

**EASTMAN**

**Specialty additives and solvents**  
for coatings formulations

# Contents

Overview ..... 3  
Market segments ..... 4

## Specialty products

Cellulose acetate..... 5  
Cellulose acetate butyrate..... 6  
Cellulose acetate propionate..... 7  
Performance additives..... 8  
Adhesion promoters ..... 9  
Resins ..... 12  
Coalescents ..... 16  
Specialty additives ..... 18  
High-performance solvents..... 21

Find out more about Eastman products at [www.eastman.com/coatings](http://www.eastman.com/coatings).



# Overview

## Eastman coatings: a unique portfolio of world-class specialty additives

Eastman is committed to delivering innovative solutions for coatings applications. For more than 70 years, we have been a leading provider of high quality raw materials and services for the global paint and coatings industry.

Today, we offer a unique portfolio of specialty additives such as cellulose esters and adhesion promoters, VOC-compliant coalescents such as Eastman Texanol™ ester alcohol and Eastman Optifilm™ enhancer 300 and 400, sulfopolyester dispersions, and specialty solvents such as Eastman ketones and EEP.

We work with our customers to meet the ever-changing regulatory climate as we move toward a greener tomorrow, helping them make good paint based on sound chemistry. These products are suitable for use in conventional, high-solids, and waterborne coatings in architectural, transportation, and industrial applications.

Eastman has an in-depth understanding of the coatings industry and believes in using technology-based innovation to give you the options you need to balance performance and regulatory compliance.

As a global company, Eastman is able to deliver a consistent, reliable supply of our wide-ranging product offerings around the world. Plus, our technology support network provides industry experience and formulation expertise when and where you need it.

# Market segments



## Architectural

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 having 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 (including coils)

General industrial refers to factory-applied coatings normally dried by forced evaporation of solvents in curing ovens. Most products are coated postmanufacture and 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 serving the industrial and decorative wood markets in applications such as furniture, flooring, fixtures, and window frames



## Transportation

Transportation coatings include automotive OEM, automotive refinish, and automotive plastic parts as well as automotive interior applications. This range of applications can be factory or field applied.



## 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 electronics, 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.



## Protective and marine

Protective and marine includes all high-performance protective coatings which are vital for protecting 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.



## 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.



## Consumer electronics

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

## Cellulose acetate

	Viscosity (seconds/ poise)	Acetyl content (%)	Combined acetic acid content (%)	Hydroxyl content (%)	Melting range (°C)	T <sub>g</sub> (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman CA-394-60LF	60/228.0	39.5	55.0	4.0	240–260	186		•							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	3/11.4	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-398-6	6/22.8	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	30/114.0	39.7	55.4	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 acetate butyrate

	Viscosity (seconds/ poise)	Acetyl content (%)	Butyryl content (%)	Hydroxyl content (%)	Melting range (°C)	T <sub>g</sub> (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman CAB-171-15	15.0/57.0	29.5	17.0	1.5	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	1.3	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-381-0.5	0.5/1.9	13.5	38.0	1.3	155–165	130		•	•	•	•				Higher viscosity and increased toughness. Good balance of compatibility and viscosity.
Eastman CAB-381-2	2.0/7.6	13.5	38.0	1.3	171–184	133		•	•	•	•				Higher viscosity and increased toughness with excellent surface hardness. Used in automotive base coats for metallic flake control.
Eastman CAB-381-2 BP	2.2/8.4	14.5	35.5	1.8	175–185	130		•	•	•					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 BP	16.0/60.8	15.5	35.5	0.8	185–195	128		•	•	•					Lower-hydroxyl-content version of CAB 381-20
Eastman CAB-500-5	5.0/19.0	4.0	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	1.9/7.22	3.0	50.0	1.7	135–150	115		•	•	•	•				Higher butyryl content offers improved compatibility.
Eastman CAB-551-0.01	0.01/0.038	2.0	53.0	1.5	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-551-0.2	0.2/0.79	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-553-0.4	0.3/1.14	2.0	46.0	4.8	150–160	136		•	•	•	•			•	Alcohol solubility with excellent compatibility and pigment-wetting characteristics. High hydroxyl content allows a high level of cross-linking.

