

# PRIMACOR\* 3440

## Copolymer

Melt Index:	10
wt % Comonomer:	9.7

PRIMACOR\* 3440 Copolymer resin is an ethylene acrylic acid copolymer suitable for extrusion coating and extrusion lamination applications.

PRIMACOR 3440 Copolymer exhibits:

- Excellent heat sealability and hot tack.
- Excellent adhesion to metallic, paper and PE substrates.

- Excellent toughness.
- Excellent stress crack resistance.
- Insensitivity to moisture.
- Designed specifically for high line speeds.

**Note:**

PRIMACOR 3440 Copolymer should comply with FDA regulation 177.1310 and with most European food contact regulations when used unmodified and processed according to good

manufacturing practices for food contact applications. Please contact your nearest office regarding food contact compliance statements. The purchaser remains responsible for determining whether the use complies with all relevant regulations.

**Applications:**

- Flexible packaging laminates.
- Liquid packaging laminates.

Physical Properties <sup>(1)</sup>	Unit	Test Method**	Values
Comonomer Content	wt %	Dow Method	9.7
Melt Index, 190 °C/2.16 kg	g/10 min	ISO 1133	10
Density	g/cm <sup>3</sup>	ISO 1183 (A)	0.938
Melting Point	°C	DSC	98
Vicat Softening Point	°C	ISO 306	76
Mechanical Properties <sup>(1)</sup>	Unit	Test Method**	Values
Hardness Shore D		ISO 868	58
Tensile Yield	MPa	ISO 527/2	7.9
Ultimate Tensile	MPa	ISO 527/2	18
Ultimate Elongation	%	ISO 527/2	600
Tensile Modulus, 2% Secant	MPa	ISO 527/2	120
Processing Performance <sup>(1)</sup>	Unit	Test Method**	Values
Recommended Processing Temperature	°C		260-290
Total Neck-In, at 100 m/min <sup>(2)</sup>	mm	Dow Method	66
Minimum Coating Weight <sup>(3)</sup>	g/m <sup>2</sup>	Dow Method	10
Coating Performance Properties <sup>(1)</sup>	Unit	Test Method**	Values
Water Vapour Transmission <sup>(4)</sup>	g/m <sup>2</sup> 24 h	DIN 53122/2	420
Minimum Heat Seal Temperature <sup>(2)</sup>	°C	Dow Method	<85

(\*\*) Specific test settings in accordance to Inter Laboratory Round Robin programs with method priorities for ISO/ASTM.

(1) Typical values, not to be construed as specifications limits.

(2) 25 g/m<sup>2</sup> coatings at 290 °C set temperature.

(3) At 290 °C set temperature.

(4) 38 °C, 90% R.H. (Divide by coating weight in g/m<sup>2</sup> to obtain actual WVTR).

-See "Handling Considerations" attached

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## Safety and Handling Considerations

### Safety Considerations

Material Safety Data Sheets for Dow ethylene acrylic acid copolymers are available from the Dow sales offices to help customers further satisfy their own safe handling and disposal needs. Such information should be requested from the supplier(s) of any product(s) prior to working with it (them). The comments that follow are pertinent only to the resins discussed, as supplied. Various additives and processing aids used in fabrication will have their own safe use profile and must be investigated separately.

### Health and Safety

Ethylene acrylic acid copolymers constitute no significant hazard in normal handling. For "Regulated" uses, such as food contact, your Dow sales representative can obtain compliance letters for specific polymers.

Normal good housekeeping practice should be followed. Workers should be protected from possibility of skin or eye contact with molten polymer. Safety glasses are suggested as a minimal precaution to prevent possible mechanical or thermal injury to the eyes. Thermal degradation during fabrication, while not a common occurrence, can release irritating fumes or vapours which could become harmful in large quantities. Thermal fabrication operations generate some smoke or fumes which contain aliphatic hydrocarbons plus acetic, propionic and acrylic acids. Such operations should be well ventilated and monitored for these acid vapours; workers should be assured of supply of fresh air. Workplace environments should be kept clean and free of dust.

