EASTMAN

Eastman products for coating and ink formulations

Helping formulators balance performance, appearance, and regulatory compliance

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Overview

Eastman coatings and inks—a unique portfolio of world-class specialty additives

In our ever-changing regulatory climate, making good coatings and inks based on sound chemistry is more important than ever. As we move toward a greener tomorrow, formulators and manufacturers need the right products for use in conventional, high-solids, and waterborne coatings for architectural, transportation, industrial, and graphic arts and ink applications.

Eastman's in-depth understanding of the coating and ink industries and commitment to technology-based innovation gives you the options you need to balance performance, appearance, and regulatory compliance. Our unique portfolio includes specialty additives such as cellulose esters and adhesion promoters, VOC-compliant coalescents, sulfopolyester dispersions, and specialty solvents. As a global company, we can deliver a consistent, reliable supply of products around the world.

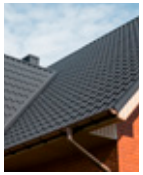
We've been a leading provider of high-quality raw materials and services for the paint and coatings industry for more than 85 years. Our technology support network's deep industry experience and formulation expertise is available when and where you need it.

For more information on all Eastman products for coating and ink applications, visit **eastman.com** or contact your Eastman technical representative or your authorized Eastman distributor.

Market segments

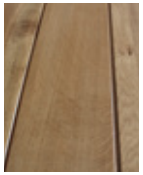
Architectural

These are coatings intended for on-site application to interior or exterior surfaces of residential, commercial, or institutional buildings with primary functions of decoration and protection. Architectural coatings cover a range of finishes, with flat paints that have a high pigment volume concentration (PVC) and trim paints with a low PVC. Architectural flat is most typically used on large interior and exterior flat surfaces, i.e., walls and ceilings. Architectural trim paints are typically used on architectural components, such as window frames and sills, door frames and doors, and other specialty moldings.



General industrial

General industrial refers to factory-applied coatings normally dried by forced evaporation of solvents in curing ovens. Coil coatings are included in this segment. Most products are coated postmanufacture, and products include household appliances, metal furniture, shelving, automotive components, drums, agricultural and construction equipment, other transportation (including rail), and plastic components.



Wood

Coating solutions specifically designed for factory- and field-applied wood applications serve the industrial and decorative wood markets in applications such as furniture, flooring, cabinetry, and window frames and blinds.

Protective and marine

Protective and marine includes all high-performance protective coatings, which are vital for protecting from corrosion in steel structures of all kinds. Applications include ships, oil rigs, and tank linings as well as basic steel structures, including bridges, chemical plants, electrical power stations, pylons, and warehouses.

Inks and graphic arts

Ink is the formulation technology used to produce patterns, text, and images using different printing methods such as gravure, flexographic, silk screen, lithographic, inkjet, and various types of pens. These ink printing methods are applied to unique and advanced applications such as metal paste for electrelectronics, solder resist ink for PCB, and heat transfer ink for packaging, as well as well-established conventional applications such as packaging, labeling, and overprinting varnish.

Transportation

Transportation includes factory-applied (OEM) e-coats, primer surfacers, base coats, and clear coats for metal and plastic substrates for automobiles, light- and heavy-duty trucks, vans, SUVs, buses and recreational vehicles, aircraft, and railcars. This sector also includes automotive refinish paints (special purpose) that are applied in body shops and other repair facilities under ambient or very low-temperature cure conditions. These finishes are also used to repair and refinish other commercial vehicles.

Metal packaging

Metal packaging includes all factory-applied coatings onto metal—normally steel, aluminum, and tin—generally prior to the manufacture of the final component. This includes internal and external can coatings.

Consumer electronics

Consumer electronics includes water- or solvent-based coatings applied onto various electronic devices. Coatings can have special effects, such as a metallic or pearlescent look, and can be monocoat, 2K, UV, or base coat/clear coat systems.

Cellulose esters

		Viscosity (seconds/poise)	Acetyl content (wt%)	Combined acetic acid content (%)	Hydroxyl content (wt%)	Melting range (°C)	T_g (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Cellulose acetate	**Eastman CA-394-60LF**	34.0/228.0	40.0	55.0	4.0	240–260	180		•							Very high melting point. Limited solubility and compatibility and low odor. Gives high strength and good resistance to ultraviolet light, heat, oils, and greases. Useful in lacquers for glass, plastic, wire, and release coatings.
	Eastman CA-398-3	3.0/11.4	39.8	55.5	3.5	230–250	180		•			•				Very high melting point. Limited solubility and compatibility and low odor. Gives high strength and good resistance to ultraviolet light, heat, oils, and greases. Useful in lacquers for glass, plastic, wire, and release coatings. Lowest-viscosity 398 grade.
	Eastman CA-398-3, food contact	3.0/11.4	39.8	55.5	3.5	230–250	180					•				Very high melting point. Limited solubility and compatibility and low odor. Gives high strength and good resistance to ultraviolet light, heat, oils, and greases. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CA-398-6	6.0/22.8	39.8	55.5	3.5	230–250	182		•							Very high melting point. Limited solubility and compatibility and low odor. Gives high strength and good resistance to ultraviolet light, heat, oils, and greases. Useful in lacquers for glass, plastic, wire, and release coatings.
	Eastman CA-398-30	30.0/114.0	39.7	55.5	3.5	230–250	189		•							Very high melting point. Limited solubility and compatibility and low odor. Gives high strength and good resistance to ultraviolet light, heat, oils, and greases. Useful in lacquers for glass, plastic, wire, and release coatings. Highest-viscosity 398 grade.

Cellulose esters

(continued)