## Cellulose acetate propionate

	Viscosity (seconds/ poise)	Acetyl content (%)	Combined acetic acid content (%)	Hydroxyl content (%)	Melting range (°C)	T <sub>g</sub> (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman CAP-482-0.5	0.4/1.52	2.5	45.0	2.6	188–210	142			•		•				Low odor. Excellent grease barrier properties. Excellent solvent release.
Eastman CAP-482-20	20.0/76.0	1.3	48.0	1.7	188–210	147			•						Higher-viscosity, low-odor resin
Eastman CAP-504-0.2	0.2/0.76	0.6	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.

## Performance additives

	Viscosity (seconds/poise)	Acetyl content (%)	Acid number	Hydroxyl content (%)	Melting range (°C)	T <sub>g</sub> (°C)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman Solus™ 2100 performance additive	—	—	—	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 coatings 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™ 2300 performance additive	—	—	—	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 coatings systems. Solus 2300 was developed for higher-solids metallic base-coat systems, and when used in combination with an antissettling 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	—	—	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 which 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 coatings. 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.



## 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
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, 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 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 <sup>a</sup> 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.

<sup>a</sup>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
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.
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% xylene	20	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 (TPO) plastics. CP 730-1 provides excellent adhesion properties for all typical base coat chemistries. Adhesion promoters built around CP 730-1 exhibit excellent gasoline, gasohol, and humidity resistance required for the newer, high-modulus TPOs being used today. Also available at 20% weight solids in aromatic 100 or in xylene.
Eastman CP 730-1 20% aromatic 100	20	Aromatic 100	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 (TPO) plastics. CP 730-1 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. CP 730-1 is available at 20% weight solids in aromatic 100 or in xylene.

## 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
Eastman AP 550-1 25% aromatic 100	25	Aromatic 100	N/A	7	—	—	●			●	●				Eastman's second-generation nonchlorinated product for adhesion to TPO and PP. Nonchlorinated systems are known to demonstrate excellent performance under 2-part urethane (2K) 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 to its chemical structure, AP 550-1 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. Available at 25% weight solids in aromatic 100 or xylene. If the solution gels due to storage at low temperatures, it can be reliquefied by warming with agitation.
Eastman AP 550-1 25% xylene	25	Xylene	N/A	7	—	—	●			●	●				Eastman's second-generation nonchlorinated product for adhesion to TPO and PP. Nonchlorinated systems are known to demonstrate excellent performance under 2-part urethane (2K) 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 to its chemical structure, AP 550-1 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. Available at 25% weight solids in aromatic 100 or xylene. If the solution gels due to storage at low temperatures, it can be reliquefied by warming with agitation.
Eastman Advantis™ 510W adhesion promoter	24	Water	N/A	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.

# 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% <i>n</i> -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 <sub>g</sub> 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	T <sub>g</sub> (°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	—	—	—	—	—					•				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	10,000	< 10	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 <sub>g</sub> (glass transition temperature) of about 55°C. The "S" indicates it's supplied as solid pellets.
Eastman AQ™ 48 ultra polymer	100	10,000	< 10	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	10,000	< 10	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 <sub>g</sub> (°C) (by DSC T <sub>g</sub> )	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	72–78	70–100	200–400	18.5–20.5	0–1.5	80	●	●	●		●			●	A thermoplastic, polyvinyl butyral resin which 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	72–78	170–250	1600–2500	17.5–20.0	0–2.5	80	●	●	●				●		A thermoplastic, polyvinyl butyral resin which 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	72–78	120–150	800–1300	17.5–20.0	0–2.5	80		●							A thermoplastic, polyvinyl butyral resin which 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	62–72	90–120	200–450	11.5–13.5	0–2.5	88	●	●		●			●	●	A thermoplastic, polyvinyl butyral resin which 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	62–72	50–80	75–200	11.0–13.5	0–2.5	88	●	●	●	●	●			●	A thermoplastic, polyvinyl butyral resin which 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	72–78	40–70	75–200	18.0–20.0	0–2.5	80	●	●	●	●	●		●	●	A thermoplastic, polyvinyl butyral resin which 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 <sub>g</sub> (°C) (by DSC T <sub>g</sub> )	Solvent	Solids wt (%)	OH# (mg KOH/g)	Acid value (mg KOH/g)	Color (Alpha)	Architectural	General industrial	Factory-applied wood	Transportation	Ink	Protective marine	Metal packaging	Consumer electronics	Key features and benefits
Eastman Tetrashield™ protective resin systems	0–6	<i>n</i> -Butyl acetate	74–76	120–150	< 10	< 80		•		•					Ultrahigh-performance polyester resins for thermoset coating applications. Applicable for both 1K and 2K automotive and industrial coating systems. These polyester-based resins enable high-solid, low-VOC, solvent base-coating layers which have exceptional UV stability, flow and leveling, and scratch and chip resistance. Well suited for automotive clear coat layers, primers, and industrial topcoats across a range of outdoor applications. High solubility across a range of solvent types.

