PIONEER CHEMICALS
博立尔化工

SINO-US

Shanghai Pioneer Chemicals Co., Ltd.






Solid Acrylic Resin Manufacturer

- BM series
- MB series
- I P series
- AR series
- CR series
- CS series
- DR series
- SP series

October 2011

Pioneer, your acrylic solution !

About us

As China's largest coating usage solid acrylic resin manufacturer, established in 2003, Sino-US Shanghai Pioneer Chemicals Co., Ltd. (SPC)'s history has been dating back to 1993, when Shanghai Jiulong Fine Chemicals Co., Ltd. started to produce solid acrylic resin by suspension polymerization.

Today's SPC, has two core technology including bulk and suspension polymerization, more than 100 resin items, and 12000MT annual production capacity. The products are widely used in coating, inks, adhesive, decorative building materials, medical devices, sanitary ware, crafts, cosmetics, and vacuum electronic and so on.

Safety, Health, and Environment (SHE) is SPC's first priority for sustainable development. SPC has been helping more and more partners to improve product performance, enhance the cost-effective, and create value. Meanwhile, continuous innovation, excellent product quality and service also make SPC enjoy a high reputation in the industry.

Relying on customers' success and growth, we are happy to develop tailor-made special specification resins. Success from concept of sublimation, mature from accumulation of experience, perfect from cooperation, and strong from personalized service, SPC's tomorrow will be better!

Through ISO9001:2008 quality management system certification

System certification CNAS C047-Q

History

1993	Shanghai Jiulong Fine Chemicals Co., Ltd. was found.
2003	Sino-US Shanghai Pioneer Chemicals Co., Ltd. was found.
2008	Sino-US Pioneer Chemicals (Yangzhou) Co,.Ltd. produced.
2008	South China Office was found in Guangzhou, China.

Solid Acrylic Resin Manufacturer

Culture

Professionalism Honesty Appreciation Implementation

Branch

Branch name	Location	Business	
Shanghai Pioneer Chemicals Co. Ltd.	Shanghai	Works	HQ
Pioneer Chemicals (Yangzhou) Co., Ltd.	Yangzhou	Works	
South China Office	Guangzhou		Office

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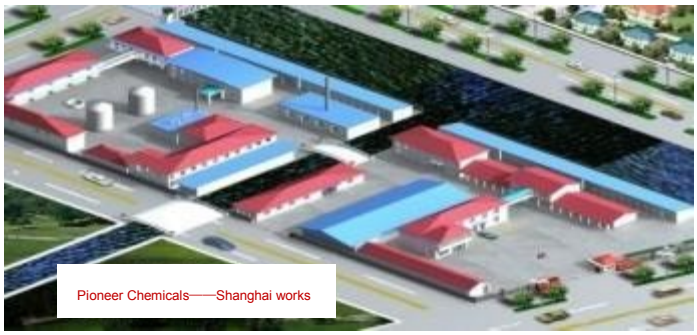


Pioneer Chemicals——Shanghai works

Pioneer Chemicals——Yangzhou works

www.sh-pioneer.com.cn

Product overview

Pchem® solid acrylic resin, is based on SPC's more than 15 years experiences of manufacture and application, from one or more monomer materials, though polymerization reaction, to homopolymers or copolymers with different characteristics and usage. The monomer raw materials including methacrylic esters, acrylic esters, and other monomers. The homopolymers or copolymers present as bead, powder or pellet. The variability on the molecular structure makes their application on a wide range of adjustability. They are compatible with many film-forming resins, such as chlorinated rubber, vinyl-chloride vinylacetate copolymer, nitrocellulose, cellulose acetate butyrate and many plasticizers. It also has good biocompatibility and excellent weather resistance and durability.

Typical performance

- ✓ Outstanding UV resistance
- ✓ Excellent durability
- ✓ Excellent weathering
- ✓ Excellent transparency
- ✓ Good discoloration resistance
- ✓ Safe and non-toxic
- ✓ High purity
- ✓ Low volatile organic compounds contents

Product series

BM series Coating application (polymerization)

MB series Coating application (suspension polymerization)

I P series Poly sodium acrylate

AR series Cement and adhesive application

CR series Casting and molding application

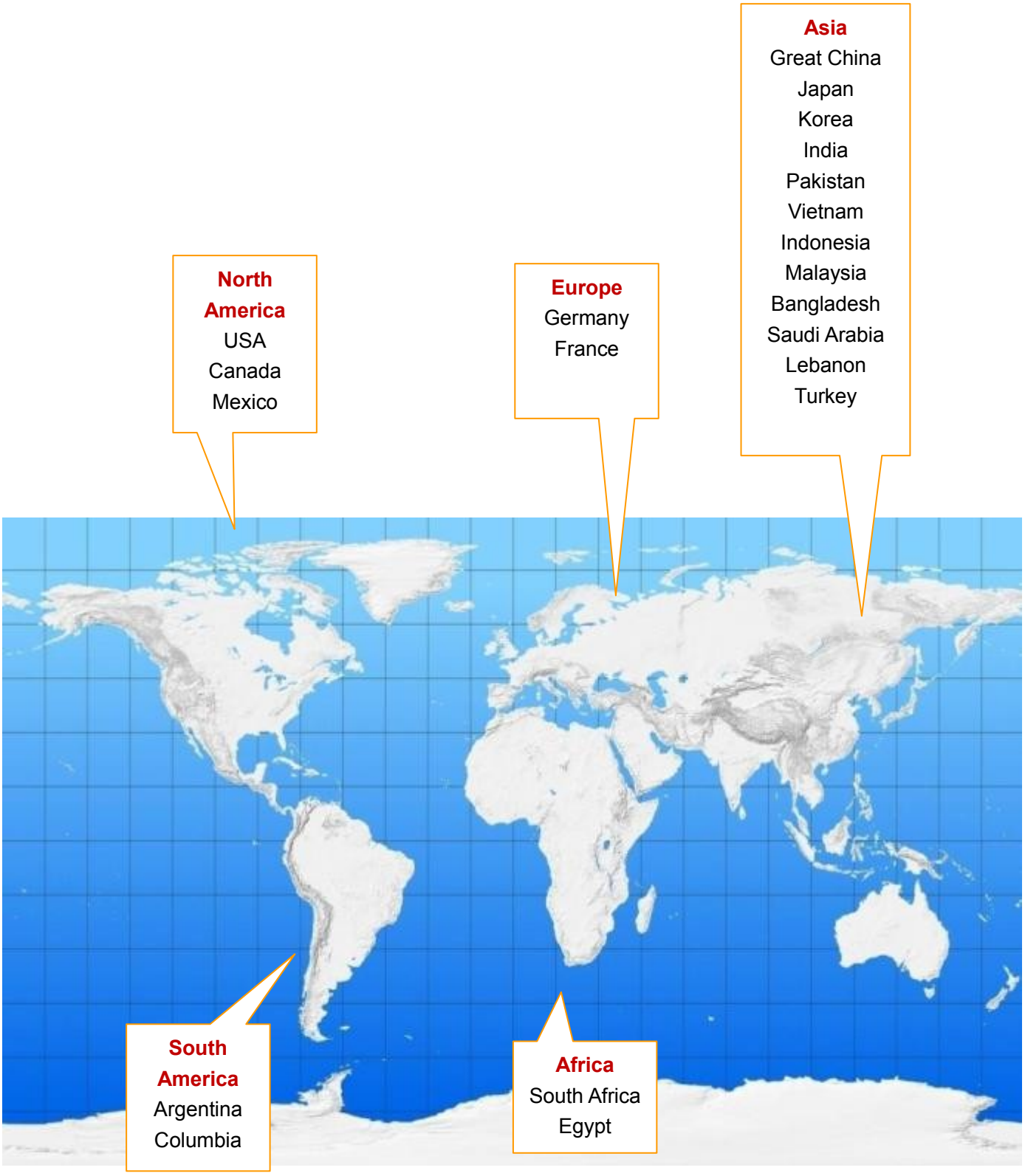
CS series Anti impact and weather modified resin

DR series Dental and medical application

SP series Special application

Solid Acrylic Resin Manufacturer

Global market



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Typical product——BM series

Item	Molecular Weight (Mw)	Tg (°C)	Inherent Viscosity (IV)	Acid Value (mgKOH/g)	Solubility	Characteristic	Main Application
BM11	85,000	100	0.33~0.38	≤ 2.0	aromatics, esters, ketones	High hardness and rigidity, Good compatibility with NC,CAB, Excellent alcohol resistance, gasoline resistance, water resistance, High durability and weatherability	Plastic coatings, coatings for toys, Printing inks for soft PVC, Leather finishes
BM17	90,000	85	0.37~0.43	≤ 1.0	aromatics, esters, ketones	Good durability, Good weatherability, Good alcohol and plasticizer resistance, Excellent compatibility with NC, CAB and good reflow of silver powders.	Inks for smoking materials, Plastic coatings, coatings for toys.
BM24E	160,000	32	0.40~0.48	≤ 1.0	aromatics, esters, ketones, chlorinated hydrocarbons, higher alcohols	Good flexibility, High gloss, Clean burn-out	Ceramic transfer lacquers Heat seal lacquers
BM44	100,000	60	0.37~0.43	≤ 2.0	aromatics, esters,ketones	Exceptional combination of hardness, flexibility and adhesion to various substrates. Good compatibility with wide latitude in formulations. excellent weatherability	PVDF coatings, Top layer of printable films
BM51	60,000	33	0.20~0.30	≤ 7.0	ethanol solely	Alcohol soluble, exceptional adhesion and flexibility	Coatings and inks with alcohol resistance
BM52	70,000	60	-	-	ethanol solely	Alcohol soluble, Good adhesion, Good pigment dispersion	Coatings and inks with alcohol resistance
BM60	40,000	75	0.16~0.20	≤ 10	aromatics, esters, ketones	Fast drying, Good compatibility, Good pigment dispersion	Metal coatings, Gravure printing inks, Screen printing inks
BM61	50,000	32	0.20~0.26	≤ 6.5	aromatics, esters, ketones, alcohols	Excellent flexibility and adhesion to various substrates with low shrinkage rate and low odor	For UV curing to improve the toughness, adhesion and shrinkage rate, Correction liquid resins
BM61A	50,000	32	0.20~0.26	≤ 1.0	aromatics, esters, ketones, alcohols	Excellent flexibility and adhesion to various substrates with low shrinkage rate and low odor	For UV curing to improve the toughness, adhesion and shrinkage rate, Correction liquid resins
BM64A	40,000	60	0.16~0.20	≤ 4.5	aromatics, esters, ketones	Fast drying, Low viscosity, Exceptional pigment dispersion	Gravure inks
BM65C	40,000	55	0.17~0.21	≤ 8.0	aromatics, esters, ketones	Fast drying, Low viscosity, Exceptional pigment dispersion	Marine and container coatings, Color concentrates, Tile paint
BM66	50,000	50	0.24~0.30	≤ 6.5	aromatics, esters, ketones, higher alcohols	Broad applications, Fast drying, Good compatibility, Excellent salt spray resistance	Gravure inks, Screen printing inks, General Purpose Coatings like marine and container coatings, plastic coatings, Metal coatings, Concrete coatings
BM66D	45,000	50	0.21~0.27	≤ 6.5	aromatics, esters, ketones	Fast drying, Low viscosity, Exceptional pigment dispersion, Good weatherability	Road marking, Paints for wall, PVC printing inks
BM70	40,000	55	-	≤ 70	esters, ketones, ethanol+esters	Good adhesion, Good pigment dispersion	Inks for glasses , Metal coatings
BM82	90,000	35	0.35~0.39	≤ 3.0	aromatics, esters, ketones	Flexibility, Good weatherability, durability, good solvent release ability	Metal coating, leather finish, stamping ink（adhesive layer）
BM99	20,000	120	-	-	esters, ketones	Fast drying, Low viscosity, Exceptional pigment dispersion	Inks for packaging materials