### Combustibility

Ethylene acrylic acid copolymers will burn when supplied with adequate amounts of heat and oxygen. They should be handled and stored away from contact with direct flames and/or other ignition sources. In burning, these polymers contribute high heat and may generate a dense black smoke. Fires can be extinguished by conventional means with water fog preferred. In enclosed areas, fire fighters should be provided with self-contained breathing apparatus.

### Recycling

Ethylene acrylic acid copolymers can be recycled. Production rejects and/or conversion waste should preferably be recycled instead of being disposed of.

### Disposal

In disposal of any wastes, be certain all applicable national and local regulations are met. If these regulations are met, the following is applicable for the ethylene acrylic acid

copolymers as supplied. If fillers, processing aids or other materials have been added, their possible influence on handling and disposal should be judged separately.

Ethylene acrylic acid copolymers can be disposed of either by incineration or landfill. With properly controlled industrial, commercial or municipal incineration, particulate or gaseous discharge into the air can be maintained within allowable levels. Thermoplastic products, such as ethylene acrylic acid copolymers, have high heat values and should be incinerated only in units designed to handle high heats of combustion. In landfill, ethylene acrylic acid copolymers are inert, do not degrade quickly, form a strong and permanent soil base, and evolve virtually no gases or leachates known to pollute water resources.

### Handling

Ethylene acrylic acid copolymers are similar to polyethylene resins in most handling characteristics. Pellets of ethylene acrylic acid copolymers having comonomer content of less than 15% and melt index of less than 50 are usually free flowing. They can be airveyed without modification to conventional plastics bulk handling systems. Higher comonomer content and melt index ethylene acrylic acid copolymers have lower softening temperatures and may require special handling and conveying techniques. For detailed bulk handling procedures, contact the Dow sales office.

### Storage

Ethylene acrylic acid copolymers pellets should be stored using the same practices as for polyethylene pellets. Closed systems are preferred over open systems to prevent dirt, water, and other contamination.

### Shipment

Shipments of ethylene acrylic acid copolymers are made in bulk hopper cars (approx. 22 MT) and cartons (approx. 0.5 MT). Bags (25 kg) may be made available (by special arrangement) for small sample quantities. Reasonable care should be taken to protect the product from moisture, and reasonable cleanliness should be maintained in loading-unloading-handling equipment.

### General Processing Information

Ethylene acrylic acid copolymers have a mildly corrosive nature because of the carboxyl groups present on the polymer molecules. Certain precautions should be taken during melt processing of these polymers to prevent undue equipment wear and to minimise the generation of gels:

- fabrication temperatures should be kept as low as practical to process the polymer and achieve the properties desired in the end product. (With copolymers of lower comonomer content, equipment can be run hotter without increasing likelihood of corrosion of gels). For detailed processing procedures contact the Dow sales office.
- when a run with ethylene acrylic acid copolymers is complete, fabrication equipment should be purged with LDPE or HDPE homopolymer until no ethylene acrylic acid copolymer remains in the machine.
- under normal circumstances, the machine should not be shut down with ethylene acrylic acid copolymer still in it. The resin remaining in the extruder will crosslink and cause excessive gel formation during subsequent start-up. At melt temperatures up to 180 °C and at comonomer levels up to 10%, corrosion rate of ethylene acrylic acid on flame-hardened steel equipment is relatively low. However, nickel or chrome plating of exposed metal surfaces is recommended for added protection. When ethylene acrylic acid copolymers are extruded at melt temperatures above 180 °C, nickel or chrome plating of the die lips and flow channels is necessary to prevent undue corrosion and wear on the equipment.

### Product Stewardship

The Dow Chemical Company has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the health and environmental information on our products and take appropriate steps to protect employee and public health, and our environment. Our Product Stewardship programme rests with each and every individual involved with Dow products – from the initial concept and research, to manufacture, use, sale and disposal of each product.

### Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to help ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel will assist customers in dealing with ecological and product safety considerations. Dow product literature, including MSD sheets, should be consulted prior to use of Dow products. Your Dow Plastics sales representative can arrange the proper contacts.

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