## Coalescents

	Evaporation rate <i>n</i> -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 <sup>a</sup>	0.05	—	254 <sup>b</sup>	-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 <sup>a</sup>	0.05 <sup>c</sup>	—	281 <sup>b</sup>	-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 a HAP or listed on SARA 313.

<sup>a</sup>20°C <sup>b</sup>Boiling point <sup>c</sup>Acidity as propionic acid (isobutyric)



## Coalescents (continued)

	Evaporation rate <i>n</i> -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	< 61	—	●	●	●			●			A non-phthalate, low-VOC coalescent for waterborne coatings 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 <sup>a</sup>	—	20	296.5 <sup>b</sup>	< -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	-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	< 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	-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.

<sup>a</sup>20°C <sup>b</sup>Boiling point

## Specialty additives

	Active content (%)	Density (g/cm <sup>3</sup> )	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 *(continued)*

	Evaporation rate <i>n</i> -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.

## Specialty additives (continued)

	Molecular wt	Density (20°C g/mL)	pK <sub>a</sub>	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.
Eastman TamiSolve™ NxG dipolar aprotic solvent	—	—	—	Completely	35	241	●	●							A high-boiling, dipolar aprotic solvent, it has a good solvency for a wide range of compounds and has a high chemical and thermal stability. It has an established performance in specialty polymer coatings (wire enamels and coated cooking gear), microelectronics manufacturing (photoresist stripper), coatings (PUDs), paint strippers and inks, chemical synthesis, and agrochemical formulations. In many applications, it can be used to replace NMP or NEP ( <i>N</i> -( <i>m</i> )ethylpyrrolidone) as well as other solvents like dimethyl sulfoxide (DMSO) and dipropylene glycol dimethyl ether (DMM). As opposed to NMP and NEP, TamiSolve NxG is not classified as developmental reprotoxic.

## High-performance solvents

	Evaporation rate <i>n</i> -BuOAc = 1	Color (Pt-Co) (max.)	Specific gravity (25°C)	Acidity as acetic acid (max. wt%)	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 ethyl 3-ethoxypropionate (EEP)	0.12	15	0.950	0.02	165–172	< –50	58	●	●	●			●	●		EEP has high electrical resistivity, making it useful for adjusting ER for electrostatically sprayed coatings.
Ethylene glycol monopropyl ether (EP)	0.20	10	0.913	0.01	148.5–153.5	< –90	49	●	●	●			●	●		A colorless, water-miscible solvent providing a slow evaporation rate, good viscosity control in waterborne resins, and high flash point. EP solvent has a milder, less detectable odor than most other glycol ethers, enhancing its use in coatings when mild odor is desirable. EP solvent is completely water miscible over a wide range of temperatures. It can also be used to develop customized aqueous cleaners.
Methyl <i>n</i> -amyl ketone (MAK)	0.40	10	0.818	0.02	147–154	–33	39	●	●	●			●	●		MAK, <i>n</i> -butyl propionate, and IBIB are suggested xylene replacements. Xylene and toluene are HAPs, and blends of the above Eastman solvents can be used to replace them to make a non-HAP blend. MAK has the advantage over MIAK of having a flashpoint above 100°F.
Eastman MIAK	0.50	10	0.813	0.01	141–148	–74	36	●	●	●			●	●		Has high solvent activity, slow evaporation rate, low density, low surface tension, and a high boiling point. These properties make MIAK a very good solvent for high-solids coatings. Because regulations limit the weight of solvent per gallon of coating, formulators favor the use of low-density solvents that help reduce the VOC content of a coating. MIAK is lower in density than ester, aromatic hydrocarbons, and glycol ether solvents with similar evaporation rates. The low density and high activity of MIAK are significant advantages when formulating low-viscosity, high-solids coatings. In addition, MIAK is useful as a polymerization solvent for high-solids acrylic resins.
Eastman MPK	2.30	10	0.810	0.01	101–105	–86	8	●	●	●	●		●	●		A medium-evaporating, urethane-grade solvent. It is an active solvent for most synthetic resins, including acrylics, polyesters, cellulotics, epoxies, vinyls, and alkyds. Its high solvency, low density, and medium evaporation rate make it attractive as a letdown solvent for high-solids resins used in formulating coatings with low VOC content. It is used in gravure printing inks and also provides excellent performance for a wide range of cleaning and surface preparation applications for the transportation industry.

