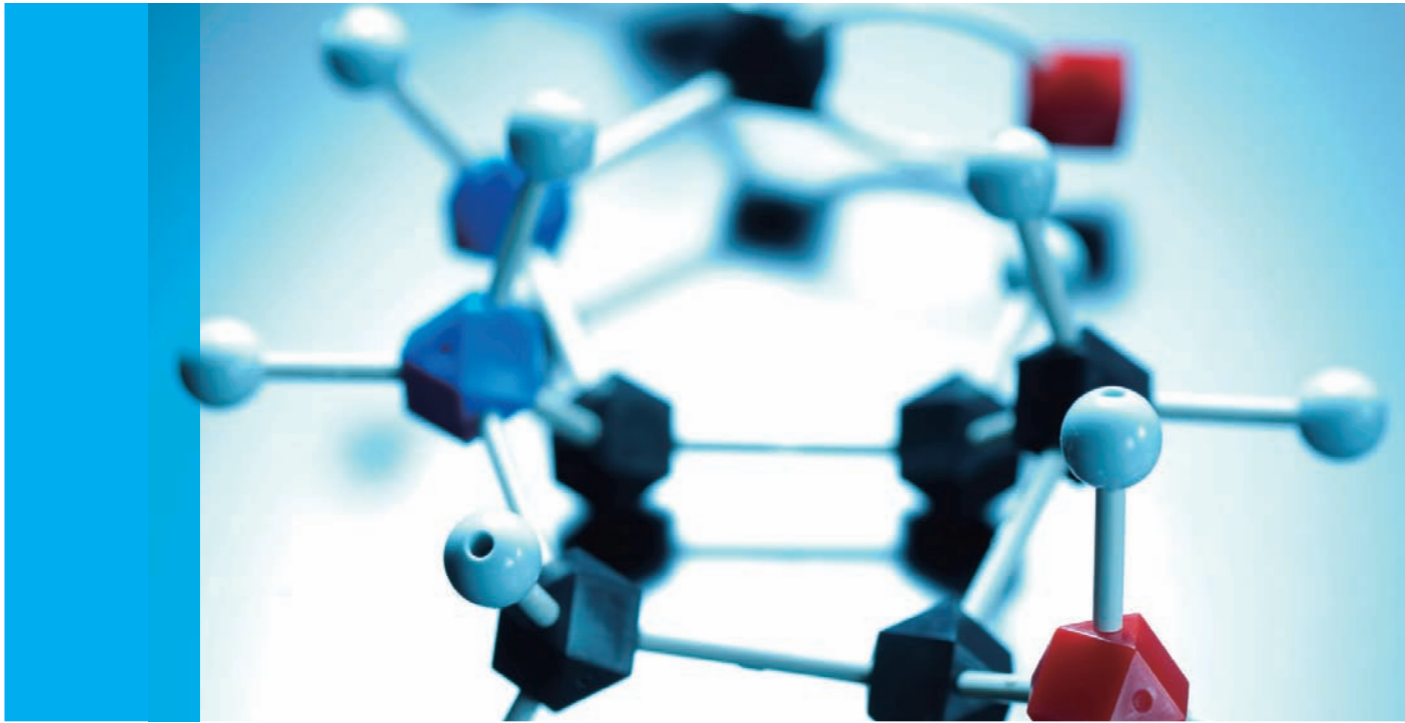
Historical Growth Milestones

- 1993 Jiulong Fine Chemicals was established
- 2003 Restructuring of Jiulong, Pioneer Chemicals Co., Ltd. was established
- 2005 Pioneer Chemicals (Yangzhou) Co., Ltd. was established to increase production capacity
- 2012 Pioneer Solutions Americas Inc. was established in California, USA
- 2013 Pioneer Solutions Europe BVBA was established in Antwerp, Belgium

- 2013 Pioneer Chemicals headquarters moved to a new business building in Jiading, Shanghai
- 2013 Pioneer Chemicals (Yangzhou) second plant became operational, increasing production capacity by a further 17,000 tons/year.
- 2014 Pioneer Solutions Asia Pacific Ltd. was established in Hong Kong

Company Culture and Philosophy

- "Professionalism, Integrity, Appreciation, and Implementation"