Typical product——MB series

Item	Molecular Weight (Mw)	Tg (°C)	Inherent Viscosity (IV)	Acid Value (mgKOH/g)	Solubility	Characteristic	Main Application
MB-2	140,000	104	0.62~0.68	≤ 1.0	ketones, esters, aromatics	High hardness, High gloss, and Scratch resistance, Chemical resistance	PVC top coatings, Masonry Coatings, Floor coatings, PVC printing inks, Upholstery
MB-4	40,000	75	0.16~0.21	≤ 6.0	ketones, esters, aromatics, chlorinated hydrocarbons	Fast drying, Good adhesion to plastic, substrates, Good solubility and pigment dispersion, Good compatibility with CAB, vinyl resins and chlorinated rubbers	Plastic coatings, Metal coatings, Screen printing inks
MB-6	50,000	50	0.23~0.30	≤ 3.5	ketones, esters, aromatics, higher alcohols	Speed solvent release, High gloss, Good pigment dispersion and weatherability, Good compatibility, General purpose grade, Exceptional resistance to water and salt	Marine and container coatings, General purpose coatings for plastics and concrete, Concrete sealants, Masonry coatings, General purpose printing inks , Road marker paints
MB-6-1	160,000	60	0.62~0.75	≤ 1.0	aromatics, esters, acrylic monomer	Good solvent release, outstanding hard and edibility, High viscosity and chemical resistance	Aerosol sprays, Adhesives, Casting and embedment
MB-6-A	50,000	50	0.22~0.29	≤ 7.0	ketones, esters, aromatics, chlorinated hydrocarbons	Fast drying, High gloss and compatibility, Good pigment dispersion	Gravure inks, Screen printing inks, Metal coatings, Marine and container coatings, Concrete coatings and sealants
MB-8	90,000	96	0.37~0.43	≤ 1.0	ketones, esters aromatics, chlorinated hydrocarbons	Good durability, Good weatherability Good alcohol, gasoline and plasticizer resistance, Exceptional compatibility with NC, CAB and good reflow of silver powders	Leather finishes, Plastic coatings, PVC printing inks and coatings
MB-9	200,000	55	0.53~0.59	≤ 1.0	esters, ketones, aromatics, chlorinated hydrocarbons, higher alcohols	Hard, flexible, durable and high gloss, excellent adhesion to substrates, Excellent, weatherability	Adhesives, metal coatings, wood finishes, Road marking, Printing inks and Aerosol lacquers
MB-9-B	70,000	55	0.31~0.37	≤ 1.0	esters, ketones, aromatics, chlorinated hydrocarbons, higher alcohols	Hard, flexibility, good glossy and adhesive, wide compatibility, weatherability, durability	Multi-usage ink, aerosol, plastic coating, alkyd modified coating
MB-10	180,000	32	0.47~0.56	≤ 9.0	aromatics, esters, ketones, chlorinated hydrocarbons, higher alcohols	Flexible and high gloss, good adhesion to aluminum substrates, Good compatibility and resistance to water, Low odor	Good adhesion to aluminum substrates Inks for lithographic heat transfers, containers and packaging, Inks for PET coated films and papers
MB-10-B	160,000	32	0.43~0.49	≤ 1.0	aromatics, esters, ketones, chlorinated hydrocarbons, higher alcohols	Flexible, Glossy, Good compatibility, Low odor and good water resistance	Good adhesion to aluminum substrates, Inks for lithographic heat transfers, containers and packaging, Inks for PET coated films and papers
MB-12	50,000	104	0.25~0.31	≤ 1.0	esters, ketones	Hard and durable, Low viscosity and good compatibility, Good alcohol resistance, gasoline resistance, plasticizer resistance, Good weatherability	Plastic coatings, coating for wall papers, Wall coverings
MB-17	90,000	85	0.37~0.43	≤ 1.0	ketones, esters, aromatics	alcohol resistance, durable, weatherability, plasticizer resistance, good solvent release ability, compatibility	Tobacco packing ink, multi-usage ink, plastic coating
MB-18-A	120,000	98	0.46~0.53	≤ 1.0	ketones, esters, aromatics	High hardness, Excellent rub and scratch resistance, Good compatibility with NC and CAB, Exceptional alcohol resistance, gasoline resistance	Plastic coatings, toy coatings or PVC inks with high alcohol resistance
MB-22	280,000	104	0.85~1.10	≤ 1.0	esters, ketones	High molecular weight, High hardness and rigidity, Exceptional rub and scratch resistance, No tacky property	Leather finishes
MB-45	-	50	0.77~0.85	≤ 1.0	ketones, esters, aromatics	Outstanding hard and flexible	Aerosol spray, Silly string
MB-311	30,000	39	0.13~0.17	≤ 1.0	ketones, esters, aromatics, chlorinated hydrocarbons, higher alcohols	Low viscosity, glossy, easy flow and good flexibility	Ceramic inks and top coatings

Product's characteristics

Item		BM11	BM17	BM24E	BM44	BM51	BM52	BM60	BM61	BM65C	BM66	BM66D	BM70	BM99
Adhesion	Metals				△	△	●		●	△	●	●	△	●
	Plastics	△	△			△		△	△	△	△	△		△
	Glass					●	●						△	●
	Primer	●	△		△	●	●			●		●	●	
Flexibility				△	●	●			△					
Fast Air-Drying		△	△	△	●	△	△	△		△	△	△		△
Durability		△	△	△	△	△	△	△	●	△	△	△		△
Water Resistance		△	△	△	△	△		△	△	△	△	△		
Gasoline Resistance		△	△		△			●						
Salt Spray Resistance		△	△	△	△	△		△	△	△	△	△		
Alcohol Resistance		●	△											
Hardness		△	●		●									△
Pigment Dispersion							△	△		●			△	△
Gloss					●	●	●	●	△	●	●			

Item		MB-10	MB-10-B	MB-12	MB-18-A	MB-2	MB-22	MB-4	MB-45	MB-6	MB-6-1	MB-6-A	MB-8	MB-9
Adhesion	Metals	△										●		●
	Plastics	△	△	△	△	△	△	△		△	△	△	△	△
	Glass													
	Primer				△	●					△		●	
Flexibility		△	△						●					●
Fast Air-Drying				●	△	△	△	△	△	●	△	●	△	●
Durability		△	△	△	△		△	△	△	△	△	△	△	△
Water Resistance		△	△	△	△	△	△	△	△	△	△	△	△	△
Gasoline Resistance				△	△	△	△	●					△	
Salt Spray Resistance			△	△	△	△	△	△	△	△	△	△	△	△
Alcohol Resistance					△	△	△						△	
Hardness				△	△	△	△						△	
Pigment Dispersion												●		
Gloss						●		●		●		●		●

note △: best suit ●: suit

Application guide

Appendix

PVDF Coating

BM44

PVDF coating is a kind of fluorocarbon coating which has high weather resistance. It's formulated with PVDF resin (content of polyvinylidene fluoride resin over 70% of total resin), acrylic resin, pigment which has outstanding weather resistance, filler, auxiliary solvent, and formed after high temperature baking.

BM44 is a thermoplastic solid acrylic resin with excellent weatherability, unique hardness, and flexibility.

BM44 is easily soluble in many organic solvents such as ketones, esters, long-chain fatty alcohol and aromatic hydrocarbons, and also has good compatibility with other film forming resins such as cellulose, epoxy resin, vinyl resin and other acrylic resin.

Thanks to the excellent compatibility with PVDF resin, BM44 can enhance the phase's stability, dryness and pigment dispersion for PVDF resin. With its outstanding performance of adhesion on metal substrates (especially at post-baking process), BM44 is widely used in baking-type fluorocarbon coatings (PVDF coatings).

The metal decorative plate (aluminum and aluminum plate-based)using PVDF coating has the following characteristics:

- ✓ Super weather resistant, outdoor use up to 15 years;
- ✓ Excellent resistant to corrosion and chemical, good anti-permeability;
- ✓ Excellent physical and mechanical properties, good after-processing performance ;
- ✓ Good anti-pollution performance;
- ✓ Good temperature resistant, the coating can be used between -60℃－130℃ for a longterm.

