Chapter NR 280

PLASTICS AND SYNTHETICS

NR 280.01 Purpose. The purpose of this chapter is to establish effluent limitations, standards of performance, and pretreatment standards for discharges of process wastes from the synthetic resin manufacturing category of point sources and subcategories thereof.

Note: The authority for promulgation of this chapter is set forth in ch. NR 205.
History: Cr. Register, June, 1976, No. 246, eff. 7−1−76.

NR 280.02 Applicability. The effluent limitations, standards of performance, pretreatment standards and other provisions in this chapter are applicable to pollutants or pollutant properties in discharges of process waste resulting from the manufacture and associated processing of plastics and synthetics in the following subcategories:

(1) Polyvinyl chloride produced from vinyl chloride by:

(a) Suspension polymerization,

(b) Emulsion polymerization, and

(c) Bulk polymerization;

(2) Polyvinyl acetate produced by polymerization of vinyl acetate;

(3) Polystyrene produced from styrene by:

(a) The suspension polymerization process, and

(b) The bulk polymerization process;

(4) Polypropylene produced by the polymerization of propylene;

(5) Polyethylene produced from ethylene by:

(a) The polymerization process to produce low density polyethylene,

(b) The solvent process to produce high density polyethylene, and

(c) The polyform process to produce high density polyethylene;

(6) Cellophane produced by processing wood pulp;

(7) Rayon produced by processing wood pulp;

(8) ABS and SAN resins which are respectively acrylonitrile−butadiene−styrene and styrene−acrylonitrile resins produced by the polymerization reactions of acrylonitrile, butadiene and styrene;

(9) Polyester materials produced by the polymerization reaction of dihydric alcohol and terephthalic acid or dimethyl terephthalate to make:

(a) Polyester resin by batch processing,

(b) Polyester fiber by batch processing,

(c) Polyester resin and fiber by continuous processing, and

(d) Polyester resin and fiber by batch processing;

(10) Nylon 66 materials produced by the polymerization reaction of hexamethylenediamine and adipic acid to make:

(a) Nylon 66 resin,

(b) Nylon 66 fiber, and

(c) Nylon 66 resin and fiber;

(11) Nylon 6 materials produced by the polymerization reaction of caprolactam to make:

(a) Nylon 6 resin,

(b) Nylon 6 fiber, and

(c) Nylon 6 resin and fiber;

(12) Cellulose acetate materials produced by processing wood pulp with acetic acid and acetic anhydride to make:

(a) Cellulose acetate resin,

(b) Cellulose acetate fiber, and

(c) Cellulose acetate resin and fiber; and

(13) Acrylic resin and fiber produced by the polymerization reaction of acrylonitrile and the copolymerization of acrylonitrile and vinylidene chloride and/or vinyl chloride. (This subcategory is suspended until further notice.)

(14) Ethylene vinyl acetate copolymers produced by the reaction of vinyl acetate and ethylene;

(15) Polytetrafluoroethylene produced as granular and fine powder grades, including manufacture of monomer from precursor chlorodifluoromethane;

(16) Polypropylene fiber produced from polypropylene;

(17) Alkyds and unsaturated polyester resins;

(18) Cellulose nitrate produced by the reaction of fibrous cellulose and a mixture of sulfuric and nitric acids;

(19) Polyamide (Nylon 6/12);

(20) Polyester resins (thermoplastic) produced as saturated polyester resins based on poly (ethylene terphthalate) and poly (butylene terephthaltate); and

(21) Silicone;

(a) Fluids,

(b) Greases, emulsions, rubber, and resins, and

(c) Coupling agents.

History: Cr. Register, June, 1976, No. 246, eff. 7−1−76.

NR 280.03 Definitions. Definitions of terms and meanings of abbreviations are set forth in ch. NR 205.
History: Cr. Register, June, 1976, No. 246, eff. 7−1−76.

NR 280.04 Compliance with effluent limitations and standards. Discharge of pollutants from facilities subject to the provisions of this chapter may not exceed, as appropriate:

(1) By July 1, 1977 effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available;

(2) By July 1, 1983 effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable;

(3) Pretreatment standards for discharges to publicly owned treatment works;

(4) Standards of performance for new sources.

History: Cr. Register, June, 1976, No. 246, eff. 7−1−76; r. and recr. Register, August, 1983, No. 332, eff. 9−1−83.