		Viscosity (seconds/poise)	Inherent viscosity	Acetyl content (wt%)	Butyryl content (%)	Hydroxyl content (wt%)	Melting range(°C)	T_g (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Cellulose acetate butyrate	**Eastman CAB-171-15**	19.0/57.37	—	29.0	18.0	1.1	230–240	161		•							Limited solubility and compatibility. Useful in coatings for wire, plastic, and cloth.
	Eastman CAB-321-0.1	0.1/0.38	—	17.5	32.5	1.3	165–175	127		•	•	•					Designed for use in automotive base coats. Resistant to attack and redissolve by solvents typical in clear coats.
	Eastman CAB-381-0.1	0.1/0.38	—	13.5	38.0	1.5	155–165	123		•	•	•	•			•	Low solution viscosity. Useful in coatings for wood, metal, plastic, paper, leather, and cloth. Reduces cratering and dry-to-touch time. Improves pigment control and intercoat adhesion.
	Eastman CAB-381-0.1, food contact	0.1/0.38	—	13.5	38.0	1.5	155–165	123					•				Low solution viscosity. Useful in coatings for wood, metal, plastic, paper, leather, and cloth. Reduces cratering and dry-to-touch time. Improves pigment control and intercoat adhesion. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAB-381-0.5	0.5/1.9	—	13.5	38.0	1.5	155–165	130		•	•	•	•			•	Higher viscosity and increased toughness. Good balance of compatibility and viscosity.
	Eastman CAB-381-0.5, food contact	0.5/1.9	—	13.5	38.0	1.5	155–165	130					•				Higher viscosity and increased toughness. Good balance of compatibility and viscosity. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAB-381-2	2.0/8.0	—	13.5	38.0	1.3	171–184	130		•	•	•	•			•	Higher viscosity and increased toughness with excellent surface hardness. Used in automotive base coats for metallic flake control.
	Eastman CAB-381-2, food contact	2.0/8.0	—	13.5	38.0	1.3	171–184	130					•				Higher viscosity and increased toughness with excellent surface hardness. Used in automotive base coats for metallic flake control. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAB-381-2 BP	2.0/8.0	—	14.5	35.5	1.8	175–185	133		•	•	•					•	Higher-hydroxyl-content version of CAB 381-2
	Eastman CAB-381-20	20.0/76.0	—	13.5	37.0	1.8	195–205	141		•	•	•	•				•	Highest viscosity and greatest rheological modification. Useful as a blending cellulosic resin in automotive coatings.
	Eastman CAB-381-20, food contact	20.0/76.0	—	13.5	37.0	1.8	195–205	141					•				Highest viscosity and greatest rheological modification. Useful as a blending cellulosic resin in automotive coatings. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAB-381-20 BP	16.0/20.8	—	15.5	35.5	0.8	185–195	128		•	•	•					•	Lower-hydroxyl-content version of CAB 381-20

Cellulose esters

(continued)

		Viscosity (seconds/poise)	Inherent viscosity	Acetyl content (wt%)	Butyryl content (%)	Hydroxyl content (wt%)	Melting range(°C)	T_g (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Cellulose acetate butyrate	**Eastman CAB-500-5**	5.0/19.0	—	3.0	51.0	1.0	165–175	96		•			•				Produces a relatively soft flexible film. Useful in leather coatings and as a flow control additive in polyurethanes.
	Eastman CAB-531-1	2.0/5.6	—	3.0	50.0	1.7	135–150	115		•	•	•				•	Higher butyryl content offers improved compatibility.
	Eastman CAB-531-1, food contact	2.0/5.6	—	3.0	50.0	1.7	135–150	115		•							Higher butyryl content offers improved compatibility. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAB-551-0.01	0.02/0.038	—	2.0	52.0	2.0	127–142	85		•	•	•	•		•	•	Excellent compatibility and low viscosity. Solubility in styrene and methyl methacrylate monomers allows use in UV-curing systems. Gives improved hardness, dry-to-touch, and application properties to 2K and high-solids systems.
	Eastman CAB-551-0.01, food contact	0.02/0.038	—	2.0	52.0	2.0	127–142	85					•		•		Excellent compatibility and low viscosity. Solubility in styrene and methyl methacrylate monomers allows use in UV-curing systems. Gives improved hardness, dry-to-touch, and application properties to 2K and high-solids systems. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAB-551-0.2	0.2/0.76	—	2.0	52.0	1.8	130–140	101		•	•	•	•			•	Excellent compatibility and low viscosity. Useful in high-solids thermoset coatings. Modifier for UV-curing systems.
	Eastman CAB-551-0.2, food contact	0.2/0.76	—	2.0	52.0	1.8	130–140	101					•				Excellent compatibility and low viscosity. Useful in high-solids thermoset coatings. Modifier for UV-curing systems. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAB-553-0.4	0.3/1.14	—	2.0	47.0	4.8	150–160	136		•	•	•	•			•	Alcohol solubility with excellent compatibility and pigment-wetting characteristics. High hydroxyl content allows a high level of cross-linking.
	Eastman CAB-553-0.4, food contact	0.3/1.14	—	2.0	47.0	4.8	150–160	136					•				Alcohol solubility with excellent compatibility and pigment-wetting characteristics. High hydroxyl content allows a high level of cross-linking. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.

Cellulose esters

(continued)

		Viscosity (seconds/poise)	Acetyl content (wt%)	Combined acetic acid content (%)	Hydroxyl content (wt%)	Melting range (°C)	T_g (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Cellulose acetate propionate	**Eastman CAP-482-0.5**	0.5/1.53	1.5	45.0	2.6	188–210	142			•		•				Low odor. Excellent grease barrier properties. Excellent solvent release.
	Eastman CAP-482-0.5, food contact	0.5/1.53	1.5	45.0	2.6	188–210	142					•				Low odor. Excellent grease barrier properties. Excellent solvent release. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAP-482-20	20.0/76.5	1.3	48.0	1.7	188–210	147			•		•				Higher-viscosity, low-odor resin
	Eastman CAP-482-20, food contact	20.0/76.5	1.3	48.0	1.7	188–210	147					•				Higher-viscosity, low-odor resin. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman CAP-504-0.2	0.2/0.76	0.5	42.5	5.0	188–210	159			•		•				Low-odor resin with high hydroxyl content for cross-linking systems. Alcohol solubility with excellent pigment-wetting characteristics.
	Eastman CAP-504-0.2, food contact	0.2/0.76	0.5	42.5	5.0	188–210	159					•				Low-odor resin with high hydroxyl content for cross-linking systems. Alcohol solubility with excellent pigment-wetting characteristics. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.

Cellulose esters

(continued)

		Viscosity (seconds/poise)	Inherent viscosity	Acetyl content (wt%)	Acid number	Hydroxyl content (wt%)	Melting range (°C)	T_g (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Performance additives	Eastman Solus™ 2100 performance additive	—	0.08	2	—	1.2–1.9	—	70–80		•	•	•	•		•		A dry, free-flowing, convenient-to-handle powder. It is soluble in a wide range of solvents and compatible in most high-solids coating systems. It is a flow and leveling additive, enabling consistent topcoat appearance, early surface hardness for handling and polishing, and better storage stability at higher solids. Reduces dry-to-touch time, improves antisag, aids flow and leveling, and improves polishability in refinish systems.
	Eastman Solus™ 2100 performance additive, food grade	—	0.08	2	—	1.2–1.9	—	70–80					•		•		A dry, free-flowing, convenient-to-handle powder. It is soluble in a wide range of solvents and compatible in most high-solids coating systems. It is a flow and leveling additive, enabling consistent topcoat appearance, early surface hardness for handling and polishing, and better storage stability at higher solids. Reduces dry-to-touch time, improves antisag, aids flow and leveling, and improves polishability. Specific food contact compliance information for U.S. FDA, European Union member states, and Switzerland is available on request.
	Eastman Solus™ 2300 performance additive	—	0.95	19	—	1.2–1.9	—	110		•		•	•				A dry, free-flowing, convenient-to-handle powder. Soluble in a wide range of solvents and compatible in most high-solids coating systems. Solus 2300 was developed for higher-solids metallic base-coat systems, and when used in combination with an antisettling additive, provides flake/pigment orientation, color development, and better strike-in resistance. It provides better flake control, increased redissolve resistance, and improved productivity through increased solids.
	Eastman Solus™ 3050 performance additive	1.02/0.3	—	1.9	50	2.8	—	130		•	•	•					A dry, white granular powder designed for use in waterborne base coats. It can be solubilized using appropriate blends of solvents, water, and neutralizing agents. It is a flow and leveling additive that provides excellent metallic flake orientation, color matching, and improved strike-in resistance. It also reduces color sensitivity and color shift due to variations in environmental temperature and humidity. Provides CAB-like performance in water-based coating. It provides improved redissolve resistance, better flake orientation, increased flexibility in aluminum flake selection, reduced blocking, and superior application consistency over a wide range of climatic conditions.