Shanghai Pudong Airport, the Oriental Pearl TV Tower and other high-rise buildings, which used PVDF coated aluminum plate, after years of wind and rain, still remained the luster and color as they were just completed.

Items	Test method	Unit	Value
			BM44
Appearance			pellet
Glass transition temperature (Tg)	ASTM D-3418	°C	60
Molecular weight (Mw)	ASTM D-3593	g/mol	100,000
Inherent viscosity (IV)	ASTM D-2857		0.37 ~ 0.43
Acid value	ISO-3682	mgKOH/g	≤ 2.0
Moisture content	ISO-3251	%	≤ 0.5

Container coating

BM65C

BM66

BM65C is a copolymer of methacrylates. Produced from bulk polymerization, it has a high purity. It offers excellent weatherability, salt spray resistance, durability and outstanding chemical resistance. It has low molecular weight and offers good pigment dispersion.

BM65C is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It has excellent compatibility with other film forming resins, such as cellulose, vinyl resins, and also plasticizer.

BM65C is a kind of multi-usage thermoplastic acrylic resin with low viscosity. It has high cost-effectiveness and it is widely used in container coatings, solvent-borne external wall coatings, printing inks, and etc.

BM66, a kind of multi-usage thermoplastic acrylic resin, is a copolymer mainly made from butyl methacrylate monomer. Produced from bulk polymerization, BM66 has a high purity. It offers excellent weatherability, salt spray resistance, durability and good comprehensive performance.

BM66 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons, chlorinated solvents and high alcohols. It has good solvent release ability and excellent compatibility with other film forming resins, such as CAB, NC, chlorinated rubber, vinyl resins, and also plasticizer.

The typical applications are marine paints and printing inks. It also widely used in container coatings, architectural anti-corrosive coatings, concrete coatings, metal coatings and plastic coatings.

Items	Test method	Unit	Value	
			BM65C	BM66
Appearance			powder	powder
Glass transition temperature (Tg)	ASTM D-3418	°C	55	50
Molecular weight (Mw)	ASTM D-3593	g/mol	40,000	50,000
Inherent viscosity (IV)	ASTM D-2857		0.17 ~ 0.21	0.24 ~ 0.30
Acid value	ISO-3682	mgKOH/g	≤ 8.0	≤ 6.5
Moisture content	ISO-3251	%	≤ 0.5	≤ 0.5

Road marking coating

BM64A

BM66

MB-6

BM64A is the copolymer of methyl methacrylate and butyl methacrylate. It has good solvent release ability and good pigment dispersion, and offers unique hardness and high gloss.

BM64A is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It has good compatibility with other film forming resins such as cellulose, vinyl resin, CAB, thermoplastic acrylic resin and also plasticizers.

It is commonly applied in container coatings, plastic coatings, PVC shrinkage film inks and etc.

BM66, a kind of multi-usage thermoplastic acrylic resin, is a copolymer mainly made from butyl methacrylate monomer. Produced from bulk polymerization, BM66 has a high purity. It offers excellent weatherability, salt spray resistance, durability and good comprehensive performance.

BM66 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons, chlorinated solvents and high alcohols. It has good solvent release ability and excellent compatibility with other film forming resins, such as CAB, NC, chlorinated rubber, vinyl resins, and also plasticizer.

The typical applications are marine paints and printing inks. It also widely used in container coatings, architectural anti-corrosive coatings, concrete coatings, metal coatings and plastic coatings.

MB-6 is a copolymer of butyl methacrylate and methyl methacrylate. It is a multi-usage acrylic resin. It offers excellent performance on weatherability, durability and chemical resistance.

MB-6 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It also can be dissolved by high alcohols solely. It has good solvent release ability and excellent compatibility with other film forming resins, such as NC, chlorinated rubber, vinyl resins, and also plasticizer.

MB-6 is widely used in container coatings, marine paints, concrete coatings, external wall coatings, screen printing inks and etc.

Items	Test method	Unit	Value		
			BM64A	BM66	MB-6
Appearance			powder	powder	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	60	50	50
Molecular weight (Mw)	ASTM D-3593	g/mol	40,000	50,000	50,000
Inherent viscosity (IV)	ASTM D-2857		0.17 ~ 0.22	0.24 ~ 0.30	0.23 ~ 0.30
Acid value	ISO-3682	mgKOH/g	≤ 4.5	≤ 6.5	≤ 3.5
Moisture content	ISO-3251	%	≤ 0.5	≤ 0.5	≤ 1.0

Concrete sealant

BM65C

MB-6-A

BM65C is a copolymer of methacrylates. Produced from bulk polymerization, it has a high purity. It offers excellent weatherability, salt spray resistance, durability and outstanding chemical resistance. It has low molecular weight and offers good pigment dispersion.

BM65C is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It has excellent compatibility with other film forming resins, such as cellulose, vinyl resins, and also plasticizer.

BM65C is a kind of multi-usage thermoplastic acrylic resin with low viscosity. It has high cost-effectiveness and it is widely used in container coatings, solvent-borne external wall coatings, printing inks, and etc.



MB-6-A is a copolymer of butyl methacrylate and methyl methacrylate. It is a multi-usage acrylic resin. It offers excellent performance on weatherability, durability and good adhesion.

MB-6-A is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It has good solvent release ability and pigment dispersion property. It has excellent compatibility with other film forming resins, such as NC, CAB, vinyl resins, and also plasticizer.

MB-6-A is widely applied in printing inks, metal coatings, plastic coatings, concrete coatings, external wall coatings and etc.

Items	Test method	Unit	Value	
			BM65C	MB-6-A
Appearance			powder	Bead
Glass transition temperature (Tg)	ASTM D-3418	°C	55	50
Molecular weight (Mw)	ASTM D-3593	g/mol	40,000	50,000
Inherent viscosity (IV)	ASTM D-2857		0.17 ~ 0.21	0.22 ~ 0.29
Acid value	ISO-3682	mgKOH/g	≤ 8.0	≤ 7.0
Moisture content	ISO-3251	%	≤ 0.5	≤ 1.0

Plastic coating

MB-17

MB-17 is a copolymer of methyl methacrylate. It offers excellent alcohol resistance, durability, weatherability and plasticizer migration resistance.

MB-17 is easily soluble in many organic solvents such as ketones, esters and aromatic hydrocarbons and etc. It has good solvent release property. MB-17 has good compatibility with other film forming resins such as CAB, NC, chlorinated rubber, vinyl resin and also plasticizer.

MB-17 is widely applied in plastic coatings, toy coatings, multifunctional inks and etc.

MB-18-A

MB-18-A is a copolymer of methacrylates. It offers excellent performance on alcohol resistance, durability, weatherability and plasticizer migration resistance.

MB-18-A is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons. It has good solvent release ability and excellent compatibility with other film forming resins, such as NC, CAB, and also plasticizer.

MB-18-A is widely used in plastic coatings where alcohol resistance is strictly required.

Items	Test method	Unit	Value	
			MB-17	MB-18-A
Appearance			bead	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	85	98
Molecular weight (Mw)	ASTM D-3593	g/mol	90,000	120,000
Inherent viscosity (IV)	ASTM D-2857		0.37 ~ 0.43	0.46 ~ 0.53
Acid value	ISO-3682	mgKOH/g	≤ 1.0	≤ 1.0
Moisture content	ISO-3251	%	≤ 1.0	≤ 1.0

Leather treating agent

BM11

MB-8

MB-22

BM11 is a copolymer of methyl methacrylate. It offers high hardness, good resistance to alcohol, gasoline and chemical, good performance on plasticizer migration resistant and good arrangement of aluminum powder.

Easily soluble in ketones, esters and other organic solvents, BM11 has excellent compatibility with cellulose resin, vinyl resin and chlorinated rubber. BM11 is widely used in gilding material coatings, leather finishes, plastic coatings, printing inks and etc.

MB-8 is a copolymer of methyl methacrylate. It has good performance on alcohol resistance, durability, chemical resistance, plasticizer migration resistance and arrangement of aluminum powders.

MB-8 is easily soluble in organic solvents like ketones, esters and aromatic hydrocarbons. It has good compatibility with CAB, NC, vinyl resin and also plasticizers.

MB-8 is widely applied in gilding material coatings, plastic toy coatings, printing inks, leather treating agent and etc.



MB-22 is a copolymer of methyl methacrylate with high molecular weight and glass transition temperature. It possesses excellent weatherability, rigidity, abrasive resistance, blocking resistance and chemical resistance.

MB-22 is easily soluble in ketones, esters and etc. It is widely used in PVC processing, leather finishes and etc.

Items	Test method	Unit	Value		
			BM11	MB-8	MB-22
Appearance			powder	bead	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	100	96	104
Molecular weight (Mw)	ASTM D-3593	g/mol	85,000	90,000	280,000
Inherent viscosity (IV)	ASTM D-2857		0.33 ~ 0.38	0.37 ~ 0.43	0.85 ~ 1.10
Acid value	ISO-3682	mgKOH/g	≤ 2.0	≤ 1.0	≤ 1.0
Moisture content	ISO-3251	%	≤ 0.5	≤ 1.0	≤ 1.0

Wallpaper

MB-4-D

MB-4-D is a copolymer of methyl methacrylate. It offers good performance on gasoline resistance and plasticizer migration resistance, and adequate hardness.

With its low molecular weight and great pigment dispersion, when used in coating or printing inks, it can help to improve solid content and pigment hiding power during coating application. It is widely used in screen printing inks, plastic coatings and etc.

MB-12

MB-12 is a copolymer of methyl methacrylate. It offers high hardness, excellent water resistance and alcohol resistance, and plasticizer migration resistance.

MB-12 is easily soluble in organic solvents such as ketones, esters and etc. It has good compatibility with cellulose, vinyl resin and chlorinated rubber.

MB-12 is mainly applied in wallpaper coatings, plastic coatings, printing inks and etc.