## High-performance solvents (continued)

	Evaporation rate <i>n</i> -BuOAc = 1	Color (Pt-Co) (max.)	Specific gravity (25°C)	Acidity as acetic acid (max. wt%)	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 <i>n</i> -butyl propionate	0.50	10	0.876	0.01 <sup>a</sup>	145–149	–75	36	●	●	●	●	●	●			A non-HAP, slow-evaporating, and urethane-grade solvent with good solvent activity for most coating resins. In lacquers and ambient cure enamels, this solvent is used as a retarder solvent. Its slow evaporation rate allows for flow and leveling but does not prevent the quick rubbing and sanding of the lacquer. Many resins are let down in a solvent thinning tank to make handling, storing, and shipping easier. It's useful as a letdown solvent because of its low volatility, good solvent activity, and urethane-grade quality. Since it is not on the EPA's HAP list, it is a good choice for replacing xylene in coating applications such as high-solids thermoset enamels. It is also used as a processing solvent for high-solids acrylic resins and coatings applied via electrostatic spray equipment. MAK, <i>n</i> -butyl propionate, and IBIB are suggested xylene replacements.
Eastman isobutyl isobutyrate (IBIB)	0.40	15	0.855	0.01	145–152	–80	40	●	●	●		●	●			Retarder solvent that is used in nitrocellulose lacquers, coatings for plastic substrates, and high-solids coatings. It is a slow-evaporating solvent with good flow and leveling characteristics and good blush resistance. It is an economical, urethane-grade, active solvent for nitrocellulose. The low surface tension of IBIB is valuable in applications where improved wetting of the substrate is needed. With low water miscibility, it is an excellent retarder solvent for moisture-sensitive coatings such as 2K polyurethanes. It has high electrical resistance, which is helpful in adjusting the resistivity of coatings applied using electrostatic spray equipment. MAK, <i>n</i> -butyl propionate, and IBIB are suggested xylene replacements.
<i>n</i> -Propyl propionate	1.2	10	0.880	—	118.8–124	–76	22	●	●	●	●	●	●			<i>n</i> -Propyl propionate is a suggested toluene replacement.

<sup>a</sup>Acidity as propionic acid (isobutyric)

Notes

**EASTMAN**

The results of **insight**<sup>™</sup>

**Eastman Corporate Headquarters**

P.O. Box 431

Kingsport, TN 37662-5280 U.S.A.

U.S.A. and Canada, 800-EASTMAN (800-327-8626)

Other Locations, +(1) 423-229-2000

[www.eastman.com/locations](http://www.eastman.com/locations)

Although the information and recommendations set forth herein are presented in good faith, Eastman Chemical Company ("Eastman") and its subsidiaries make no representations or warranties as to the completeness or accuracy thereof. You must make your own determination of its suitability and completeness for your own use, for the protection of the environment, and for the health and safety of your employees and purchasers of your products. Nothing contained herein is to be construed as a recommendation to use any product, process, equipment, or formulation in conflict with any patent, and we make no representations or warranties, express or implied, that the use thereof will not infringe any patent. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND NOTHING HEREIN WAIVES ANY OF THE SELLER'S CONDITIONS OF SALE.

Safety Data Sheets providing safety precautions that should be observed when handling and storing our products are available online or by request. You should obtain and review available material safety information before handling our products. If any materials mentioned are not our products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed.

© 2017 Eastman. Eastman brands referenced herein are trademarks of Eastman or one of its subsidiaries or are being used under license. The ® symbol denotes registered trademark status in the U.S.; marks may also be registered internationally. Non-Eastman brands referenced herein are trademarks of their respective owners.