Resin intermediates

		Resin benefit	Processability	Thermal stability	Low color	Low solution viscosity	Hydrolytic stability	Coating/composite benefit	Hardness	Flexibility	Stain resistance	Corrosion resistance	Chemical resistance	Humidity resistance	Excellent weathering	Technology	High solids	Powder	Waterborne	Radiation cure	Conventional	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics
Glycols	Neopentyl glycol (NPG)		•	•	•				•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
	Eastman TMPD glycol (2,2,4-trimethyl-1, 3-pentanediol glycol)				•	•	•		•		•	•	•	•			•		•	•		•	•	•	•	•	•		•
	1,4-Cyclohexanedimethanol (CHDM-D)		•	•	•				•			•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
	Hydroxypivalyl hydroxypivalate (HPHP)		•	•	•				•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
Diacids/ diesters	Purified isophthalic acid (PIA)			•	•		•		•		•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
	Purified terephthalic acid (PTA)			•	•				•		•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•
	1,4-Cyclohexanedicarboxylic acid (1,4-CHDA)		•	•	•		•		•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
	Dimethyl 1,4-cyclohexanedicarboxylate (DMCD)			•	•		•		•	•		•	•	•	•		•			•	•	•	•	•	•	•	•	•	•
Acetoacetates	Acetoacetoxyethyl methacrylate (AAEM)		•			•				•	•	•	•	•			•		•	•		•	•	•	•	•			•
	t-Butyl acetoacetate (t-BAA)		•			•				•	•	•	•	•			•		•	•		•	•	•	•	•			•

For detailed information on these products, refer to Eastman publication *Building Blocks for Better Resins* or contact your Eastman technical representative or authorized Eastman distributor.

Resins

	Average nonvolatile content (%)	Solvent	Viscosity (mPa•s)	Typical pH	Average particle size (nm)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastek™ 1000 polymer dispersion	30	Water	60	6.0	27			•		•				Film-forming polyester polymer supplied as an aqueous dispersion containing 30% polymer solids. Provides excellent alcohol resistance, fast drying rates, low odor, low foaming, good adhesion to aluminum, and neutral pH. Eastek 1000 is amine, surfactant, and cosolvent free.
Eastek™ 1100 polymer dispersion	33	Water	86	6.2	20		•	•		•				Film-forming polyester polymer supplied as an aqueous dispersion containing 33% polymer solids. Provides excellent alcohol resistance, fast drying rates, low odor, low foaming, good adhesion to aluminum, and neutral pH. Eastek 1100 is amine, surfactant, and cosolvent free.
Eastek™ 1200 polymer dispersion	30	Water	99	6.6	13		•	•					•	Polyester polymer supplied as an aqueous solution containing 2% *n*-propanol and 30% polymer solids. Provides excellent water resistance, alcohol resistance, fast drying rates, low odor, and a consistently low coefficient of friction. Eastek 1200 is amine and surfactant free. Eastek 1200 has the highest T_g of all the Eastek dispersions.
Eastek™ 1300 polymer dispersion	30	Water	14	6.0	54			•		•				Alcohol-free, film-forming polyester polymer. Aqueous dispersions of this polymer are characterized by low odor, good storage stability, and reducibility with water or water/alcohol mixtures. It offers excellent resistance properties and fast drying rates. Eastek 1300 is amine, surfactant, and cosolvent free.
Eastek™ 1400 polymer dispersion	30	Water	15	6.0	34			•		•				Aqueous dispersions of this polymer are characterized by low odor, good storage stability, and reducibility with water or water/alcohol mixtures. Offers excellent resistance properties and fast drying rates. Has outstanding adhesion to a variety of substrates, including PET film (treated or untreated), paper, SBS board, aluminum foil, and metallized papers/films. Eastek 1400 is amine, surfactant, and cosolvent free.

Resins

(continued)

	Solids (%)	Molecular wt	Hydroxyl number	Acid number (typical)	T_g (°C)	Inherent viscosity (dL/g)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman AQ™ 65S polymer	100	~20,000	< 10	< 2	62–65	0.34–0.42					•				Polyester supplied as pellets. Aqueous dispersions of AQ 65S provide excellent water resistance, alcohol resistance, fast drying rates, low odor, and a consistently low coefficient of friction.
Eastman AQ™ 55S polymer	100	~20,000	< 10	< 2	51–55	0.29–0.37					•				Sulfopolyester that disperses directly in hot water without the assistance of surfactants or other additives. AQ 55S aids the dispersion of many hydrophobic ingredients in water-based products and forms clear films at room temperature from aqueous dispersions. As indicated by the number in the product name, AQ 55S has a T_g (glass transition temperature) of about 55°C. The "S" indicates it's supplied as solid pellets.
Eastman AQ™ 48 ultra polymer	100	~20,000	< 10	< 2	45–48	0.26–0.32					•				Sulfopolyester that disperses directly in a mixture of ethanol and water at room temperature or in warm water without the assistance of surfactants or other additives. The aqueous or hydroalcoholic dispersions have water-like viscosity at concentrations up to about 20% polymer. Films formed from the dispersions are clear and glossy.
Eastman AQ™ 38S polymer	100	~20,000	< 10	< 2	35–38	0.32–0.40					•				Eastman AQ™ 38S polymer is a sulfopolyester that disperses directly in hot water without the assistance of amines, cosolvents, surfactants, or other additives. AQ 38S polymer aids the dispersion of many hydrophobic ingredients in water-based products and forms clear films at room temperature from aqueous dispersions. The "S" indicates it's supplied as solid pellets.