Items	Test method	Unit	Value	
			MB-4-D	MB-12
Appearance			bead	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	75	104
Molecular weight (Mw)	ASTM D-3593	g/mol	40,000	50,000
Inherent viscosity (IV)	ASTM D-2857		-	0.25 ~ 0.31
Acid value	ISO-3682	mgKOH/g	≤ 6.0	≤ 1.0
Moisture content	ISO-3251	%	≤ 1.0	≤ 1.0

Water transfer printing inks

BM24E

MB-10-B

BM24E is a copolymer mainly made from butyl methacrylate monomer. It has high purity and offers better performance of flexibility, adhesion and gloss.

BM24E is easily soluble in many organic solvents including ketones, esters, long-chain fatty alcohol, aromatic hydrocarbons, and chlorinated solvents. It also has good compatibility with plasticizer.

BM24E is commonly applied in water transfer printing films on different surface such as ceramic, glass, metal, and the film could be tearable or untearable. It offers better flexibility, good surface condition such as cratering-free and bubble-free. It can be easily baked resulting no remains such as ash and stain. It can also be used in tobacco packaging gold varnish and aluminum foil gloss oil.

MB-10-B is a copolymer mainly of butyl methacrylate. It has good flexibility, adhesion, high gloss and water-resistant performance.

MB-10-B is easily soluble in many organic solvents such as ketones, esters, long-chain fatty alcohol, aromatic hydrocarbons, chlorinated solvents and etc. It has excellent compatibility with other film forming resins such as NC, chlorinated rubber, vinyl resin and also plasticizers.

MB-10-B is mainly used in tobacco packaging coatings, flexible leather treating agent, ceramic coatings and etc.

Items	Test method	Unit	Value	
			BM24E	MB-10-B
Appearance			pellet	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	32	32
Molecular weight (Mw)	ASTM D-3593	g/mol	160,000	160,000
Inherent viscosity (IV)	ASTM D-2857		0.40 ~ 0.48	0.43 ~ 0.49
Acid value	ISO-3682	mgKOH/g	≤ 1.0	≤ 1.0
Moisture content	ISO-3251	%	≤ 0.5	≤ 1.0

PVC shrinkage film inks

BM60

BM64A

BM66

BM60 is a copolymer of methyl methacrylate and butyl methacrylate. It has good solvent release ability and good performance on plasticizer migration resistant. It offers unique hardness and high gloss.

BM60 is easily soluble in many organic solvents such as ketones, esters and aromatic hydrocarbons. It has excellent compatibility with other film forming resins, such as NC, vinyl resins, CAB, and also plasticizer.

With lower molecular weight which enhances the performance of pigment dispersion and solid content of coating application, BM60 is the outstanding dispersion agent for color coatings and inks. It is also a kind of multi-usage resin. With excellent weatherability and salt spray resistance，BM60 is widely applied in plastic coatings, printing inks, metal coatings and etc.

BM64A is the copolymer of methyl methacrylate and butyl methacrylate. It has good solvent release ability and good pigment dispersion, and offers unique hardness and high gloss.

BM64A is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It has good compatibility with other film forming resins such as cellulose, vinyl resin, CAB, thermoplastic acrylic resin and also plasticizers.

It is commonly applied in container coatings, plastic coatings, PVC shrinkage film inks and etc.

BM66, a kind of multi-usage thermoplastic acrylic resin, is a copolymer mainly made from butyl methacrylate monomer. Produced from bulk polymerization, BM66 has a high purity. It offers excellent weatherability, salt spray resistance, durability and good comprehensive performance.

BM66 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons, chlorinated solvents and high alcohols. It has good solvent release ability and excellent compatibility with other film forming resins, such as CAB, NC, chlorinated rubber, vinyl resins, and also plasticizer.

The typical applications are marine paints and printing inks. It also widely used in container coatings, architectural anti-corrosive coatings, concrete coatings, metal coatings and plastic coatings.

Items	Test method	Unit	Value		
			BM60	BM64A	BM66
Appearance			bead	bead	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	75	60	50
Molecular weight (Mw)	ASTM D-3593	g/mol	40,000	40,000	50,000
Inherent viscosity (IV)	ASTM D-2857		0.16 ~ 0.20	0.17 ~ 0.22	0.24 ~ 0.30
Acid value	ISO-3682	mgKOH/g	≤ 10.0	≤ 4.5	≤ 6.5
Moisture content	ISO-3251	%	≤ 0.5	≤ 0.5	≤ 0.5

Stamping materials

BM11

BM11 is a copolymer of methyl methacrylate. It offers high hardness, good resistance to alcohol, gasoline and chemical, good performance on plasticizer migration resistant and good arrangement of aluminum powder.

Easily soluble in ketones, esters and other organic solvents, BM11 has excellent compatibility with cellulose resin, vinyl resin and chlorinated rubber. BM11 is widely used in gilding material coatings, leather finishes, plastic coatings, printing inks and etc.

BM11 can be used in stamping inks (protective layer)

BM82

BM82 is a copolymer of methacrylates and other acrylates from bulk polymerization. It has a high purity and good flexibility, weatherability and durability.

BM82 is soluble in ketones, esters, aromatic hydrocarbons, chlorinated solvent, higher alcohol and other organic solvent. It has good solvent release ability. BM82 has excellent compatibility with other film forming resins , such as NC, chlorinated rubber, vinyl resin and also plasticizer. It can be used in stamping inks (adhesive layer).

BM99

BM99 is a temperature-resistance-modified copolymer of methacrylates produced from bulk polymerization. It has low molecular weight and high glass transition temperature, thus it offers wonderful pigment dispersion and high temperature resistance.

BM99 is soluble in ketones, esters and other organic solvents. Due to its low solubility, it is recommended to be immersed into ketones with proper heat to speed up the dissolving process.

BM99 is mainly applied in gilding material printing inks and coatings where high temperature resistance is required. It can be used in stamping inks (color layer).

MB-9-B

MB-12

MB-9-B is a copolymer of iso-butyl methacrylate. It offers high flexibility and good gloss, heat resistance and durability.

MB-9-B is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons, chlorinated solvent, white gasoline, high alcohol and etc. Based on its good compatibility with middle/long oil alkyd resin, MB-9-B can be used as its modifying agent. It is also compatible with PVC resin and chlorinated paraffin. And it offers excellent pigment wettability.

MB-9-B is applied to gilding material coatings (adhesive layer), metal coatings, alkyd modified coatings and etc. It can be used in stamping inks (adhesive layer).

MB-12 is a copolymer of methyl methacrylate. It offers high hardness, excellent water resistance and alcohol resistance, and plasticizer migration resistance.

MB-12 is easily soluble in organic solvents such as ketones, esters and etc. It has good compatibility with cellulose, vinyl resin and chlorinated rubber.

MB-12 is mainly applied in wallpaper coatings, plastic coatings, printing inks and etc. It can be used in stamping inks (release layer).

Items	Test method	Unit	Value		
			BM11	BM82	BM99
Appearance			powder	pellet	pellet
Glass transition temperature (Tg)	ASTM D-3418	°C	100	35	120
Molecular weight (Mw)	ASTM D-3593	g/mol	85,000	90,000	20,000
Inherent viscosity (IV)(BM99,s)	ASTM D-2857		0.33 ~ 0.38	0.35 ~ 0.39	*
Acid value	ISO-3682	mgKOH/g	≤ 2.0	≤ 3.0	-
Moisture content	ISO-3251	%	≤ 0.5	≤ 0.5	≤ 1.0

*BM99 viscosity : 27.0 ~ 31.0s@GB/T1723-93

Items	Test method	Unit	Value	
			MB-9-B	MB-12
Appearance			bead	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	55	104
Molecular weight(Mw)	ASTM D-3593	g/mol	70,000	50,000
Inherent viscosity(IV)(BM99,s)	ASTM D-2857		0.31 ~ 0.37	0.25 ~ 0.31
Acid value	ISO-3682	mgKOH/g	≤ 1.0	≤ 1.0
Moisture content	ISO-3251	%	≤ 1.0	≤ 1.0

Screen printing inks

MB-4

MB-6

MB-6-A

MB-4 is a copolymer of methyl methacrylate. It offers good performance on gasoline resistance and plasticizer migration resistance, and adequate hardness.

MB-4 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents and it has good solvent release ability. It has excellent compatibility with other film forming resins, such as cellulose, vinyl resin, chlorinated rubber, acrylic resin, and also plasticizer.

With its low molecular weight and great pigment dispersion, when used in coating or printing inks, it can help to improve solid content and pigment hiding power during coating application. It is widely used in screen printing inks, plastic coatings and etc.

MB-6 is a copolymer of butyl methacrylate and methyl methacrylate. It is a multi-usage acrylic resin. It offers excellent performance on weatherability, durability and chemical resistance.

MB-6 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It also can be dissolved by high alcohols solely. It has good solvent release ability and excellent compatibility with other film forming resins, such as NC, chlorinated rubber, vinyl resins, and also plasticizer.

MB-6 is widely used in container coatings, marine paints, concrete coatings, external wall coatings, screen printing inks and etc.

MB-6-A is a copolymer of butyl methacrylate and methyl methacrylate. It is a multi-usage acrylic resin. It offers excellent performance on weatherability, durability and good adhesion.

MB-6-A is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It has good solvent release ability and pigment dispersion property. It has excellent compatibility with other film forming resins, such as NC, CAB, vinyl resins, and also plasticizer.

MB-6-A is widely applied in printing inks, metal coatings, plastic coatings, concrete coatings, external wall coatings and etc.