Product Overview

PChem® acrylic resins are based on Pioneer Chemicals' 20 years of product development, manufacturing expertise and field applications. Pioneer Chemicals manufactures its products by selecting appropriate monomer compositions for high conversion free radical polymerization reaction, in order to form polymers for a wide variety of applications. The common raw materials include methacrylates, acrylates and many other monomers. The physical forms of PChem® acrylic resins are beads, powders or pellets, for users to choose. The polymer's structure-property relationship is the core art of design for our R&D function of new product development. Our resins are compatible with many other film forming resins, such as chlorinated rubber, polyvinyl chloride, polyvinyl acetate, nitrocellulose, cellulose acetate butyrate, as well as with many pigments, dyes, additives and solvents. With its unique functionalities, PChem® offers excellent weathering/UV resistance and the best optical properties, such as high gloss, high light transmittance and low haze. PChem® also

offers good biocompatibility and recycling capability because of the nature of its chemical structures.

Typical Performance

- Outstanding weathering, UV resistances with superior fade resistance
- Safe and nontoxic with excellent biocompatibility
- The best optical properties such as high gloss, high light transmittance and low haze
- Excellent pigment dispersion characteristics for coatings, inks, adhesives and plastics
- Excellent compatibility with many other resins, solvents, pigments/dyes and additives

Global Markets



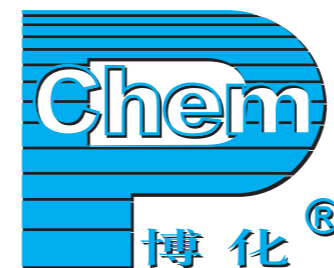
Process Setting

PChem® products are available according to end users' needs

- Resin appearance: beads, powders and pellets
- MB series: beads, particle size ranges from 50 um to 700 um
- BM series: powders, pellets, particle size ranges from 20 um to 3 mm

Key Physical Properties

- Molecular weight (Mw): 4,000 to 1,500,000
- Glass transition temperature (Tg°C): -80 to 145
- Acid number (mgKOH/g): 0 to 300
- Hydroxyl number (mg ACID/g): 0 to 150