Resins

(continued)

	T_g (°C) (by DSC T_g)	Molecular wt	Solution viscosity 10% by wt	–OH content as % PVOH	Acetate content as % PVOAc	Butyral content as % PVB	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Butvar® B-90 thermoplastic polyvinyl butyral resin	72–78	70–100	200–400	18.5–20.5	0–1.5	80		•	•	•	•	•		•	A thermoplastic, polyvinyl butyral resin that offers a unique combination of properties for coating or adhesive applications. The use or addition of polyvinyl butyral to a system imparts adhesion, toughness, and flexibility. PVB retains the clarity of the coating and offers reactive hydroxyl sites for cross-linking with thermoset.
Butvar® B-72 thermoplastic polyvinyl butyral resin	72–78	170–250	1600–2500	17.5–20.0	0–2.5	80	•	•		•	•		•		A thermoplastic, polyvinyl butyral resin that offers a unique combination of properties for coating or adhesive applications. The use or addition of polyvinyl butyral to a system imparts adhesion, toughness, and flexibility. PVB retains the clarity of the coating and offers reactive hydroxyl sites for cross-linking with thermoset systems.
Butvar® B-74 thermoplastic polyvinyl butyral resin	72–78	120–150	800–1300	17.5–20.0	0–2.5	80		•			•				A thermoplastic, polyvinyl butyral resin that offers a unique combination of properties for coating or adhesive applications. The use or addition of polyvinyl butyral to a system imparts adhesion, toughness, and flexibility. PVB retains the clarity of the coating and offers reactive hydroxyl sites for cross-linking with thermoset systems.
Butvar® B-76 thermoplastic polyvinyl butyral resin	62–72	90–120	200–450	11.5–13.5	0–2.5	88	•	•			•		•	•	A thermoplastic, polyvinyl butyral resin that offers a unique combination of properties for coating or adhesive applications. The use or addition of polyvinyl butyral to a system imparts adhesion, toughness, and flexibility. PVB retains the clarity of the coating and offers reactive hydroxyl sites for cross-linking with thermoset systems. Within the Butvar line of products, B-76 and B-79 have the most compatibility.
Butvar® B-79 thermoplastic polyvinyl butyral resin	62–72	50–80	75–200	11.0–13.5	0–2.5	88	•	•		•	•	•		•	A thermoplastic, polyvinyl butyral resin that offers a unique combination of properties for coating or adhesive applications. The use or addition of polyvinyl butyral to a system imparts adhesion, toughness, and flexibility. PVB retains the clarity of the coating and offers reactive hydroxyl sites for cross-linking with thermoset systems. Within the Butvar line of products, B-76 and B-79 have the most compatibility.
Butvar® B-98 thermoplastic polyvinyl butyral resin	72–78	40–70	75–200	18.0–20.0	0–2.5	80	•	•	•	•	•	•	•	•	A thermoplastic, polyvinyl butyral resin that offers a unique combination of properties for coating or adhesive applications. The use or addition of polyvinyl butyral to a system imparts adhesion, toughness, and flexibility. PVB retains the clarity of the coating and offers reactive hydroxyl sites for cross-linking with thermoset systems. B-98 can be used in some screening ink applications.

Resins

(continued)

	T_g (°C)	Solvent	Solids (wt%)	Viscosity (poise)	Neat resin OH# (mg KOH/g)	Neat resin acid value (mg KOH/g)	Color (APHA)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman Tetrashield™ AC1001 protective resin system	—	*n*-Butyl acetate	74–76	12–32	120–150	< 10	< 120				•					Eastman Tetrashield AC1001 is a durable polyester resin system that improves the performance of both clear coats and pigmented topcoats. Tetrashield protective resin systems are designed to enhance coating performance, reduce environmental impact, and optimize the coating process for automotive OEMs and suppliers.
Eastman Tetrashield™ IC3000 protective resin system	—	*n*-Butyl acetate	74–76	12–32	120–150	< 10	< 63		•							Eastman Tetrashield IC3000 is a durable polyester resin system that improves the performance of both clear coats and pigmented topcoats. Tetrashield protective resin systems are designed to enhance coating performance, reduce environmental impact, and optimize the coating process for agricultural and construction equipment manufacturers and their suppliers.
Eastman Tetrashield™ IC3020 protective resin system	38	*n*-Butyl acetate	75	65	145–155	< 10	< 75		•							Eastman Tetrashield IC3020 is a high-performance polyester resin system for 2K topcoats. Tetrashield protective resin systems are designed to increase the application window and enhance coating performance for protective and maintenance coatings in industrial plants, equipment, and infrastructure.
Eastman Tetrashield™ IC3021 protective resin system	—	*n*-Butyl acetate	74–76	< 200	122–133	< 10	< 75		•							Eastman Tetrashield IC3021 is a protective resin system that provides excellent direct-to-metal corrosion resistance in weatherable 2K polyurethane industrial coatings. Tetrashield-based coatings can enable reduced labor costs, lower coating consumption, reduced environmental impact, and increased productivity. IC3021 provides superior corrosion resistance over iron-phosphate pretreated steel, galvanized steel, and smooth cold-rolled steel.
Eastman Tetrashield™ MP2100 protective resin system	74	None	100	0.28 dL/g (IV)	15	3	—							•		Eastman Tetrashield MP2100 for metal packaging enhances the performance of bisphenol A non-intent (BPA-NI) metal packaging coatings. With high solids, improved retort resistance, and broad chemical resistance, formulations featuring Tetrashield protective resin systems can achieve superior performance results in interior, food contact metal packaging applications. Tetrashield MP2100 resin can also be used in ends, caps and closures, and general line applications to improve coating performance in these applications as well as to formulate high-solids coating formulations.
Eastman Tetrashield™ PC4000 protective resin system	37	*n*-Butyl acetate	75	55–75	144–155	< 8	< 100		•							Eastman Tetrashield PC4000 is a high-performance polyester resin system for 2K topcoats. Tetrashield protective resin systems are designed to increase the application window and enhance coating performance for protective and maintenance coatings in industrial plants, equipment, and infrastructure.

