

**15A NCAC 02D .0944 MANUFACTURE OF POLYETHYLENE: POLYPROPYLENE AND POLYSTYRENE**

(a) For the purpose of this Rule, the following definitions shall apply:

- (1) "By-product and diluent recovery operation" means the process that separates the diluent from the by-product (atactic) and purifies and dries the diluent for recycle.
- (2) "Continuous mixer" means the process that mixes polymer with anti-oxidants.
- (3) "Decanter" means the process that separates the diluent/crude product slurry from the alcohol-water solution by decantation.
- (4) "Ethylene recycle treater" means the process that removes water and other impurities from the recovered ethylene.
- (5) "High-density polyethylene plants using liquid phase slurry processes" means plants that produce high-density polyethylene in which the product, polyethylene, is carried as a slurry in a continuous stream of process diluent, usually pentane or isobutane.
- (6) "Neutralizer" means the process that removes catalyst residue from the diluent/crude product slurry.
- (7) "Polypropylene plants using liquid phase process" means plants that produce polypropylene in which the product, polypropylene, is carried as a slurry in a continuous stream of process diluent, usually hexane.
- (8) "Polystyrene plants using continuous processes" means plants that produce polystyrene in which the product, polystyrene, is transferred in a continuous stream in a molten state.
- (9) "Product devolatilizer system" means the process that separates unreacted styrene monomer and by products from the polymer melt.
- (10) "Reactor" means the process in which the polymerization takes place.

(b) This Rule applies to:

- (1) polypropylene plants using liquid phase processes;
- (2) high-density polyethylene plants using liquid phase slurry processes; and
- (3) polystyrene plants using continuous processes.

(c) For polypropylene plants subject to this Rule, the emissions of volatile organic compounds shall be reduced by 98 percent by weight or to 20 ppm, whichever is less stringent, from:

- (1) reactor vents;
- (2) decanter vents;
- (3) neutralizer vents;
- (4) by-product and diluent recovery operation vents;
- (5) dryer vents; and
- (6) extrusion and pelletizing vents.

(d) For high-density polyethylene plants subject to this Rule, the emissions of volatile organic compounds shall be reduced by 98 percent by weight or to 20 ppm, whichever is less stringent, from:

- (1) ethylene recycle treater vents;
- (2) dryer vents; and
- (3) continuous mixer vents.

(e) For polystyrene plants subject to this Rule, the emissions of volatile organic compounds shall not exceed 0.24 pounds per ton of product from the product devolatilizer system.

(f) If flares are used to comply with this Rule, all of the following conditions shall be met:

- (1) visible emissions shall not exceed five minutes in any two-hour period;
- (2) a flame in the flare shall be present;
- (3) if the flame is steam-assisted or air-assisted, the net heating value shall be at least 300 Btu per standard cubic foot. If the flame is non-assisted, the net heating value shall be at least 200 Btu per standard cubic foot; and
- (4) if the flare is steam-assisted or non-assisted, the exit velocity shall be no more than 60 feet per second. If the flare is air-assisted, the exit velocity shall be no more than  $(8.706 + 0.7084 HT)$  feet per second, where HT is the net heating value.

A flare that meets the conditions given in Subparagraphs (1) through (4) of this Paragraph are presumed to achieve 98 percent destruction of volatile organic compounds by weight. If the owner or operator of the source chooses to use a flare that fails to meet one or more of these conditions, he or she shall demonstrate to the Director that the flare shall destroy at least 98 percent of the volatile organic compounds by weight. To determine if the specifications for the flare are being met, the owner or operator of a source using the flare to control volatile organic compound

emissions shall install, operate, and maintain necessary monitoring instruments and shall keep records as required by 15A NCAC 02D .0903.

*History Note:* Authority G.S. 143-215.3(a)(1); 143-215.107(a)(5);  
Eff. May 1, 1985;  
Readopted Eff. November 1, 2020;  
Amended Eff. October 1, 2022.