NR 280.06 Application of effluent limitations and standards. (1) The effluent limitations and standards set forth in this chapter shall be used in accordance with this section to establish the quantity or quality of pollutants or pollutant proper-

ties which may be discharged by a point source subject to the provisions of this chapter, except as:

(a) They may be modified in accordance with subch. IV of ch. NR 220,

(b) They may be superseded by more stringent limitations and standards necessary to achieve water quality standards or meet other legal requirements, or

(c) They may be supplemented or superseded by standards or prohibitions for toxic pollutants or by additional limitations for other pollutants required to achieve water quality.

(2) The production basis for the application of the limitations and standards set forth in this chapter shall be the daily average of annual production in each subcategory subject to the provisions of this chapter.

(3) For a facility manufacturing silicones the total discharge limitations shall be determined:

(a) For facilities manufacturing fluids only from the limitations for subcategory (21) (a) in the appropriate of table 1, 2, or 3;

(b) For facilities manufacturing greases, emulsions, rubbers, and resins in addition to fluids from the sum of the limitations for subcategories (21) (a) and (21) (b) in table 1;

(c) For facilities manufacturing coupling agents in addition to the products of par. (b) from the sum of the limitations for subcategories (21)(a), (21)(b), and (21)(c) in table 1; and

(d) For facilities manufacturing greases, emulsions, rubbers, resins, and coupling agents in addition to fluids from the sum of the limitations for subcategories (21)(a) and (21)(b) in the appropriate of table 2 or table 3.

History: Cr. Register, June, 1976, No. 246, eff. 7−1−76; **correction in (1) (a) made under s. 13.92 (4) (b) 7, Stats., Register April 2018 No. 748.**

NR 280.10 Effluent limitations, best practicable treatment. The following effluent limitations for all or specific subcategories establish, except as provided in subch. IV of ch. NR 220, the quantity or quality of pollutants or pollutant properties which may be discharged by a facility subject to the provisions of this chapter after application to process wastes of the best practicable control technology currently available.

(1) The pH of all discharges shall be within the range of 6.0 to 9.0.

(2) The 30−day average and daily maximum limitations for BOD_5**,** suspended solids, COD and other parameters are set forth in table 1 in lbs/1,000 lbs or kg/1,000 of product.

History: Cr. Register, June, 1976, No. 246, eff. 7−1−76; **correction in (intro.) made under s. 13.92 (4) (b) 7, Stats., Register April 2018 No. 748**.

NR 280.11 Effluent limitations, best available treatment. The following effluent limitations for all or specific subcategories establish the quantity or quality of pollutants or pollutant properties which may be discharged by a facility subject to the provisions of this chapter after application to process wastes of the best available technology economically achievable.

(1) The pH of all discharges shall be within the range of 6.0 to 9.0.

(2) The 30−day average and daily maximum limitations for BOD_5, suspended solids, COD and other parameters are set forth in table 2 lbs/1,000 lbs or kg/1,000 kg of product.

History: Cr. Register, June, 1976, No. 246, eff. 7−1−76.

NR 280.12 Standards of performance. The following effluent limitations for all or specific subcategories when applied in accordance with s. NR 280.06 establish the quantity or quality of pollutants or pollutant properties which may be discharged by a facility which is a new source subject to the provisions of this chapter.

(1) The pH of all discharge shall be within the range of 6.0 to 9.0.

(2) The 30−day average and daily maximum limitations for BOD_5 suspended solids, COD and other parameters are set forth in table 3 in lbs/1,000 lbs or kg/1,000 kg of product.

History: Cr. Register, June, 1976, No. 246, eff. 7−1−76.

NR 280.13 Pretreatment standards. The pretreatment standards for discharges to publicly owned treatment works from sources subject to the provisions of this chapter shall be as set forth in ch. NR 211.

History: Cr. Register, June, 1976, No. 246, eff. 7−1−76; r. and recr. Register, August, 1983, No. 332, eff. 9−1−83.