Solvents

		Physical properties	Specific gravity @ 20°C	Boiling point (°C)	Flash point (°C)	Performance properties	Evaporation rate (nBA = 1.0)	Total Hansen solubility parameter	Surface tension (dynes/cm)	Regulatory information	MIR value (gm O_3/gm VOC)	HAP list CAA Tittle III	Prop 65	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Esters	Methyl acetate		0.933	57.0	–13		6.2	18.8	25.2		0.07	No	No	●	●	●	●	●	●	●	●	VOC exempt. Low MIR value. Limited water solubility. Can be used to replace acetone with zero VOC. Low odor.
	Methyl acetate HP		0.933	57.0	–13		6.2	18.8	25.2		0.07	No	No	●	●	●	●	●	●	●	●	VOC exempt. Low MIR value. Limited water solubility. Can be used to replace acetone with zero VOC. Urethane grade. Low odor.
	Ethyl acetate		0.901	77.0	–4		4.1	18.0	23.9		0.63	No	No		●	●	●	●	●	●	●	FIFRA inert food ingredient (limitations). Urethane grade. High resistivity. Low surface tension. Available in electronic grade.
	Isopropyl acetate		0.873	88.0	2		3.0	17.6	22.1		1.07	No	No		●	●	●	●	●	●	●	FIFRA inert nonfood ingredient. Urethane grade. High resistivity. Low surface tension.
	Propyl acetate		0.889	101.0	13		2.3	17.6	24.3		0.78	No	No		●	●	●	●	●	●	●	Urethane grade. FIFRA inert nonfood ingredient. Low MIR value.
	Isobutyl acetate		0.870	115.5	20		1.4	16.8	23.7		0.62	No	No		●	●	●	●	●	●	●	Urethane grade. High resistivity. Low water solubility. Low surface tension. FIFRA inert nonfood ingredient.
	n-Propyl propionate		0.880	121.5	22		1.2	17.6	24.7		0.84	No	No	●	●	●	●	●	●	●	●	Possible toluene replacement. Urethane grade. Best odor profile among esters. Low MIR value. High electrical resistance.
	n-Butyl acetate		0.883	125.5	27		1.0	17.4	25.1		0.83	No	No		●	●	●	●	●	●	●	Urethane grade. Low water solubility. High resistivity. FIFRA inert nonfood ingredient. Available in electronic grade.
	n-Butyl propionate		0.876	147.0	36		0.5	17.2	25.3		0.84	No	No	●	●	●	●	●	●	●	●	Possible xylene replacement. Urethane grade. Best odor profile among esters. Low water solubility. High electrical resistance.
	Isobutyl isobutyrate (IBIB)		0.855	148.5	40		0.4	16.6	23.2		0.60	No	No	●	●	●	●	●	●	●	●	Low surface tension. Low density. Urethane grade. Low MIR value. FIFRA inert nonfood ingredient. High blush resistance. Limited solvent crazing on multiple substrates.
	Ethyl-3-ethoxypropionate (EEP)		0.950	168.5	58		0.12	18.6	27.0		3.58	No	No	●	●	●	●	●	●	●	●	Linear structure, fast film release. Excellent solvent activity. Urethane grade. High electrical resistivity. FIFRA inert nonfood ingredient. High autoignition temperature.
	2-EH acetate		0.873	202.0	71		0.04	16.8	25.8		0.66	No	No		●	●	●	●	●	●	●	Extremely slow evaporation rate. Low MIR value. Urethane grade. FIFRA inert nonfood ingredient. High electrical resistance. Good blush resistance.
	Ethylene glycol diacetate		1.107	190.0	58		0.02	19.4	33.7		0.66	No	No		●	●	●	●	●	●	●	Slow evaporation rate. Low MIR value. High blush resistance.

Solvents

(continued)

		Physical properties	Specific gravity @ 20°C	Boiling point (°C)	Flash point (°C)	Performance properties	Evaporation rate (nBA = 1.0)	Total Hansen solubility parameter	Surface tension (dynes/cm)	Regulatory information	MIR value (gm O_3/gm VOC)	HAP list CAA Tittle III	Prop 65	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Ketones	Methyl isopropyl ketone (MIPK)		0.805	94.2	–17		2.9	17.4	—		1.65	No	No	•	•	•	•	•	•	•	•	Excellent solvent activity. Medium evaporation rate.
	Methyl propyl ketone (MPK)		0.807	103.0	8		2.3	18.2	26.6		2.81	No	No	•	•	•	•	•	•	•	•	Active medium evaporating urethane-grade solvent with high solvency and low density. Meets Boeing specification. FIFRA inert nonfood ingredient.
	Methyl propyl ketone (MPK) UHP		0.807	103.0	8		2.3	18.2	26.6		2.81	No	No	•	•	•	•	•	•	•	•	Active medium evaporating urethane-grade solvent with high solvency and low density. Meets Boeing specification. FIFRA inert nonfood ingredient.
	Methyl isobutyl ketone (MIBK)		0.802	115.5	16		1.6	17.0	23.6		3.88	Yes	Yes	•	•	•	•	•	•	•	•	Excellent solvent activity. Low surface tension. FIFRA inert food ingredient (limitations).
	Methyl isoamyl ketone (MIAK)		0.813	144.5	36		0.5	17.0	25.8		2.41	No	No	•	•	•	•	•	•	•	•	Excellent solvent activity. Urethane grade. FIFRA inert nonfood ingredient.
	Methyl amyl ketone (MAK)		0.818	150.0	39		0.4	17.6	26.1		3.36	No	No	•	•	•	•	•	•	•	•	Excellent solvent activity. Urethane grade. Available in electronic grade. FIFRA inert food ingredient (limitations). Flash point above 100°F.
	Diisobutyl ketone (DIBK)		0.811	170.0	49		0.2	16.4	24.6		2.68	No	No	•	•	•	•	•	•	•	•	FIFRA inert nonfood ingredient. Low surface tension. High blush resistance. Low water solubility.
	Eastman C-11 ketones		0.840	220.0	84		0.02	16.8	27.5		—	No	No	•	•	•	•	•	•	•	•	Good flow and leveling in high-bake and coil applied coatings. High flash point. Low water solubility.

Solvents

(continued)

		Physical properties	Specific gravity @ 20°C	Boiling point (°C)	Flash point (°C)	Performance properties	Evaporation rate (nBA = 1.0)	Total Hansen solubility parameter	Surface tension (dynes/cm)	Regulatory information	MIR value (gm O_3/gm VOC)	HAP list CAA Tittle III	Prop 65	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Glycol ethers	Propylene glycol methyl ether (PM solvent)		0.923	120.0	33		0.7	20.5	28.3		2.44	No	No	●	●	●	●	●	●	●	●	Complete water miscibility. FIFRA inert food ingredient (limitations).
	Ethylene glycol propyl ether (EP solvent)		0.913	151.5	49		0.2	22.7	27.9		3.30	Yes	No	●	●	●	●	●	●	●	●	Complete water miscibility. Excellent coupling efficiency. Low odor. High blush resistance. Available in electronic grade. FIFRA inert nonfood ingredient.
	Ethylene glycol butyl ether (EB solvent)		0.902	171.0	62		0.09	20.9	26.6		2.90	No	No	●	●	●	●	●	●	●	●	Complete water miscibility, Excellent coupling efficiency. Available in electronic grade. FIFRA inert food ingredient (limitations).
	Diethylene glycol ethyl ether (DE solvent)		0.990	201.0	91		0.02	21.9	32.2		3.26	Yes	No	●	●	●	●	●	●	●	●	Complete water miscibility, LVP-VOC. Low odor. Good coupling efficiency. FIFRA inert food ingredient (limitations).
	Diethylene glycol propyl ether (DP solvent)		0.967	215.0	93		0.010	20.9	32.3		2.85	Yes	No	●	●	●	●	●	●	●	●	Complete water miscibility. LVP-VOC. Low odor. High blush resistance. Good coupling efficiency.
	Diethylene glycol butyl ether (DB solvent)		0.955	231.0	111		0.003	20.5	30.0		2.39	Yes	No	●	●	●	●	●	●	●	●	Complete water miscibility. LVP-VOC. Available in electronic grade. FIFRA inert food ingredient (limitations).
Glycol ether esters	Propylene glycol methyl ether acetate (PM acetate)		0.970	145	46		0.4	19.2	26.4		1.70	No	No		●	●	●	●	●	●	●	High solvent activity. Urethane grade. Available in electronic grade.
	Ethylene glycol butyl ether acetate (EB acetate)		0.941	190	71		0.03	18.2	30.3		1.62	Yes	No		●	●	●	●	●	●	●	High solvent activity. High boiling point. Urethane grade. FIFRA inert nonfood ingredient.
	Diethylene glycol ethyl ether acetate (DE acetate)		1.012	218	107		0.008	19.2	31.7		1.48	Yes	No		●	●	●	●	●	●	●	High solvent activity. Slow evaporation rate. High blush resistance. Urethane grade. LVP-VOC.
	Diethylene glycol butyl ether acetate (DB acetate)		0.980	243	105		0.002	18.4	30.0		1.38	Yes	No		●	●	●	●	●	●	●	High solvent activity. Slow evaporation rate. High blush resistance. LVP-VOC.