Items	Test method	Unit	Value		
			MB-4	MB-6	MB-6-A
Appearance			bead	bead	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	75	50	50
Molecular weight (Mw)	ASTM D-3593	g/mol	40,000	50,000	50,000
Inherent viscosity (IV)	ASTM D-2857		0.16 ~ 0.21	0.23 ~ 0.30	0.22 ~ 0.29
Acid value	ISO-3682	mgKOH/g	≤ 6.0	≤ 3.5	≤ 7.0
Moisture content	ISO-3251	%	≤ 1.0	≤ 1.0	≤ 1.0

tobacco packaging coatings

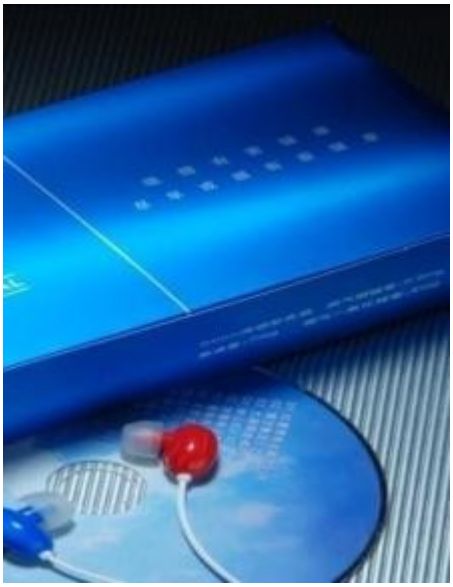
BM17

BM66

BM17 is a copolymer of methacrylates. Produced from bulk polymerization, BM17 has a high purity. It offers excellent performance on alcohol resistance, durability, weatherability and plasticizer migration resistance.

BM17 is easily soluble in many organic solvents such as ketones, esters and aromatic hydrocarbons. It has good solvent release ability and excellent compatibility with other film forming resins, such as CAB, NC, chlorinated rubber, vinyl resins, and also plasticizer.

BM17 is widely used in plastic coatings, tobacco packaging coatings, multi-usage printing inks and etc. It is in compliance with regulations of low volatile organic compounds (VOC).



BM66, a kind of multi-usage thermoplastic acrylic resin, is a copolymer mainly made from butyl methacrylate monomer. Produced from bulk polymerization, BM66 has a high purity. It offers excellent weatherability, salt spray resistance, durability and good comprehensive performance.

BM66 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons, chlorinated solvents and high alcohols. It has good solvent release ability and excellent compatibility with other film forming resins, such as CAB, NC, chlorinated rubber, vinyl resins, and also plasticizer.

The typical applications are marine paints and printing inks. It also widely used in container coatings, architectural anti-corrosive coatings, concrete coatings, metal coatings and plastic coatings.

Items	Test method	Unit	Value	
			BM17	BM66
Appearance			powder	powder
Glass transition temperature (Tg)	ASTM D-3418	°C	85	50
Molecular weight (Mw)	ASTM D-3593	g/mol	90,000	50,000
Inherent viscosity (IV)	ASTM D-2857		0.37 ~ 0.43	0.24 ~ 0.30
Acid value	ISO-3682	mgKOH/g	≤ 1.0	≤ 6.5
Moisture content	ISO-3251	%	≤ 0.5	≤ 0.5

OPP/BOPP film UV inks

BM61

BM61 is a copolymer of methacrylates. It offers performance on excellent adhesion, good flexibility, low shrinkage and good durability.

BM 61 is a kind of alcohol solubility resin. It can be dissolved in many organic solvents such as high alcohol, ketones, esters, aromatic hydrocarbons, and chlorinated solvents. It has good compatibility with NC, vinyl resin and cellulose acetate.

BM61 is commonly used in UV ink formulation (OPP/BOPP film) as inert resin to enhance adhesion and to reduce shrinkage. It is also widely used in aluminum heat sealing lacquer, cardboard ink, eco-friendly correction fluid and etc.

BM61A

BM61A is a copolymer of methacrylates. It offers performance on excellent adhesion, good flexibility, low shrinkage and good durability.

BM 61A is a kind of alcohol solubility resin. It can be dissolved in many organic solvents such as alcohol, ketones, esters, aromatic hydrocarbons, and chlorinated solvents. It has good compatibility with NC, chlorinated rubber, vinyl resin, cellulose acetate and also plasticizer.

BM61A is commonly used in UV ink formulation as inert resin to enhance adhesion and to reduce shrinkage. It is also widely used in aluminum heat sealing lacquer, cardboard ink, and metal coatings.

Items	Test method	Unit	Value	
			BM61	BM61A
Appearance			pellet	pellet
Glass transition temperature (Tg)	ASTM D-3418	°C	32	32
Molecular weight (Mw)	ASTM D-3593	g/mol	50,000	50,000
Inherent viscosity (IV)	ASTM D-2857		0.20 ~ 0.26	0.20 ~ 0.26
Acid value	ISO-3682	mgKOH/g	≤ 6.5	≤ 1.0
Moisture content	ISO-3251	%	≤ 0.5	≤ 0.5

Aerosol spray

MB-6-1

MB-6-1 is a copolymer of methacrylates. It has the feature of dissolving rapidly. It also offers excellent cold resistance, flexibility and chemical resistance.

MB-6-1 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons and chlorinated solvents. It has excellent compatibility with other film forming resins, such as NC, chlorinated rubber, vinyl resins, and also plasticizer.

MB-6-1 is a kind of resin with high viscosity and mainly used in adhesives, aerosol sprays (color string), etc.

MB-45

MB-45 is a copolymer of methyl methacrylate. It offers outstanding performance of cold resistance, flexibility and chemical resistance.

MB-45 is easily soluble in many organic solvents such as ketones, esters, aromatic hydrocarbons, chlorinated solvent and etc. It has good compatibility with other film forming resins such as NC, chlorinated rubber, vinyl resin and also plasticizer.

MB-45 is mainly used in adhesives, aerosol spray, color string and etc.

Items	Test method	Unit	Value	
			MB-6-1	MB-45
Appearance			bead	bead
Glass transition temperature (Tg)	ASTM D-3418	°C	60	50
Molecular weight (Mw)(MB-45@Mη)	ASTM D-3593	g/mol	160,000	160,000 ~ 180,000
Inherent viscosity(IV)	ASTM D-2857		0.62 ~ 0.75	0.77 ~ 0.85
Acid value	ISO-3682	mgKOH/g	≤ 1.0	≤ 1.0
Moisture content	ISO-3251	%	≤ 1.0	≤ 1.0

Alcohol-soluble resin

BM51

BM52

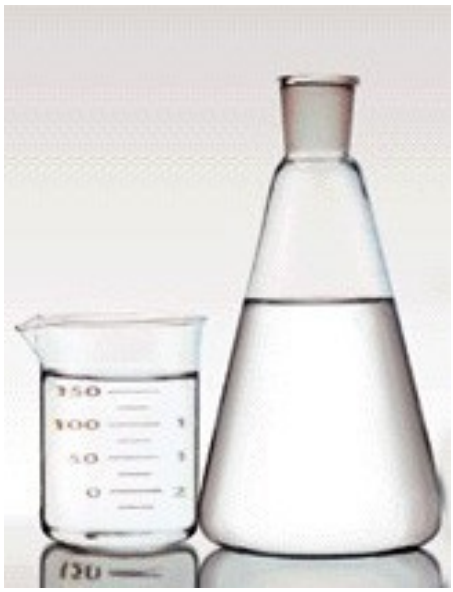
BM51 is a copolymer of methacrylates. It has high purity and low molecular weight. It offers outstanding weatherability, flexibility and pigment dispersion.

BM 51 is a kind of alcohol solubility resin and can be dissolved by ethanol solely.

BM51 possesses excellent adhesion on nylon and metal. It is widely used in alcohol soluble inks and eco-friendly coatings.

BM52 is a copolymer of methacrylates. It is a kind of alcohol solubility resin and can be dissolved by ethanol solely. It is also can be dissolved in other weak solvents. It has high purity and low odor and it offers better hardness and pigment dispersion.

BM52 possesses excellent adhesion on almost all metals and nylons (PA). It is widely used in alcohol soluble inks, eco-friendly coatings and coatings on special substrates.



Items	Test method	Unit	Value	
			BM51	BM52
Appearance			pellet	powder
Glass transition temperature (Tg)	ASTM D-3418	°C	33	60
Molecular weight (Mw)	ASTM D-3593	g/mol	60,000	70,000
Inherent viscosity (IV)	ASTM D-2857		0.20 ~ 0.30	-
Acid value	ISO-3682	mgKOH/g	≤ 7.0	-
Moisture content	ISO-3251	%	≤ 0.5	≤ 1.0

Formulations

1. PVDF coating	w/w (%)
BM44	10
PVDF resin	24
xylene	26
BCS	8
Isophorone	10
Pigment	21
Auxiliary	0.5-1.0
Total	**100**

2.Aluminum paint (plastic paint)	
Varnish	w/w (%)
BM-17	32
CAB381-20 (or CAB381-2)	2.5
EAC	30
BAC	7.0
MEK	15
TOL	5.0
BCS	8.0
Auxiliary	0.5
Total	**100**
Aluminum paint	
Aluminum powder	8-10
TOL	8-10
varnish	80-84
Total	**100**
Thinner	
EAC	20
BAC	10
MEK	20
IPA	25
DAA	5
120#	5
BCS	15
Total	**100**

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

3.Container coating	w/w (%)
BM65C	20-25
Pigment, filler	20-25
Xylene	10-15
S100#	30-40
Leveling agent, dispersant	0.5-1
Total	100

4.PVC screen printing inks	w/w (%)
BM60	14
PVC vinyl acetate	7
Titanium dioxide	23
Cyclohexanone	10
S100 (solvent mesitylene)	19
Diacetone alcohol	15
Glycol acetate	10
Auxiliary or plasticizer	2
Total	**100**

Note：solid content: 46% ， pigment/resin=1:1

Note: according to different situation, other Pioneer resin also can be used.

5.Gravure inks	w/w (%)
Slurries	
Phthalocyanine blue	15
Pigment dispersion resin	5
MIBK	80
Total：	100
Paint	
Slurries	76.9
BM66 (50% toluene, prepared)	15.5
Note: solid content: 23%, pigment/resin=1:1	
Diacetone alcohol	3.8
cyclohexanone	3.8
Total:	**100**

6.Cement paint, exterior paint	w/w (%)
BM66D	22-30
Xylene	12
S100#	25
NBA	2
Pigment	15-20
Heavy Calcium carbonate	14
Talcum powder	5
Auxiliary	1
total：	100

Note: according to different situation, other Pioneer resin also can be used, such asBM66,MB-6.

7. leather(PVC/PU) coating	w/w (%)
BM11	6.5
PVC powder	7.5
Pigment	15-20
DMF	20
MEK	30
CYC	15
Auxiliary	1
Total:	**100**

Note: according to diffirent situation, other Pioneer resin also can be used, such asMB-8, MB-22, MB-2.