Grades	Molecular Weight (Mw)	TG (°C)	Inherent Viscosity	Acid Number	Hydroxyl Number	Solubility						Properties & Performance
						Aromatics	Alcohols	Chlorinated Hydrocarbons	Higher alcohols	Esters	ketones	
BM9	70,000	56	0.31	≤1.0		●		●	●	●	●	Good pigment dispersion, excellent weathering resistance
BM9A	130,000	56	0.5	≤1.0		●		●	●	●	●	Hard flexible and durable. high gloss and good pigment dispersion, excellent weathering resistance
BM11	85,000	100	0.36	≤ 1.0		●				●	●	High hardness & rigidity, good compatibility with NC, CAB, excellent alcohol resistance, gasoline resistance, water resistance, high durability, and weatherability
BM17	90,000	85	0.4	≤ 1.0		●				●	●	Good durability, good weatherability, good alcohol and plasticizer resistance, excellent compatibility with NC, CAB and good reflow of silver powders
BM24E	160,000	32	0.43	≤ 1.0		●		●	●	●	●	Good pigment wetting and color strength. Excellent compatibility to Al flakes and gold bronze pigments. Usable for cigarette packaging. Proven depolymerisation behavior for ceramic transfer lacquers
BM24G	180,000	33	0.47	≤1.0		●		●	●	●	●	Good pigment wetting and color strength, great for ceramic and glass transfer printing lacquers
BM44	100,000	60	0.4	≤ 2.0		●				●	●	Exceptional combination of hardness flexibility and adhesion to various substrates, good compatibility with wide latitude in formulations, excellent weatherability
BM51	60,000	33	0.27	≤ 1.0			●					Alcohol soluble, exceptional adhesion and flexibility
BM52	70,000	60	-	20	22		●					Alcohol soluble, good adhesion, good pigment dispersion
BM55E	100,000	68	0.38	<1.0		●		●		●	●	Excellent adhesion to aluminum and unsaturated polyester
BM55F	20,000	68	0.14	<1.0		●		●		●	●	Excellent adhesion to aluminum and unsaturated polyester
BM60	40,000	75	0.2	10		●		●		●	●	Fast drying, good compatibility, good pigment dispersion
BM60E	35,000	75	0.17	8.5		●		●		●	●	Lower Mw than BM60 and all others are the same as BM60
BM61	50,000	32	0.26	6.5		●	●			●	●	Excellent flexibility and adhesion to various substrates with low shrinkage rate and odor
BM61A	50,000	32	0.23	≤ 1.0		●	●			●	●	Fast drying, low viscosity, exceptional pigment dispersion
BM62	45,000	65	0.18	≤8.0		●		●		●	●	Excellent weathering and anti-corrosion properties, marine applications
BM64A	40,000	60	0.18	4.5		●				●	●	Fast drying, low viscosity, exceptional pigment dispersion
BM65C	40,000	55	0.19	6.5		●				●	●	Fast drying, low viscosity, exceptional pigment dispersion
BM66	50,000	50	0.27	6.5		●			●	●	●	Broad applications, fast drying, good compatibility, excellent salt spray resistance
BM66D	45,000	50	0.25	6.5		●				●	●	Fast drying, low viscosity, exceptional pigment dispersion, good weatherability
BM67	50,000	50	0.19	≤1.0		●		●	●	●	●	Excellent pigment dispersion, water reducible, fast drying
BM70	40,000	55	-	70			●			●	●	Good adhesion, good pigment dispersion
BM71	100,000	50	0.6	3.5		●			●	●	●	Fabric screen ink, pvc replacement in automotive plastisol
BM72	32,000	54	0.15	6.5		●			●	●	●	Low VOC, for heat sealing lacquer and traffic marking
BM76	105,000	61	0.37	8		●			●	●	●	Excellent outdoor durability and chemical resistance for use in protective coatings, concrete sealers, seamless flooring, wood coatings
BM80	90,000	54	0.36	9		●		●		●	●	Good binder for various coating materials
BM81	30,000	103	0.12	2		●	●	●	●	●	●	Offer fast tack-free time, heat resistance; plastic coating and ink
BM82	90,000	35	0.37	≤ 3.0		●				●	●	Flexibility, good weatherability, durability, good solvent release ability
BM97	50,000	105	0.18	12						●	●	Soluble in ketones, good for pvc pipe adhesives and structure adhesives
BM99	20,000	113	-	-						●	●	Fast drying, low viscosity, exceptional pigment dispersion
BM111	110,000	110	0.48	≤1.0		●				●	●	Since its high Mw and high heat resistance, it is very good for applications of pvc top coat and plastic coating
BM112A	70,000	32	0.24	≤1.0		●		●		●	●	It offers excellent adhesion, flexibility, low shrinkage rate and durability. It is commonly used in UV curing technology.
BM131	84,000	104	0.4	≤1.0		●				●	●	High hardness & rigidity, good compatibility with NC, CAB, excellent alcohol resistance, gasoline resistance, water resistance, high durability, and weatherability; good for flexographic inks.
BM164	92,000	62	0.4	≤ 3.0		●				●	●	Outstanding combination of hardness, flexibility, and adhesion to various substrates. It is suitable for clear coating of interior and exterior concrete floors and road surface.
BM218	160,000	35	0.54	≤1.0		●		●	●	●	●	Common applications are ceramic coatings, aerosol paints, a good aluminum finishes.
BM260	20,000	50	0.11	≤7.0	35	●			●	●	●	Good raw material for 2k systems in printing inks
BM270	60,000	70	0.31	124								Binder for photoresist ink
BM655	10,000	62	0.1	55	24					●	●	High acid resin, good for hot melt adhesive
BM701C	200,000	-45	0.55	<1		●		●		●	●	Binder for pressure sensitive adhesives
BM708	390,000	-50	0.55	<1		●		●		●	●	Binder for hot melt adhesives
BM751	30,000	49	0.13	<6	10	●		●		●	●	Binder for moisture curable reactive PU hot melt adhesives
BM820	250,000	65	0.65	≤1.0		●					●	High gloss, high Mw; good for aerosol spray, plastic coating