Solvents

(continued)

		Physical properties	Specific gravity @ 20°C	Boiling point (°C)	Flash point (°C)	Performance properties	Evaporation rate (nBA = 1.0)	Total Hansen solubility parameter	Surface tension (dynes/cm)	Regulatory information	MIR value (gm O_3/gm VOC)	HAP list CAA Tittle III	Prop 65	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Alcohols	*n*-Propyl alcohol		0.804	97.0	23		1.0	24.6	23.8		2.50	No	No	●	●	●	●	●	●	●	●	Good solvent activity. Complete water miscibility. Low surface tension. FIFRA inert food ingredient (limitations).
	Isobutyl alcohol		0.803	107.0	29		0.6	22.7	22.8		2.51	No	No	●	●	●	●	●	●	●	●	Low surface tension. Low density.
	n-Butyl alcohol		0.811	118.0	36		0.5	23.1	24.6		2.88	No	No	●	●	●	●	●	●	●	●	Low density. FIFRA inert food ingredient (limitations).
	Methyl amyl carbinol		0.819	159.5	66		0.06	20.6	25.6		—	No	No	●	●	●	●	●	●	●	●	Limited water solubility.
	2-Ethylhexyl alcohol		0.833	184.0	73		0.01	20.3	28.7		2.00	No	No	●	●	●	●	●	●	●	●	Limited water solubility. LVP-VOC. High electrical resistivity. FIFRA inert food ingredient (limitations).
	Eastman Omnia™ high-performance solvent		0.971	218.0	96		0.01	20.7	25.7		—	No	No	●	●	●	●	●	●	●	●	Excellent safety profile. Limited water solubility. LVP-VOC.
Nitrogen-containing	Dimethylacetamide (DMAc)		0.943	166.0	64		0.7	22.7	33.8		—	—	Yes	●	●	●	●		●	●	●	Dipolar aprotic solvent used for many organic reactions and industrial applications. Versatile solvent due to its high boiling point and good thermal and chemical stability.
	Dimethylformamide (DMF)		0.951	153.0	58		0.2	24.8	35.2		—	No	Yes	●	●	●	●	●	●	●		Aprotic solvent with exceptional solvency, high dielectric constant, high miscibility in water, and low volatility.
	n-Methyl-2-pyrrolidone (NMP)		1.027	202.0	91		0.04	22.9	40.7		2.41	No	No	●	●	●	●		●	●	●	Excellent solvent activity. Polar aprotic solvent. FIFRA inert food ingredient (limitations).
	n-Ethylpyrrolidone (NEP)		0.997	212.0	91		0.02	22.7	69.0		—	No	No	●	●	●	●	●	●	●		Good solvent activity. Polar aprotic solvent.
	Eastman TamiSolve™ NxG dipolar aprotic solvent		0.960	241.0	108		0.001	20.5	33.8		—	No	No	●	●	●	●	●	●	●	●	Dipolar aprotic solvent with good solvency for a wide range of compounds. High chemical and thermal stability.

Neutralizing amines

	Molecular wt	Density (20°C g/mL)	pK_a	Soluble in water	Vapor pressure (20°C)	Boiling point (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman Vantex™-T neutralizing amine additive	161.3	0.98	8.9	Completely	< 0.01	283	•				•				A coalescent neutralization amine additive that allows paint manufacturers to formulate high quality, low-VOC paints with virtually no amine odor. Has a very low vapor pressure with virtually no odor and is not considered a VOC by calculation or measurement. It can be used as a replacement for current paint neutralization systems as well as a highly effective coalescing aid, providing for the reduction or complete elimination of coalescing solvents.
Eastman Advantex™ neutralizing amine additive	117.2	0.89	10	Completely	0.14	199	•								A neutralizing amine additive for coatings, this product not only provides excellent buffering capacity but also improves the performance of paint through enhanced pigment dispersion properties.

Specialty additives

	Active content (%)	Density (g/cm³)	Viscosity (cP)	pH	Appearance	Water (%)	VOC (%)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman Optifilm™ additive OT1200	69	1.08	8500	8.3	Hazy	28	< 1	•				•				Uniquely improves the application properties of paint through improved workability and longer open time over a range of application conditions. A low-VOC additive that does not negatively affect other key paint properties such as water resistance, wet adhesion, block resistance, and stability. Because the impact of OT1200 is in the early stages of film formation, it will not affect dry time or recoat time of the paint. It can be substituted for volatile glycols, giving a substantial reduction in the VOC content while improving the application feel and the workability of the paint.

