

PAINTS AND PROTECTIVE COATINGS

CHAPTER 1. INTRODUCTION	
Section 1. GENERAL	1-1
1.1.1 Purpose	1-1
1.1.2 Scope	1-1
1.1.3 Terminology	1-1
1.1.4 Glossary	1-2
Section 2. PURPOSE OF PAINTING	1-2
1.2.1 Protection	1-2
1.2.2 Sanitation and Cleanliness	1-2
1.2.3 Illumination and Visibility	1-3
1.2.4 Safety and Efficiency	1-3
1.2.5 Appearance	1-3
1.2.6 Camouflage	1-3
1.2.7 Tone Down (Passive Defense)	1-3
1.2.8 Fire Retardance	1-3
Section 3. SPECIFICATIONS, SAMPLING, TESTING, INSPECTION	1-3
1.3.1 Use of Product Specifications	1-3
1.3.2 Sampling and Testing	1-4
1.3.3 Job Inspection	1-4
1.3.4 Job Acceptance Inspection	1-4
Section 4. REQUIREMENTS FOR PAINTING OPERATIONS	1-4
1.4.1 Supervision	1-4
1.4.2 Surface Condition	1-4
1.4.3 Weather	1-5
1.4.4 Environmental Conditions	1-5
Section 5. RESTRICTIONS ON USE OF LEAD-CONTAINING PAINTS	1-6
1.5.1 Background	1-6
1.5.2 Requirements	1-7
Section 6. RESTRICTIONS ON USE OF MERCURY-CONTAINING FUNGICIDES IN PAINTS	1-7
1.6.1 Requirements	1-7
Section 7. RESTRICTIONS ON USE OF SOLVENTS	1-7
1.7.1 Background	1-7
1.7.2 Requirements	1-8
CHAPTER 2. PROGRAMMED PAINTING	2-1
Section 1. GENERAL	2-1
2.1.1 Purpose	2-1
2.1.2 Economics	2-1
2.1.3 Efficiency	2-2
Section 2. PROCEDURE	2-2
2.2.1 Inspection and Reporting	2-2
2.2.2 Project Preparation	2-3
2.2.3 Scheduling	2-4
2.2.4 Inspection During Application	2-4
2.2.5 Performance Inspection	2-4
2.2.6 Historical Records	2-5
2.2.7 Records and Data	2-5
2.2.8 Evaluation	2-5
CHAPTER 3. SAFETY	3-1
Section 1. GENERAL	3-1
3.1.1 Hazards	3-1
3.1.2 Safety Measures	3-2
3.1.3 Responsibility of Foremen	3-5
Section 2. ACCIDENT HAZARDS	3-8
3.2.1 Causes	3-8

3.2.2	Precautions and Prevention	3-8
	Section 3. FIRE HAZARDS	3-20
3.3.1	Causes	3-20
3.3.2	Precaution~ and Prevention	3-24
	Section 4. HEALTH HAZARDS	3-25
3.4.1	Causes	3-25
3.4.2	Precautions and Prevention	3-28
	Section 5. HEALTH SERVICES	3-29
3.5.1	Medical Department	3-29
3.5.2	Medical Examinations and Records	3-29
	CHAPTER 4. PAINTING OPERATIONS	4-1
	Section 1. PAINT SHOP	4-1
4.1.1	Functions	4-1
4.1.2	Planning and Layout	4-1
4.1.3	Equipment Operation and Maintenance	4-1
	Section 2. PAINT MATERIALS	4-1
4.2.1	Procurement	4-1
4.2.2	Sampling and Testing	4-1
4.2.3	Materials Storage	4-3
4.2.4	Defective Paint Materials	4-4
	Section 3. PAINT CONDITIONING AND MIXING	4-5
4.3.1	General	4-5
4.3.2	Mixing	4-5
4.3.3	Tinting	4-5
4.3.4	Straining	4-8
4.3.5	Thinning	4-8
	Section 4. PREPARATION OF SURFACES	4-8
4.4.1	General	4-8
4.4.2	Mechanical Treatment	4-9
4.4.3	Chemical and Solvent Treatment	4-18
4.4.4	Pretreatments	4-24
4.4.5	Conditioners, Sealers and Fillers	4-25
4.4.6	Applicable Specifications	4-27
	Section 5. REPAIR OF SURFACES	4-27
4.5.1	General	4-27
4.5.2	Calking Compounds and Sealants	4-27
4.5.3	Putty	4-28
4.5.4	Glazing Compounds	4-28
4.5.5	Application of Calking and Glazing Compounds, Putty, and Sealants	4-28
4.5.6	Patching Materials	4-31
4.5.7	Applicable Specifications	4-32
	Section 6. PAINT APPLICATION	4-32
4.6.1	General	4-32
4.6.2	Basic Application Procedures	4-33
4.6.3	Brush Application	4-33
4.6.4	Roller Application	4-38
4.6.5	Spray Application	4-39
4.6.6	Paint Mitt Application	4-47
4.6.7	Clean Up	4-47
	CHAPTER 5. DETERIORATION OF COATINGS	5-1
	Section 1. NORMAL DETERIORATION	5-1
5.1.1	General	5-1
5.1.2	Exterior Deterioration	5-1
5.1.3	Interior Deterioration	5-5
5.1.4	Coatings Subject to Abrasion	5-12
5.1.5	Factors Affecting Normal Deterioration	5-12