Grades	Molecular Weight (Mw)	TG (°C)	Inherent Viscosity	Acid Number	Hydroxyl Number	Solubility						Properties & Performance
						Aromatics	Alcohols	Chlorinated Hydrocarbons	Higher alcohols	Esters	ketones	
MB-2	140,000	104	0.65	≤ 1.0		●				●	●	High hardness, high gloss and scratch resistance, chemical resistance
MB-4	40,000	75	0.19	6		●		●		●	●	Fast drying, good adhesion to plastic substrates, good solubility and pigment dispersion, good compatibility with CAB, vinyl resins and chlorinated rubbers
MB-6	50,000	50	0.27	3.5		●			●	●	●	Speed solvent release, high gloss, good pigment dispersion and weatherability, good compatibility, general purpose grade, exceptional resistance to water & salt
MB-6-1	200,000	60	0.7	≤ 1.0		●				●		Good solvent release, outstanding hard and durability, high viscosity and chemical resistance; for aerosol spray and specialty ink resin.
MB-6-A	50,000	50	0.26	7		●		●		●	●	Fast drying, high gloss and compatibility, good pigment dispersion
MB-6-C	60,000	58	0.23	≤1.0		●		●	●		●	High gloss, fast drying, good pigment dispersion
MB-8	90,000	96	0.4	≤ 1.0		●		●		●	●	Good durability, good weatherability, good alcohol gasoline, and plasticizer resistance, exceptional compatibility, with NC, CAB and good reflow of silver powders
MB-9	200,000	55	0.56	≤ 1.0		●		●	●	●	●	Hard, flexible, durable, and high gloss, excellent adhesion to substrates, excellent weatherability
MB-9-A	100,000	55	0.46	≤1.0		●		●	●	●	●	Good pigment dispersion, excellent weathering resistance
MB-9-B	70,000	55	0.34	≤ 1.0		●		●	●	●	●	Good durability, good weatherability, good alcohol gasoline and plasticizer resistance, exceptional compatibility with NC, CAB and good reflow of silver powders
MB-9-X	50,000	56	0.23	2.6		●		●	●	●	●	Good pigment dispersion, high gloss, fast drying
MB-10	180,000	32	0.52	≤ 9.0		●		●	●	●	●	Flexible and high gloss, good adhesion to aluminum substrates, good compatibility and resistance to water, low odor
MB-10-B	160,000	32	0.46	≤ 1.0		●		●	●	●	●	Flexible, glossy, good compatibility, low odor and good water resistance
MB-11	60,000	48	0.27	10		●	●			●	●	Alcohol soluble resin for printing ink
MB-11-A	60,000	48	0.27	10		●	●			●	●	Alcohol soluble resin for printing ink
MB-12	50,000	104	0.28	≤ 1.0						●	●	Hard and durable, low viscosity and good compatibility, good alcohol resistance, gasoline resistance, plasticizer resistance, good weatherability
MB-17	90,000	85	0.4	≤ 1.0		●				●	●	Alcohol resistant, durable, weatherability, plasticizer resistance, good solvent release skill, compatibility
MB-18	90,000	93	0.41	≤1.0		●				●	●	High hardness, excellent rub and scratch resistance, good compatibility with NC and CAB exceptional alcohol resistance, gasoline resistance
MB-18-A	120,000	98	0.49	≤ 1.0		●				●	●	High hardness, excellent rub and scratch resistance, good compatibility with NC and CAB exceptional alcohol resistance, gasoline resistance
MB-22	280,000	104	0.97	≤ 1.0						●	●	High molecular weight, high hardness and rigidity, exceptional rub and scratch resistance, no tacky property
MB-38	84,000	65	0.31	≤ 1.0		●		●	●	●	●	Excellent applications of alkyd resin's additive and printing inks
MB-45	180,000	50	0.81	≤ 1.0		●				●	●	Outstanding hardness and flexible
MB-48-N	120,000	40	0.4	21		●		●			●	Good adhesion to unprimed and untreated metal
MB-244	140,000	20	0.51	≤1.0		●				●	●	Good adhesion to aluminum and PS; binder for pigmented lacquer
MB-247	450,000	108	1.25	≤ 1.0		●					●	For casting and embedment applications
MB-250	300,000	122	1	≤ 1.0		●					●	High Mw resin for coatings where chemical resistance especially for petroleum and alcohol are required.
MB-255	5,000	76	0.08	6.5		●		●		●	●	Excellent pigment dispersion; general carrier resin for color masterbatch
MB-256	5,000	75	0.09	3.5	35	●		●		●	●	Excellent pigment dispersion, general carrier resin for color masterbatch
MB304-A	155,000	38	0.42	6.5		●			●	●	●	Good pigment wetting and color strength. Excellent compatibility to Al flakes and gold bronze pigments. Usable for cigarette packaging. Proven depolymerisation behavior for ceramic transfer lacquers
MB-311	30,000	39	0.15	≤ 1.0		●		●	●	●	●	Low viscosity, glossy, easy flow and good flexibility
MB-312	130,000	39	0.43	≤ 1.0		●		●	●	●	●	Good carrier resin for heat sealing lacquer applications
MB-313	60,000	57	0.23	10		●		●		●	●	Fast drying, low viscosity, exceptional pigment dispersion
MB-501	50,000	55	0.25	25		●			●	●	●	Fast drying, high floss and compatibility, good pigment dispersion
MB-605	8,200	60	0.06	53						●	●	Compatible with most resins for fast dry, high gloss for solvent based fluid inks and overprint varnishes.