Specialty additives

	Evaporation rate (*n*-BuOAc = 1)	Color (Pt-Co) (max.)	Specific gravity (25°C)	Acidity as acetic acid (max. wt%)	Viscosity (mPa•s)	Boiling range (°C)	Freezing point (°C)	Flash point (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
SAIB-90 (sucrose acetate isobutyrate)	—	200	1.146	0.20 (acid No.)	100,000 (30°C)	—	—	260 (COC)		•		•	•				SAIB is a stable liquid that is soluble in most solvents. It has a light color as well as good thermal, hydrolytic, and color stability. Although SAIB is a very viscous liquid, it has the unique characteristic of changing viscosity abruptly with the addition of solvent or increasing temperature. SAIB-90 is a low-viscosity solution of 90% by weight SAIB and 10% denatured ethyl alcohol.
SAIB-90EA	—	200	1.100	0.20 (acid No.)	770 (25°C)	—	—	18 (TTC)		•	•	•	•				SAIB is a stable liquid that is soluble in most solvents. It has a light color and good thermal stability. It also has good color stability to heat and UV light. Hydrolytic stability is also excellent. Although SAIB is a very viscous liquid, it has the unique characteristic of changing viscosity abruptly with the addition of solvent or an increase in temperature. SAIB-90EA is a low-viscosity solution of 90% by weight SAIB and 10% ethyl acetate.
SAIB-100	—	200	1.100	0.20 (acid No.)	935 (25°C)	—	—	91 (COC)		•	•	•	•				It is an odorless and tasteless, thermally stable, viscous liquid. It has very light color (less than 1 on the Gardner color scale). It is produced by the controlled esterification of sucrose, a natural sugar, with acetic and isobutyric anhydrides. The electrical properties of Eastman SAIB are equal to or better than those of many widely used plasticizers, and it possesses an especially high volume resistivity. It also has good thermal hydrolytic stability, making it useful in surface coatings and electrical insulation.

Coalescents

	Evaporation rate (*n*-BuOAc = 1)	Color (Pt-Co) (max.)	Specific gravity (25°C)	Acidity as acetic acid (max. wt%)	Viscosity (mPa•s)	Boiling range (°C)	Freezing point (°C)	Flash point (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman Texanol™ ester alcohol	0.002	10	0.95[a]	0.05	—	254[b]	–50	120 (COC)	•	•	•	•	•	•	•		Provides the highest level of film integrity at low levels of coalescent. Texanol is suitable for all types of latex paints and maintains good performance regardless of varying weather conditions and substrate porosity. Not classified as a VOC per EU Directive 2004/42/EC and EU Solvent Emissions Directive. Texanol is considered a VOC in the U.S.
Eastman Optifilm™ enhancer 300	0.00077	30	0.945[a]	0.05[c]	—	281[b]	–70	143 (COC)	•	•	•	•	•	•	•		An efficient, low-odor coalescent for latex paints. Its broad compatibility, easy incorporation, and excellent hydrolytic stability allow its use in a wide range of latex types. Appropriate for many architectural applications, it is particularly suited for low-odor flat and low-sheen wall paints. Reduces formulated cost by allowing substantial reductions in associative thickeners. Greater than 25% reduction in associative thickener levels can be obtained without compromising rheology characteristics. It is not classified as a VOC per EU Directive 2004/42/EC and EU Solvent Emissions Directive. However, it is considered a VOC in the U.S.
Eastman Optifilm™ enhancer 400	0.000017	100 max.	0.967	—	15.8 cP	374–381	–50	199	•	•	•	•	•	•	•		A non-VOC, very low-odor coalescent that is compatible with a variety of latex types. It is an efficient coalescent that aids in the development of latex paints that have a good balance of performance properties. Delivers excellent film integrity, touch-up properties, and scrub resistance, even at the lowest VOC content. Paints prepared with Optifilm 400 have also demonstrated good exterior durability after long-term exposure. Does not migrate to the surface like other low-VOC coalescents. This product is non-phthalate and is not listed on HAP or SARA 313.
EEH (ethylene glycol 2-ethylhexyl ether) solvent	0.003	10	0.882	0.02	7 cP	235–275	< –45	102	•	•	•	•					Primarily used in performance specialty coatings applications. It offers an excellent balance of performance properties when used as a coalescent in architectural and industrial maintenance coatings. EEH has low water miscibility, low surface tension, good hydrolytic stability, and high electrical resistance. In electrodeposition primers, EEH reduces volatilization from dip tanks and provides good flow and leveling of the coating in the baking oven. It is not an HAP or listed on SARA 313.

[a] *20°C* [b] *Boiling point* [c] *Acidity as propionic acid (isobutyric)*

Coalescents

(continued)

	Evaporation rate (*n*-BuOAc = 1)	Color (Pt-Co) (max.)	Specific gravity (25°C)	Acidity as acetic acid (max. wt%)	Viscosity (mPa•s)	Boiling range (°C)	Freezing point (°C)	Flash point (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman Velate™ 375 coalescent	< 0.001	150	1.150	—	93	> 350[b]	< 61	—	•	•	•			•			A non-phthalate, low-VOC coalescent for waterborne coating applications. This product is a very good alternative to conventional coalescents for formulating paints with very low VOC content without sacrificing surface appearance and durability. Its combination of efficiency and extremely low volatility makes it useful as a plasticizer in other applications, such as adhesives and caulks.
Eastman Velate™ 368 coalescent	< 0.001	40	0.962[a]	—	20	296.5[b]	< –98	162	•	•	•			•			A low-odor and low-viscosity coalescent. By virtue of having lower odor than most coalescents, paints formulated with Velate 368 have minimal or no odor in freshly painted rooms. The principal use is as a coalescent for trade sales latex paints.
Benzoflex™ 9-88 plasticizer	—	80	1.12	0.1	105	347[b]	–30	182	•	•	•			•			A high-solvating plasticizer that has been used for many years in a wide variety of polymer systems and applications. Its diverse uses include resilient flooring, adhesives, artificial leather cloth, and caulk. It can be used in both water-based and solvent-based coatings.
Benzoflex™ 50 plasticizer	—	80	1.15	0.1	78	370[b]	< 16	192	•	•	•			•			Primarily known for its exceptional performance in polyvinyl acetate and water-based adhesives. It can be used in both water-based and solvent-based coatings.
DOM plasticizer	—	50	0.944	0.01	15	365[b]	–60	185	•	•	•			•			A comonomer normally used in polymerization with vinyl acetate, vinyl chloride, styrene, and derivatives of acrylic and methacrylic acids. It's used as a specialty plasticizer and can be used in applications such as latex paints and textiles.