5.1.6	Repainting	5-15	
	Section 2. ABNORMAL DETERIORATION		5-17
5.2.1	General	5-17	
5.2.2	Substrate Peculiarities	5-17	
5.2.3	Abnormal Environments	5-23	
5.2.4	Incompatible Preservatives and Paints	5-26	
5.2.5	Improper Painting Operations	5-28	
5.2.6	Poor Painting Techniques	5-32	
5.2.7	Entrance of Moisture Due to Faulty Structural Conditions	5-32	
	CHAPTER 6. PAINT MATERIALS		6-1
	Section 1. GENERAL		6-1
	Section 2. PAINT BINDERS		6-1
6.2.1	General	6-1	
6.2.2	Alkyd	6-1	
6.2.3	Cement	6-1	
6.2.4	Epoxy	6-2	
6.2.5	Epoxy-Coal Tar	6-2	
6.2.6	Inorganic	6-2	
6.2.7	Latex	6-2	
6.2.8	Oil	6-3	
6.2.9	Oil-Alkyd	6-3	
6.2.10	Oleoresinous	6-3	
6.2.11	Phenolic	6-3	
6.2.12	Phenolic-Alkyd	6-3	
6.2.13	Rubber-Base	6-3	
6.2.14	Silicone	6-4	
6.2.15	Silicone-Alkyd	6-4	
6.2.16	Urethane	6-4	
6.2.17	Vinyl	6-4	
6.2.18	Vinyl-Alkyd	6-5	
6.2.19	Comparison of Paint Binders	6-5	
	Section 3. TYPES OF PAINTS		6-8
6.3.1	General	6-8	
6.3.2	Lacquer	6-8	
6.3.3	Varnish	6-8	
6.3.4	Paint and Enamel	6-9	
6.3.5	Aluminum Paint	6-10	
6.3.6	Oil Stain	6-12	
6.3.7	Glaze Coating	6-12	
6.3.8	Water Repellent	6-12	
6.3.9	Special Purpose Paint Materials	6-12	
6.3.10	Accessory Paint Materials	6-12	
6.3.11	Coating Compatibility	6-12	
	CHAPTER 7. INTERIOR PAINTING (EXCEPT FLOORS)		7-1
	Section 1. GENERAL		7-1
7.1.1	Scope	7-1	
7.1.2	Purpose of Interior Painting	7-1	
7.1.3	Choice of Finishes	7-1	
	Section 2. TYPES OF PRODUCTS AVAILABLE		7-3
7.2.1	General	7-3	
7.2.2	Basic Types of Coatings	7-3	
7.2.3	Specialized Coatings	7-3	
7.2.4	Accessory Products	7-4	
7.2.5	Applicable Specifications	7-5	
	Section 3. SURFACE PREPARATION AND REPAIR		7-5
7.3.1	General	7-5	