8.Ceramic cover oil	w/w (%)
BM24E	38-40
S100#	40
BCS	6
S150#	14
Auxiliary	0.5
Total:	100

Solution viscosity

Item	Solvents	Solid Content (%)	Dissolve Time (min)	Viscosity (MPa·s)
MB-2	Toluene	15	50	1200
MB-4	Butanone Mixed Solvent	30	80 70	75 100
MB-6-1	Toluene	30	15	400
MB-6	Toluene	40	15	275
MB-6-A	Xylene	30	30	100
MB-8	Butanone Mixed Solvent	30	75 60	440 900
MB-9	Toluene	30	7	200
BM61	Toluene	30	15	175
MB-10	Toluene Butanone	30	15	575 250
MB-10-B	Toluene	40	20	1260
MB-12	Mixed Solvent	30	60	650
BM-17	Toluene	25		80
MB-18-A	Butanone	30	75	450
BM11	Butanone	30	40	170
BM44	Toluene	40	40	1300
BM60	Butanone	30	80	75
BM66	Toluene	40	15	275
BM99	Butanone, Vinyl acetate	30	-	4#30S
BM24E	Toluene	40	20	1260
BM65C	Butanone Mixed Solvent	30	80 70	75 100

Note: Mixed solvent is ethyl acetate/Acetone=1:1(V/V); Test temperature of solubility and viscosity is 25°C

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
BM-17	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
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

Note: C——Compatible M——Partially Compatible X——Not Compatible

Selection of solvent

Solubility Parameters		IPA	NBA	IPA	DAA	EAC	PAC	BAC	DBE	PMA	TOL	XYL	AROMATIC 100	Aromatic 150	ACE	MEK	CYC	MC	CARBITOL ACETATE	HEPTANE	NAPHTHA	ETHANOL
Solubility Parameters		11.5	11.4	10.8	9.2	9.1	8.8	8.5	8.1	9.2	8.9	8.8	8.6	8.5	9.9	9.3	9.9	9.7	8.5	7.4	7.6	12.9
BM11	9.4	I	I	I	S	S	S	S	S	S	S	P	I	I	S	S	S	S	S	I	I	I
BM-17	9.4	I	I	I	S	S	S	S	S	S	S	S	I	I	S	S	S	S	S	I	I	I
BM24E	8	I	P	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	P	P	I
BM44	9.4	I	I	I	S	S	S	S	S	S	S	S	I	I	S	S	S	S	S	I	I	I
BM51	8	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
BM52	8.2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
BM60	9.2	I	I	I	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
BM61	9	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	P	P	P
BM65C	9	I	I	I	S	S	S	S	S	S	S	S	P	P	S	S	S	S	S	I	I	I
BM66	9	I	P	P	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
BM66D	9	I	I	I	S	S	S	S	S	S	S	S	P	P	S	S	S	S	S	I	I	I
BM-70	9.8	I	I	I	S	S	S	S	S	S	I	I	I	I	S	S	S	P	P	I	I	P
BM99	9.8	I	I	I	I	P	P	P	P	P	I	I	I	I	S	S	S	I	P	I	I	I
MB-2	9.1	I	I	I	S	S	S	S	S	S	S	P	I	I	S	S	S	S	S	I	I	I
MB-4	9.2	I	I	I	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
MB-6	9	I	P	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
MB-6-1	9	I	I	I	S	S	S	S	S	S	S	S	P	P	S	S	S	S	S	I	I	I
MB-6-A	9	I	P	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
MB-8	9.4	I	I	I	S	S	S	S	S	S	S	P	I	I	S	S	S	S	S	I	I	I
MB-9	8.2	I	P	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
MB-10-B	8	I	P	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
MB-12	9.4	I	I	I	S	S	S	S	S	S	S	P	I	I	S	S	S	S	S	I	I	I
MB-18-A	9.4	I	I	I	S	S	S	S	S	S	S	S	I	I	S	S	S	S	S	I	I	I
MB-22	9.6	I	I	I	S	S	S	S	S	S	P	P	I	I	S	S	S	S	S	I	I	I
MB-45	9.1	I	I	I	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I
MB-311	8	I	P	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I	I	I

Note：I：Not Soluble　　P：Partially Soluble　　S：Soluble

Common defect and reason

Reason / Defect	Coating								Process					Operation						Surface						Environment					
	Component performance	Resin	Pigment	Auxiliary	Solvent boiling point	solvency	viscosity	System temperature	Coating thickness	Proceduce	Primer	Primer dryness	Dryness degress	Stirring	impurities	Operating method	Equipment adjustment	proficiency	Spary particles	Surface roughness	Surface treatment	polishment	shape	materials	Surface state	ventilation	Air cleaning	Temperature	Humidity	Light	climate
Brush marks		☆	☆		☆		★		☆								☆	★													
Prange peel					★	☆	★		☆		☆					☆	★	★										☆			
Sagging	☆	★		☆		☆									★				☆	☆	☆		☆			★	☆				
Flooding		☆			★		★		★		☆						☆	★				★									
Wrinkle						☆			☆		☆			☆	☆				☆	☆					☆			☆			☆
Poor arrangement of silver	☆	☆	★		★	★			☆		☆		☆															☆			
Form the grain			★			☆			☆			☆																			
White		★					☆		★		☆			☆				☆			☆								★		
pinhole	★		☆	☆		☆	☆	☆	☆					☆			☆								☆						
Drawing	☆	☆	☆		☆	☆	★	☆	☆							☆					☆							☆			
Shrinkage cavity		☆	☆	☆		☆																		★		☆	☆	☆			
Bleeding	☆	★		☆		☆									★					☆				☆		★					
Pitting	☆				★	☆	★		★		☆												☆				☆				
Floating	☆								☆		☆	☆	☆		☆					★			☆				☆	★			
Peeling		☆																			★	★					☆	★		☆	
Back stick	☆								☆	☆	☆	☆								★		☆		☆			★	★	☆		
Poor adhesion	☆	★	☆								☆	☆								★	★	★		★				☆			
Color			★																									★			
Loss of light		☆			★		★		☆	☆						☆	★	★											☆	☆	
Lifting						★																	★								
Chalking	☆	★	★						★		☆													★	☆						
Cracking		☆			★		☆		★		☆					☆							☆								
Bubble		★	★																										☆	☆	
Poor alcohol resistant	☆	★	★						☆				☆																☆		
Rust		☆	★																											★	
Mildew	☆											★									☆	☆		☆					☆		
Bak metallic luster	☆	☆	☆						☆												★			★	☆			☆	★		

Note: ★ major reason, ☆ possible reason

Abbreviations table in coating industry

Abbreviation	Name	Abbreviation	Name
AA	Acrylic acid	IBMA	Iso-butyl methacrylate
AAS(ASA)	Methacrylic acid- Acrylonitrile- Styrene copolymer	IBOMA	Isobornyl methacrylate ester
ABS	Acrylonitrile -Butadiene- Styrene terpolymer	IPA	Isopropyl alcohol
ACS	Chlorinated polyethylene- Acrylonitrile - Styrene copolymer	LMA	Lauryl methacrylate
AMA	Allyl methacrylate	MA	Methacrylate
AN	Acrylonitrile	MAA	Methacrylic acid
AS	Acrylonitrile- Styrene copolymer	MCS	Methyl cellosolve (ethylene glycol ether)
BA	Butyl acrylate	MEK	Methyl ethyl ketone / methyl ethyl ketone
BAC	Butyl acetate	MF	Melamine formaldehyde resin
BCS	Butyl cellosolve (Glycol ether)	MIBK	Methyl isobutyl ketone
BMA	Butyl methacrylate	MMA	Methyl methacrylate
BZMA	Methacrylic acid benzyl ester	MPA	Methoxy acetate
CA	Cellulose acetate	NC	nitrocellulose
CAB	Cellulose acetatebutyrate	OMA	Octyl methacrylate
CAC	Glycol ether acetate	PAMA	Phthalate 2-methyl ethyl acrylamide oxygen
CHA	Cyclohexyl acrylate	PBT	Poly (butylene terephthalate)
CHMA	Cyclohexyl methacrylate	PC	polycarbonate
CYC	Cyclohexanone	PDAF	Poly diallyl phthalate
DBE	Dimethyl nylon	PE	Polyethylene
DBP	Dibutyl phthalate	PESF	Polyphenylene sulfide(PPS)
DCP	Dioctyl phthalat, Dicumyl peroxide	PI	polyimide
DEMA	Diethyl ammonium ethyl methacrylate	PMA	Propylene glycol monomethyl ether acetate
DMMA	Dimethyl ammonium ethyl methacrylate	PMMA	Poly (methyl methacrylate)
DOP	Ethylhexyl phthalate	POM	polyformaldehyde
EA	Ethyl acrylate	PP	polypropylene
EAC	Ethyl acetate	PPO	Polyphenylene ether
ECS	Ethyl cellosolve (Glycol ether)	PS	polystyrene
EEMA	Methacrylate 2-ethoxy ethyl	PTFE	Polytetrafluroethylene
EHA	Ethylhexyl acrylate	PTSA	p-toluenesulfonic acid
EHMA	Ethylhexyl methacrylate	PUR	Polyurethane
EMA	Ethyl methacrylate	PVAC	Poly vinyl acetate
EP	Epoxy resin	PVC	Poly vinyl chloride
ETFE	Ethylene-tetrafluoroethylene copolymer	SB	Styrene-butadiene copolymer
EVA	Ethylene-vinyl acetate copolymer	SI	Silicone resin
GMA	Glycidyl methacrylate	SLMA	Methacrylic acid alkyl ester
HDI	Hexamethylene diisocyanate	SMA	Methacrylic acid stearic acid ester
HEA	2-hydroxyethyl acrylate	ST	Styrene
HEMA	2-hydroxyethyl methacrylate	TDMA	Tridecane methacrylate esters
HHMA	Hexahydro phthalic acid 2-methyl ethyl acrylamide oxygen	TOL	Toluene
HPA	Hydroxypropyl acrylate	UF	Allyl resin
HPMA	Hydroxypropyl methacrylate	UP	Unsaturated polyester
IBA	Isobutanol	XYL	Xylene