Formulation Guide

1. PVDF coating	w/w(%)	3. Container coating	w/w(%)	6. Cement paint, exterior paint	w/w(%)
BM44	10	BM65C or BM62	20-25	BM66D or BM66	22-30
PVDF resin	24	Pigment,filler	20-25	Xylene	12
xylene	26	Xylene	10-15	S100#	25
BCS	8	S100#	30-40	NBA	2
Isophorone	10	Leveling agent, dispersant	0.5-1	Pigment	15-20
Pigment	21	Total	100	Heavy Calcium carbonate	14
Auxiliary	0.5-1.0	4. PVC screen printing inks	w/w(%)	Talcum powder	5
Total	100			Auxiliary	1
2. Aluminium paint (plastic paint)	w/w(%)	BM60 or BM64A	14	Total	100
		PVC vinyl acetate	7	Note:according to different situation, other PChem® resin also can be used, such as MB-6.	
		Titanium dioxide	23	7. Leather(PVC/PU) coating	w/w(%)
		Cyclohexanone	10		
		CAB381-20 (or CAB381-2)	2.5	BM11	6.5
		EAC	30	PVC powder	7.5
		BAC	7.0	Pigment	15-20
		MEK	15	DMF	20
		TOL	5.0	MEK	30
		BCS	8.0	CYC	15
Auxiliary	0.5	Auxiliary	1		
Total	100	Total	100	Note:according to different situation, other PChem® resin also can be used, such as MB-8, MB-22, MB-2.	
Aluminum paint		5. Gravure inks	w/w(%)	8. Ceramic cover oil	w/w(%)
Aluminum powder	8-10				
TOL	8-10	Slurries		BM24E	38-40
Varnish	80-84	Phthalocyanine blue	15	S100#	40
Total	100	Pigment dispersion resin	5	BCS	6
Thinner		MIBK	80	S150#	14
EAC	20	Total:	100	Auxiliary	0.5
BAC	10	Paint		Total	100
MEK	20	Slurries	76.9		
IPA	25	BM66(50% toluen, prepared)	15.5		
DAA	5	Note:solid content:23% pigment/resin=1:1			
120#	5	Diacetone alcohol	3.8		
BCS	15	Cyclohexanone	3.8		
Total	100	Total	100		

Note:according to different situation, BM11, MB-18-A can also be used, and the ratio of CAB should be adjusted.

Compatibility with Other Resins

Items	Cellulose Resins								Polyvinyl Chloride Resins								Chlorinated Rubber			
	1/4NC				CAB Resins (CAB381-0.5)				P(VC-VA)				P(VC-VA-MA)							
	10%	30%	50%	70%	10%	30%	50%	70%	10%	30%	50%	70%	10%	30%	50%	70%	10%	30%	50%	70%
BM11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM24E	C	C	C	C	C	C	C	C	M	M	M	M	M	M	M	M	X	X	X	X
BM44	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM51	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM52	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	X	X	X	X
BM60	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM61	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM65C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM66	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM66D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
BM67	C	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	X	X	X
MB-2	X	C	C	C	X	X	X	X	C	C	C	C	C	C	C	C	M	M	M	M
MB-4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
MB-6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
MB-6-1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
MB-6-A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
MB-8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
MB-9	C	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	X	X	X
MB-10	C	C	C	C	C	C	C	C	M	M	M	M	M	M	M	M	X	X	X	X
MB-10-B	C	C	C	C	C	C	C	C	M	M	M	M	M	M	M	M	X	X	X	X
MB-12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M
MB-18-A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	M	M	M	M

C—Compatible M—Partially Compatible X—Not Compatible