[a] *20°C* [b] *Boiling point*

Adhesion promoters

		Average nonvolatile content (%)	Solvent	Typical chlorine content (wt%)	Color (Gardner) (max.)	Viscosity (mPa•s)	Typical pH	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Solvent-based	**Eastman CP 153-2 25% xylene**	25	Xylene	23.0	15	—	—		•		•	•			•	A 25% solution of a chlorinated polyolefin in xylene. It is 21–25 wt% chlorine and has a Gardner color value of 12–15. Recommended as an adhesion-promoting primer for untreated polyethylene-based substrates.
	Eastman CP 164-1 100%	100	None	20.5	16	—	—		•		•				•	Has an 18–23 wt% chlorine content. It is soluble in toluene and xylene. The limited solubility of CP 164-1 increases the resistance of the primer coat to redissolve during topcoat application. It was developed to improve not only initial adhesion but also adhesion after exposure to humidity and gasoline on TPO and PP-based substrates.
	Eastman CP 343-1[a] 100%	100	None	20.5	—	—	—		•		•	•			•	Supplied as a white powder and soluble in both toluene and xylene. It is 18–23 wt% chlorine. Good resistance to high temperatures. Because of its limited solubility, solutions of CP 343-1 may become hazy, partially precipitate from solution, or gel with exposure to low temperatures. Should any of the above conditions occur, warming the contents to approximately 38°–49°C with mild agitation will generally return the product to its original condition. Care should be taken in handling or mixing nonpolar solvents such as xylene and toluene.
	Eastman CP 343-3 25% xylene	25	Xylene	29.0	7	—	—		•		•	•			•	Higher chlorine content than CP 343-1 gives improved compatibility with co-resins. Recommended as stir-in additive to promote adhesion to PP-based substrates.
	Eastman CP 343-3 50% xylene	50	Xylene	29.0	11	—	—		•		•	•			•	Higher chlorine content than CP 343-1 gives improved compatibility with co-resins. Recommended as stir-in additive to promote adhesion to PP-based substrates.
	Eastman CP 515-2 40% aromatic 100	40	Aromatic 100	29.0	7	—	—		•		•	•			•	Recommended as stir-in additive to promote adhesion to PP and other difficult-to-coat substrates. Although CP 515-2 shows borderline compatibility with some resins, this is not a problem because of the small amount of CP 515-2 usually added to a coating or ink. CP 515-2 has excellent adhesion to polypropylene and good to excellent adhesion to many other substrates. Not only will CP 515-2 adhere to a variety of substrates, but when added to coatings and inks, it improves their adhesion to these substrates.

[a]Eastman CP 343-1 comes in a variety of solid levels.

Adhesion promoters

(continued)

		Average nonvolatile content (%)	Solvent	Typical chlorine content (wt%)	Color (Gardner) (max.)	Viscosity (mPa•s)	Typical pH	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Solvent-based	**Eastman CP 515-2 40% xylene**	40	Xylene	29.0	3	—	—		•		•	•			•	Recommended as stir-in additive to promote adhesion to PP and other difficult-to-coat substrates. Although CP 515-2 shows borderline compatibility with some resins, this is not a problem because of the small amount of CP 515-2 usually added to a coating or ink. CP 515-2 has excellent adhesion to polypropylene and good to excellent adhesion to many other substrates. Not only will CP 515-2 adhere to a variety of substrates, but when added to coatings and inks, it improves their adhesion to these substrates.
	Eastman CP 730-1 20% aromatic 100 or xylene	20	Aromatic 100 or xylene	22.5	7	—	—		•		•	•			•	Designed to be the active component in adhesion promoter primers used to ensure adhesion of color coats and topcoats to polypropylene (PP) and thermoplastic olefin (TPS) plastics, CP 730-1 20% in aromatic 100 or xylene provides excellent adhesion properties for all typical base coat chemistries. Adhesion promoters built around CP 730-1 exhibit excellent gasoline and humidity resistance required for the newer, high-modulus TPOs being used today. It also has outstanding gasoline and gasohol resistance under melamine-cured systems.
	Eastman AP 550-1 25% aromatic 100 or xylene	25	Aromatic 100 or xylene	—	7	—	—		•		•	•				Eastman's second-generation nonchlorinated product for adhesion to TPS and PP. Nonchlorinated systems are known to demonstrate excellent performance under 2-component (2K) urethane coatings, but often their application is limited to 2Ks. AP 550-1 expands nonchlorinated performance to applications under many melamine-cured systems. Due to its lack of chlorine and chemical structure, AP 550-1 25% in aromatic 100 or xylene exhibits excellent gasoline resistance. Formulators should be able to get a boost in gasoline resistance performance by adding AP 550-1 to their current adhesion-promoter system. If the solution gels due to storage at low temperatures, it can be reliquefied by warming with agitation.

Adhesion promoters

(continued)

		Average nonvolatile content (%)	Solvent	Typical chlorine content (wt%)	Color (Gardner) (max.)	Viscosity (mPa•s)	Typical pH	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Water-based	**Eastman CP 310W**	30	Water	20.5	—	10	9.5		•		•	•			•	A water dispersion of a chlorinated polyolefin. It contains ammonia as the neutralizing amine. The faster-evaporating ammonia in CP 310W makes it more useful in adhesion-promoting primers that are air dried prior to application of a topcoat. CP 310W is also APEO free.
	Eastman CP 347W	25	Water	20.5	—	10	9.5		•		•	•			•	A water dispersion of a chlorinated polyolefin. It contains 2-amino-2-methyl-1-propanol as the neutralizing amine along with 2 wt% ethylene glycol, making it more compatible with other waterborne resins and therefore more useful as an additive. CP 347W is compatible with many amine-neutralizable solution resins.
	Eastman CP 349W	26	Water	20.5	—	10	9.5		•		•	•			•	A water dispersion of a chlorinated polyolefin. It contains 2-amino-2-methyl-1-propanol as the neutralizing amine along with 5 wt% ethylene glycol, making it more compatible with other waterborne resins and therefore more useful as an additive.
	Eastman CP 377W	24	None	20.5	Tan	10	9.5		•		•	•			•	A water dispersion of a chlorinated polyolefin containing an APEO-free surfactant. It contains 2-amino-2-methyl-1-propanol as the neutralizing amine along with 2 wt% ethylene glycol, making it more compatible with other waterborne resins and therefore more useful as an additive. CP 377W is compatible with many amine-neutralizable solution resins.
	Eastman Advantis™ 510W adhesion promoter	24	Water	—	Off-white milky liquid	< 75 cP	8				•	•				Eastman's next-generation waterborne product for adhesion to thermoplastic polyolefin-based plastics (TPO, PP). Advantis 510W is chlorine free and APEO free. Primary application is a blend-in resin in waterborne primers and waterborne base coats for automotive bumper applications. Advantis 510W can also be used as a wash primer and is suitable as an adhesion promoter for applications beyond automotive. It provides excellent adhesion on non-flame-treated EPDM rubber-modified polypropylene substrates.
100% Solids	**Eastman CP 730-1 100% solids**	20	None	22.5	7	—	—		•		•	•			•	Supplied in powder form for dilution in xylene, toluene, or aromatic 100. Designed to be the active component in adhesion promoter primers used to ensure adhesion of color coats and topcoats to polypropylene (PP) and thermoplastic olefin (TPS) plastics, CP 730-1 100% solids provides excellent adhesion properties for all typical base coat chemistries. Adhesion promoters built around CP 730-1 100% solids exhibit excellent gasoline and humidity resistance required for newer, high-modulus TPOs being used today. It also has outstanding gasoline and gasohol resistance under melamine-cured systems.

Notes

Notes

For more information on all Eastman products for coating and ink applications, visit **eastman.com** or contact your Eastman technical representative or your authorized Eastman distributor.

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