7.3.2 Techniques	7-5
Section 4. SELECTION, PREPARATION AND APPLICATION OF COATING SYSTEMS	7-9
7.4.1 Selection of Coatings	7-9
7.4.2 Preparation of Coatings for Use	7-10
7.4.3 Application of Coatings	7-11
CHAPTER 8. EXTERIOR PAINTING	8-1
Section 1. GENERAL	8-1
8.1.1 Scope	8-1
8.1.2 Purpose of Exterior Painting	8-1
8.1.3 Choice of Finishes	8-1
8.1.4 Exposure Conditions	8-2
Section 2. TYPES OF PRODUCTS AVAILABLE	8-3
8.2.1 General	8-3
8.2.2 Basic Types of Coatings	8-3
8.2.3 Specialized Coatings	8-3
8.2.4 Primers	8-5
8.2.5 Accessory Products	8-6
8.2.6 Applicable Specifications	8-7
Section 3. SURFACE PREPARATION AND REPAIR	8-7
8.3.1 General	8-7
8.3.2 Techniques	8-8
Section 4. SELECTION, PREPARATION AND APPLICATION OF COATING SYSTEMS	8-10
8.4.1 Selection of Coatings	8-10
8.4.2 Preparation of Coatings for Use	8-12
8.4.3 Application of Coatings	8-12
CHAPTER 9. FLOOR FINISHES	9-1
Section 1. GENERAL	9-1
9.1.1 Scope	9-1
9.1.2 Purpose of Floor Finishing	
9.1.3 Choice of Finishes	9-1
Section 2. TYPES OF PRODUCTS AVAILABLE	9-2
9.2.1 General	9-2
9.2.2 Coating Products	9-2
9.2.3 Accessory Products	9-2
9.2.4 Applicable Specifications	9-2
Section 3. SURFACE PREPARATION AND REPAIR	9-3
9.3.1 General	9-3
9.3.2 Techniques	9-3
Section 4. SELECTION, PREPARATION AND APPLICATION OF COATINGS	9-6
9.4.1 Selection of Coatings	9-6
9.4.2 Preparation of Coatings for Use	9-7
9.4.3 Application of Coatings	9-7
CHAPTER 10. SPECIAL PURPOSE COATINGS	10-1
Section 1. GENERAL	10-1
10.1.1 Scope	10-1
10.1.2 Use of Special Purpose Coatings	10-2
10.1.3 Choice of Finishes	10-2
10.1.4 Surface Preparation	10-3
Section 2. TYPES OF COATINGS USED FOR SPECIAL PURPOSES	10-3
10.2.1 General	10-3
10.2.2 Special Painting Materials	10-3
10.2.3 Special Areas and Objects	10-6
10.2.4 Special Surfaces	10-9
10.2.5 Accessory Products	10-10
10.2.6 Applicable Specifications	10-10

Section 3. SURFACE PREPARATION AND COATING APPLICATION	10-10
10.3.1 General	10-10
10.3.2 Special Painting Operations	10-10
CHAPTER 11. SIGNS, TRAFFIC AND OBSTRUCTION MARKING	11-1
Section 1. SIGNS	11-1
11.1.1 General	11-1
11.1.2 Methods of Sign Preparation	11-1
11.1.3 Background Surface	11-1
11.1.4 Freehand Sign Painting	11-2
11.1.5 Stenciling	11-3
11.1.6 Screen Processing	11-4
11.1.7 Pressure Sensitive Overlays	11-7
11.1.5 Reflectorized Signs	11-7
11.1.9 Applicable Specifications	11-9
Section 2. TRAFFIC OBSTRUCTION	11-10
11.2.1 General	11-10
11.2.2 Types of Products Available	11-10
11.2.3 Applicable Specifications	11-10
11.2.4 Surface Preparation	11-10
11.2.5 Selection of Coatings	11-11
11.2.6 Preparation of Coating for Use	11-11
11.2.7 Application of Coatings	1-11
Section 3. REFERENCES AND STANDARDS	11-12
11.3.1 References, Standards, Manuals and Regulations	11-12