Solvent boiling point and volatilization rate

Solvent	Formula	Molecular weight	Boiling point ℃	Volatilization rate
Petroleum ether	Lower alkane mixtures	—	30～120	—
200# paint solvent oil	Mixture of pentane, hexane, heptane, octane	—	145～200	≈0.18
N-heptane	C_7H_{16}	100.21	98.40	≈0.2
N-octane	C_8H_{18}	114.23	125.60	≈0.2
benzene	C_6H_6	78.11	79.60	5.00
Toluene	$C_6H_5CH_3$	92.13	111.00	1.95
Xylene	$C_6H_4(CH_3)_2$	106.13	135.00	0.68
Solvesso100	$C_6H_3(CH_3)_3$	—	157～174	0.19
Solvesso150	$C_6H_2(CH_3)_4$	—	188～210	0.04
Solvesso200	$C_{10}H_6(CH_3)_2$	—	226～279	0.04
Solvent naphtha	Mixture of toluene, xylene, ethylbenzene, cumene	—	120～200	—
Turpentine	Mixture of α-pinene and β-pinene	—	150～170	0.45
Dipentene	$C_{10}H_{16}$	—	160～190	—
Methanol	CH_3OH	32.04	64.65	6.00
Ethanol	C_2H_5OH	46.07	78.30	2.60
N-propanol	$CH_3(CH_2)_2OH$	60.10	97.20	1.00
Isopropyl acohol	$(CH_3)_2CHOH$	60.09	82.50	2.05
N-butanol	$C_2H_5CH_2CH_2OH$	74.12	117.10	0.45
Isobutanol	$(CH_3)_2CHCH_2OH$	74.12	107.00	0.83
Butanol	$CH_3CHOHC_2H_5$	74.12	99.50	1.15
Methyl acetate	$CH_3CO_2CH_3$	74.08	59～60	10.40
Ethyl acetate	$CH_3CO_2C_2H_5$	88.10	77.00	5.25
N-butyl acetate	$CH_3CO_2C_4H_9$	116.15	126.50	1.00
Isobutyl acetate	$CH_3CO_2CH_2CH(CH_3)_2$	116.15	118.30	1.52
Glycol ether	$C_2H_5OC_2H_4OH$	90.12	135.00	0.40
Glycol N-butyl	$C_4H_9OC_2H_4OH$	118.17	170.60	0.10
Glycol ether acetate	$CH_3COOCH_2CH_2OC_2H_5$	132.16	156.30	0.20
Acetone	CH_3COCH_3	58.08	56.10	7.20
Cyclohexanone	$CH_2(CH_2)_4CO$	98.14	155.00	0.25
Diacetone alcohol	$(CH_3)_2COHCH_2COCH_3$	116.15	166.00	0.15
Butanone	$CH_3COC_2H_5$	72.10	79.60	4.65
MIBK	$CH_3COC_4H_9$	100.15	118.00	1.45
Isophorone	$C_9H_{14}O$	138.21	215.20	0.03
Diethyl ketone	$C_2H_5COC_2H_5$	86.10	102.00	2.80
Methyl propyl ketone	$CH_3COC_3H_7$	96.08	103.00	2.50
Dichloromethane	H_2CCl_2	84.94	39.80	29.00
1.1.1-trichloroethane	CH_3CCl_3	133.41	74.00	1.50
2-nitropropane	$CH_3CHNO_2CH_3$	89.10	120.30	1.20

Note: the volatilization rate of N-butyl acetate is 1.0

Solvent parameters

Solvent surface tension

Solvent	Surface tension (mN/m)	Solvent	Surface tension (mN/m)	Solvent	Surface tension (mN/m)
methanol	22.55	S100	34.00	N-propyl acetate	24.20
ethanol	22.27	S150	34.00	Isopropyl acetate	21.20
PA	23.80	200 # solvent	36.00	BAC	25.09
IPA	21.70	1.1.1-tricholoethane	25.56	Isobutyl acetate	23.70
NBA	24.60	Nitroethane	31.00	CAC	31.80
IBA	23.00	CYC	34.50	Dichloromethane	28.12
Acetone	23.70	Diacetone alcohol	31.00	EAC	23.75
Methyl acetone	23.97	Benzene	28.18	Diethylene glycol ether	31.80
MEK	24.60	TOL	28.53	ECS	28.20
MIBK	23.90	XYL	28.08	BCS	27.40

Solvent resistivity

Solvent	Resistivity/（Ω/cm)	Solvent	Resistivity /（Ω/cm)
methanol	6.2×10^{5}	MIBK	2.1×10^{7}
ethanol	1.9×10^{5}	EAC	1.7×10^{9}
IPA	2.0×10^{7}	ECS	8.5×10^{7}
MBA	1.4×10^{6}	CAC	7.0×10^{8}
Benzyl alcohol	3.2×10^{6}	BCS	1.4×10^{7}
MEK	7.7×10^{6}	Naphtha ether	3.5×10^{10}
CYC	3.9×10^{7}	TOL	2.8×10^{9}
Isophorone	1.8×10^{7}	XYL	1.8×10^{10}

Solvent solubility parameter and hydrogen bond value

Solvent	Solubility parameter		Hydrogen bond value	Solvent	Solubility parameter		Hydrogen bond value
	(Cal/cm^3)	$\times10^5$(J/m^3)			(Cal/cm^3)	$\times10^5$(J/m^3)	
TOL	8.9	18.21	4.5	Acetone	9.9	20.25	9.7
XYL	8.8	18	4.5	CYC	9.9	20.25	—
Ethylbenzene	8.8	18	1.5	Isophorone	9.1	18.62	—
S100	8.6	17.6	—	MEK	9.3	19.03	7.7
S150	8.5	17.39	—	Diethyl ketone	8.8	18	7.7
200 # solvent	8.7	17.8	—	Methyl propyl ketone	8.9	18.21	8
Naphtha	7.6	15.55	0.0	MIBK	8.4	17.91	7.7
ST	9.3	19.03	1.5	Methanol	14.6	29.67	18.7
N-hexane	7.3	14.94	0.0	Ethanol	12.9	26.39	18.7
N-heptane	7.4	15.14	0.0	NPA	11.9	24.35	18.7
Cyclohexane	8.2	16.78	—	IPA	11.5	23.53	—
Turpentine	8.1	16.5	—	NBA	11.4	23.32	18.7
Dipentene	8.5	17.39	—	IBA	10.8	22.1	—
Chloroform	9.7	19.85	—	DBE	8.1	16.5	—
Dichloromethane	9.7	19.85	—	Methyl acetate	9.6	19.64	8.4
Dichloroethane	9.6	20.05	—	EAC	9.1	—	8.4
Chlorobenzene	9.6	19.64	1.5	BAC	8.5	17.39	8.8
Nitroethane	11.1	22.71	2.5	PMA	9.2	18.8	—
Benyal alcohol	12.1	24.76	18.7	ECS	9.9	20.25	13
Acetophenone	10.6	21.69	—	BCS	8.9	18.21	13
Diacetone alcohol	9.2	18.82	13	CAC	8.7	17.8	9.4

IP series——water soluble polymers

IP-01 (Poly Sodium Acrylate)

I. Product Introduction:

IP-01 is poly (sodium acrylate) also named acrylic sodium salt polymer. It has functionalities of dispersion, emulsion, suspension, thickening, cementing and protecting and gloss-improving. Depending upon the manufacturing process, molecular weight control and solid content, the physical forms of this product are either in solid, paste or solution.

II. Main Applications:

●IP-01S : Commonly used as dispersion agent in suspension polymerization of vinyl chloride and chlorinated vinyl chloride.

●IP-01P : Commonly used as a pigment dispersion agent for both organic dyes and inorganic pigments.

●IP-01L : Commonly used as cements and adhesives such as carpet glues, glues of non-woven clothes, glues of artificial furs, adhesives of printed flocking and textile sizing. It is also used as rheology modifier (thickening agent), coating materials for construction and stabilizers in emulsion paints and printing inks.

Technical Data Sheet

Properties		**IP-01 S**	**IP -01 P**	**IP -01 L**	**IP -01 L**
Appearance		Light yellow paste	Light yellow paste	Light yellow liquid	Light yellow liquid
Mw		High	Medium	High	High
Solid Content	%	50 (±2)	40 (±2)	20 (±2)	10(±2)
	Test Method	ISO-3251			
Viscosity	Value	High	Medium	Medium	Low
	Test Method	ASTM D-2196			
PH Value	Value	7 - 9	7 - 9	7 - 9	7 - 9
	Test Method	pH Paper			

Packaging and Storage:

1. IP -01 S: 40 kg/bag.
2. IP -01 P and IP -01 L are in 50 kg/drum.
3. The shipment is as regulation of non-hazardous products
4. There is no shelf-life issue for this product.

The information contained on above data sheet is, to the best of our best knowledge, true and accurate. However, since the conditions of use are beyond our control, all recommendations or suggestions are presented without guarantee or responsibility on our part. We disclaim all liabilities in connection with the use of information contained herein or otherwise. All risks of such nature are assumed by the user.

IP series——water soluble polymers

IP-02 (Poly Ammonium Acrylate)

I Product Introduction:

IP-02 is poly (ammonium acrylate) made by mainly methacrylic acid and ammonia. It is a water soluble polymer and commonly used in adhesives, cements, pigment dispersion agents and scale inhibitors. In many applications, IP-02 has similar characteristics as polyethylene oxide (PEO) but with an advantage of non-drawing (no silk lines).

II Main Features

- ●No metal residuals and maintain high purity.
- ●Excellent pigment dispersion function.
- ●Exceptional adhesion to ceramic and glass substrates.
- ●The viscosity decreases when light exposures increases.
- ●Polymer degrades when applied with high shear rate.
- ●Completely degrades without residuals when applied in high temperature.