Table 1
BPT EFFLUENT LIMITATIONS

	BOD		Susp. Solids		Other (B)		
Subcategory (A)	**Ave.**	**Max.**	**Ave.**	**Max.**	**Ave.**	**Max.**	
(1)(a)	.36	.70	.99	1.8	—	—	
(b)	.13	.26	.36	.65	—	—	
(c)	.06	.12	.16	.29	—	—	
(2)	.20	.39	.55	1.0	—	—	
(3)(a)	.22	.43	.61	1.1	.0023	.0046	Cr
(b)	.04	.08	.11	.20	—	—	
(4)	.42	.81	1.16	2.1	—	—	
(5)(a)	.20	.39	.55	1.0	—	—	
(b)	.30	.58	.83	1.5	.0031	.0062	Cr
(c)	.052	.10	.14	.25	—	—	
(6)	8.7	17.8	16	29.1	—	—	
(7)	4.8	10.0	8.8	16.0	.534	.91	Zn
(8)	.63	1.3	1.16	2.10	.0044	.0088	Cr
(9)(a)	.78	1.4	.52	.95	—	—	
(b)	.78	1.4	.52	.95	—	—	
(c)	.78	1.4	.52	.95	—	—	
(d)	1.56	2.8	1.04	1.9	—	—	
(10)(a)	.66	1.2	.44	.80	—	—	
(b)	.58	1.1	.39	.70	—	—	
(c)	1.24	2.3	.83	1.5	—	—	
(11)(a)	3.71	6.8	2.48	4.5	—	—	
(b)	1.90	3.5	1.27	2.3	—	—	
(c)	5.61	10.3	3.75	6.8	—	—	
(12)(a)	4.13	7.5	2.75	5.0	—	—	
(b)	4.13	7.5	2.75	5.0	—	—	
(c)	8.26	15.0	5.5	10.0	—	—	
(13) (reserved))							
(14)	.20	.39	.55	1.0			
(15)	3.6	7.0	9.9	18.0	.6	1.2	F
(16)	.40	.78	1.1	2.0	.5	1.0	O
(17)	.33	.60	.22	.40			
(18)	14	26	9.4	17			
(19)	.66	1.2	.44	.80			
(20)	.78	1.4	.52	.95			
(21)(a)	1.0	1.9	.69	1.52	.005	.01	Cu
(b)	13.2	24	8.8	16	.067	.13	Cu
(c)	8.2	15	5.4	10	.042	.084	Cu

Note (A): As defined in s. NR 280.02.

Note (B): Other parameters identified as Cr (total chromium), Zn (zinc), F (fluorides), O (oil and grease), and Cu (copper).

Table 2
BAT EFFLUENT LIMITATIONS

	BOD		COD		Susp. Solids		Other (B)		
Subcategory (A)	**Ave.**	**Max.**	**Ave.**	**Max.**	**Ave.**	**Max.**	**Ave.**	**Max.**	
(1)(a)	.28	.41	1.28	1.92	.19	.23	—	—	
(b)	.13	.20	.61	.92	.092	.11	—	—	
(c)	.06	.09	.28	.42	.042	.05	—	—	
(2)	.19	.29	.89	1.33	.14	.16	—	—	
(3)(a)	.22	.33	1.03	1.55	.16	.18	.0023	.0046	Cr
(b)	.04	.06	.19	.29	.028	.033	—	—	
(4)	.32	.48	2.14	3.21	.23	.27	—	—	
(5)(a)	.19	.29	1.65	2.48	.14	.16	—	—	
(b)	.30	.45	1.60	2.40	.21	.25	.0031	.0062	Cr
(c)	.052	.078	.28	.42	.037	.043	—	—	
(6)	5.1	7.9	43.9	68.3	3.19	3.75	—	—	
(7)	2.8	4.4	24.4	37.9	1.77	2.08	.105	.210	Zn
(8)	.45	.70	3.3	5.1	.28	.33	.0042	.0084	Cr
(9)(a)	.44	.59	2.3	3.1	.13	.16	—	—	
(b)	.44	.59	2.3	3.1	.13	.16	—	—	
(c)	.34	.47	1.8	2.4	.11	.13	—	—	
(d)	.87	1.2	4.5	6.2	.27	.32	—	—	
(10)(a)	.37	.50	1.9	2.6	.11	.13	—	—	
(b)	.32	.44	1.7	2.3	.10	.12	—	—	
(c)	.69	.94	3.6	4.9	.21	.25	—	—	
(11)(a)	1.8	2.45	9.3	12.7	.55	.65	—	—	
(b)	.92	1.25	4.8	6.5	.28	.33	—	—	
(c)	2.7	3.7	14.1	19.2	.84	.98	—	—	
(12)(a)	1.7	2.35	8.9	12.2	.53	.63	—	—	
(b)	1.7	2.35	8.9	12.2	.53	.63	—	—	
(c)	3.4	4.7	17.8	24.4	1.06	1.26	—	—	
(13)reserved									
(14)	.19	.29	1.65	2.48	.14	.16	—	—	
(15)	2.2	3.3	4.0	5.9	1.6	1.8	.6	1.2	F
(16)	.22	.33	.40	.59	.16	.18	.092	.18	O
(17)	.10	.14	.52	.74	.03	.04			
(18)	6.9	9.4	34	47	2.1	2.5			
(19)	.37	.50	1.9	2.6	.11	.13			
(20)	.44	.59	2.3	3.1	.14	.16			
(21)(a)	.57	.74	3	4	.18	.21	.0026	.0052	Cu
(b)	6.4	8.8	33.4	45.5	2.0	2.3	.029	.058	Cu