III Main Applications

IP-02 is commonly used in following applications:

Bonding materials in high end water-borne coatings and printing inks Theology modification of emulsion coatings and paints. Temporary adhesives for electronic vacuum devices. Adhesives and Dispersion agents in industries of ceramics, electronics, ferrite and paper manufacturing. Circulating water for power plants, chemical plants and metallurgy plants. Water for injection in oilfield. Scale inhibitor of air conditioning system.

Excellent water treatment agent if combine it with other scale inhibitors such as organophosphate and BTA.

IV Technical Data Sheet

- ●Appearance: Light yellow Liquid
- ●Solid Content: Test Method
- ●Density:1.1g/cm3
- ●PH value:7-9

If customers require any product with more than 10% solid content and different molecular weight, SPC has the flexibility in supplying alternative grades of IP-02.

Packaging and Storage:

- IP -02: 50 kg/drum.
- Must store indoor with dark and dry environments with ambient temperature > 0°C
- The shipment is per non-hazardous products
- The shelf life is 1 year.

The information contained on above data sheet is, to the best of our best knowledge, true and accurate. However, since the conditions of use are beyond our control, all recommendations or suggestions are.

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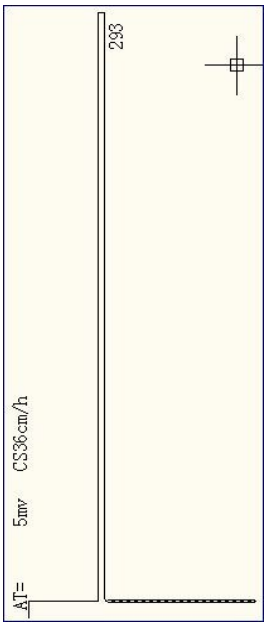
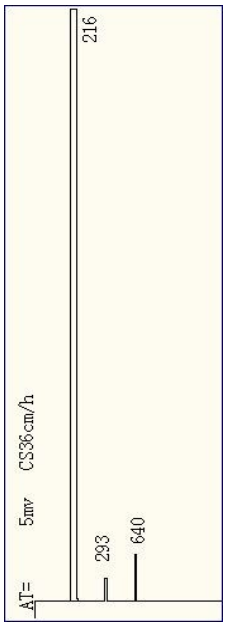
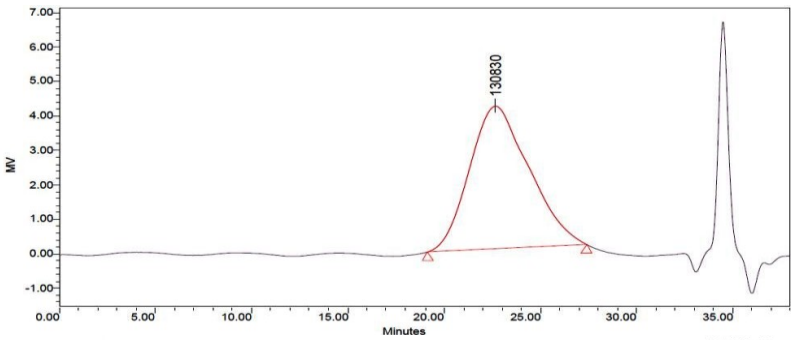
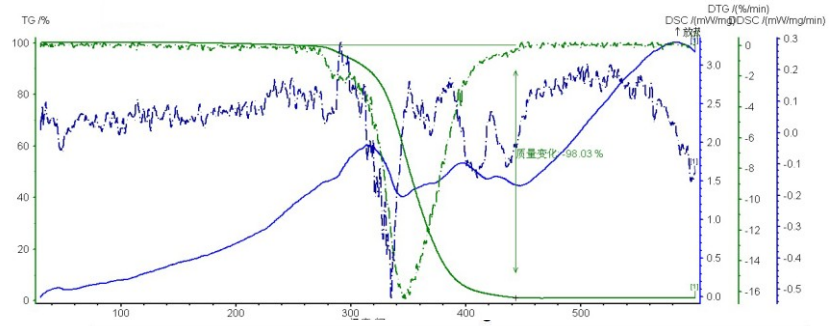
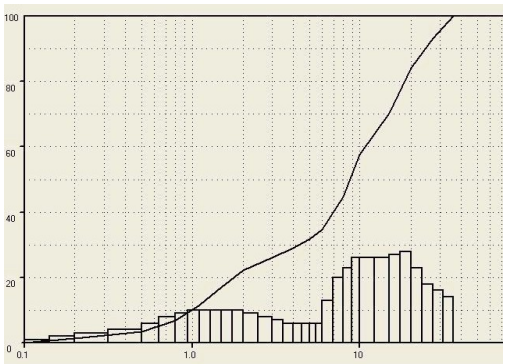
Typical QC tests

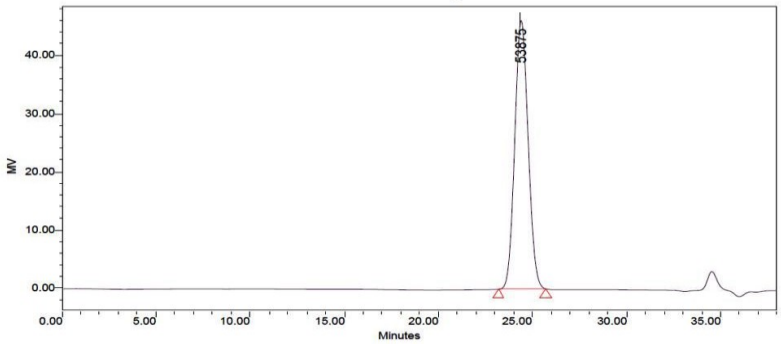












Safety Precautions in use

Material Identity: Solid Acrylic Resins

1, Manufacturer's Information

Manufacturers：

Shanghai Pioneer Chemicals Co. LTD.

Address： Gao Shi Zhi Road, Tanghang, Jiading District, Shanghai, China（201816）,

Telephone: +021-5995-1484 or +021-5995-4238

Emergency Contact Phone：+021-5995-3629

Pioneer Chemicals (Yangzhou) Co. LTD.

Address: No. 38-40 North Tongyang Road, Wuqiao Town, Jiangdu, Jiangsu Province Telephone：+0514-8635-2158

２, Products' Ingredients

Methacrylate and Acrylate Polymers 98.0 (Min.)

Methacrylate and Acrylate monomers 1.0 (Max.)

Moisture 1.0 (Max.)

３, Health Hazard Information

Eyes- Slight irritation

Skin- Slight irritation

４, Emergency/First Aid Procedures:

General Recommendation: Wash with large amount of soap water and breath air refresh clean air.

Inhale：With fresh air.

Skin： Washed by soap water, remove contaminated clothing, launder before re-use Eye：Flush with clean water for 15 min before seeing medical doctors.

Ingest：Drink plenty of water. Get medical attention immediately

５, Fire Hazard Data

On fire: Burns vigorously with intense heat and hazardous vapors.

Special Fire Fighting Procedure: Wear full protective clothing and use carbon dioxide, water to spray.

６, Handling Procedures upon product spillage

Individual：The pellets or beads will cause people to slip or fall. Do not contact with eyes or skins

Environment：Ventilate the spill area and transfer spilled material to suitable container for disposal. It is not permitted to dump it to underground sewers.

７, Operation and Storage

Store the products in a cool and fire preventive area. All metal equipment and tools are required to touch the ground.

When the materials are heated, some monomeric vapor might be generated and the details are described in next paragraph.

８, Personal Protection:

Contact Control: The upper limit of dust contact is MAC 10mg/m ^{3}

The breathing limit is MAC 5mg/m ^{3}

Eye Protection: Safety goggle

Hand Protection: Rubber gloves

Skin Protection: Remove pellet, beads or powders from skin to prevent any grease on the skin to have any reaction.

Respiratory Protection: When the work environment needs to use respirators, operators must follow the safety and health requirements.

Protection Procedure：Set up washing equipment in the plant where products are

used

Engineering Control：To have nice venting when powders or beads are in the air.

９, Physical/Chemical Characteristics

Appearance：Clear pellets, beads or powders

Odor：None

Decomposition Temperature：Above 250℃

Specific Gravity：1.05—1.20

Solubility：Insoluble in water. Soluble in ketones, esters, aromatics and chlorinated solvents.

Evaporation Rate: < 2%

１０, Reactivity Data

Stability：Yes

Hazardous decomposed ingredients: Acrylic monomers when temperature >250℃ Hazardous Polymerization：No

１１, Toxicology Information

These products are polymers or copolymers of methacrylate and Acrylate and are in compliance with Chinese SFDA for the III type products.

Products were tested per SFDA's Y0270 - 2003 and reported on MA - T - 03 - 2005 - 128:

Cytotoxicity: minor

Ames Test：Mutation negative

Sensitization：None

Short-term systemic toxicity test: Through mouth, no toxicity Oral mucous membrane irritation test: None

１２, Ecology Information

These products are practically insoluble in water, are not hazardous.

１３, Safety

These products are not toxic and disposal procedures need to be in compliance with local regulations.

１４, Transportation Data

Ground Shipment: Not regulated

Ocean Shipment：Not regulated by IMO-IMDG

Air Shipment：Not regulated by IATA/ICAO

solid acrylic resin

solides de résine acrylique

resina de acrílico sólido

твердой акриловой смолы

راتنج الاكريليك الصلبة

固體丙烯酸樹脂

solide Acrylharz

固形アクリル樹脂

resina acrílica sólida

solida resina acrilica

solide acrylhars

solid akryl harpiks

resinae solidae ipsum

fast akrylharts

stałych żywicy akrylowej

pevné akrylové pryskyřice

pevné akrylové živice

tömör akril gyanta

твърди акрилна смола

στερεά ακρυλική ρητίνη

שרף אקרילי מוצק

sağlam akrilik reçine

رزین اکریلیک سخت

pepejal resin akrilik

resin akrilik yang solid

솔리드 아크릴 수지

rắn nhựa acrylic

เรซินอะคริลิของแข็ง

ठोस ऐक्रेलिक राल

ٹھوس acrylic رال

Sino-US

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Shanghai(201816), China

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