Note (A): As defined in s. NR 280.02.

Note (B): Other parameters identified as Cr (total chromium), Zn (zinc), F (fluorides), O (oil and grease), and Cu (copper).

Table 3
STANDARDS OF PERFORMANCE EFFLUENT LIMITATIONS

	BOD		COD		Susp. Solids		Other (B)		
Subcategory (A)	**Ave.**	**Max.**	**Ave.**	**Max.**	**Ave.**	**Max.**		**Max.**	
(1)(a)	.19	.37	.89	1.70	.13	.19	—	—	
(b)	.13	.26	.61	1.20	.092	.14	—	—	
(c)	.06	.12	.28	.54	.042	.06	—	—	
(2)	.18	.35	.84	1.6	.13	.19	—	—	
(3)(a)	.22	.43	1.03	2.0	.16	.24	.0023	.0046	Cr
(b)	.04	.08	.19	.37	.028	.04	—	—	
(4)	.22	.43	1.47	2.9	.16	.24	—	—	
(5)(a)	.18	.35	1.8	3.5	.13	.19	—	—	
(b)	.3	.58	1.6	3.1	.21	.31	.0031	.0062	Cr
(c)	.052	.10	.28	.54	.036	.05	—	—	
(6)	3.6	7.41	48	98	2.27	3.3	—	—	
(7)	2.0	4.17	47	97	1.28	.19	.075	.15	Zn
(8)	.43	.88	3.1	6.5	.27	.40	.0040	.0080	Cr
(9)(a)	.44	.79	4.0	7.3	.13	.19	—	—	
(b)	.44	.79	4.0	7.3	.13	.19	—	—	
(c)	.25	.46	2.32	4.2	.078	.12	—	—	
(d)	.87	1.58	8.0	14.6	.27	.40	—	—	
(10)(a)	.37	.67	2.6	4.8	.11	.16	—	—	
(b)	.32	.58	2.3	4.2	.10	.15	—	—	
(c)	.69	1.25	4.95	9.0	.21	.31	—	—	
(11)(a)	1.51	2.75	15.7	28.6	.47	.69	—	—	
(b)	.78	1.42	8.1	14.7	.24	.35	—	—	
(c)	2.29	4.17	23.9	43.4	.71	1.10	—	—	
(12)(a)	1.15	2.08	11	20	.35	.51	—	—	
(b)	1.15	2.08	11	20	.35	.51	—	—	
(c)	2.29	4.17	22	40	.71	1.1	—	—	
(13) (Reserved)									
(14)	.18	.35	1.8	3.5	.13	.19	—	—	
(15)	.80	1.6			.57	.83	.67	1.3	F
(16)	.04	.08	.07	.14	.03	.04	.017	.033	O
(17)	.02	.03	.11	.20	.006	.008	—	—	
(18)	6	11	30	54	1.8	2.7	—	—	
(19)	.37	.67			.11	.17	—	—	
(20)	.44	.800	6.5	12	.14	.20	—	—	
(21)(a)	.57	1.0	4.7	8.5	.18	.26	.0026	.0052	Cu
(b)	5.5	10	45	82	1.7	2.5	.025	.05	Cu

Note (A): As defined in s. NR 280.02.
Note (B): Other parameters identified as Cr (total chromium), Zn (zinc), F (fluorides), O (oil and grease), and Cu (copper).