

Process Industry Practices  
Coatings

**PIP CTCE1000  
External Coating System  
Selection Criteria**

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## PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

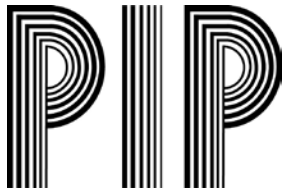
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### **PRINTING HISTORY**

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## Process Industry Practices Coatings

# PIP CTCE1000 External Coating System Selection Criteria

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### Data Forms

**CTCE1000-D1** – Documentation  
Requirements Sheet

*The following data forms shall be part of this Practice only if indicated on the purchaser's completed Documentation Requirements Sheet.*

**CTCE1000-D2** – Coating Type Code  
Definitions

**CTCE1000-D11** – Severe Environment  
Selection Criteria (US Customary Units)

**CTCE1000-D11M** – Severe Environment  
Selection Criteria (SI Units)

**CTCE1000-D12** – Severe/Seacoast  
Environment Selection Criteria  
(US Customary Units)

**CTCE1000-D12M** – Severe/Seacoast  
Environment Selection Criteria (SI Units)

**CTCE1000-D13** – Offshore Environment  
Selection Criteria (US Customary Units)

**CTCE1000-D13M** – Offshore Environment  
Selection Criteria (SI Units)

**CTCE1000-D14** – Moderate Environment  
Selection Criteria (US Customary Units)

**CTCE1000-D14M** – Moderate Environment  
Selection Criteria (SI Units)

**CTCE1000-D21** – Severe Environment  
Selection Criteria Purchaser Defined (US  
Customary Units)

**CTCE1000-D21M** – Severe Environment  
Selection Criteria Purchaser Defined  
(SI Units)

**CTCE1000-D22** – Severe/Seacoast  
Environment Selection Criteria Purchaser  
Defined (US Customary Units)

**CTCE1000-D22M** – Severe/Seacoast  
Environment Selection Criteria Purchaser  
Defined (SI Units)

**CTCE1000-D23** – Offshore Environment  
Selection Criteria Purchaser Defined (US  
Customary Units)

**CTCE1000-D23M** – Offshore Environment  
Selection Criteria Purchaser Defined  
(SI Units)

**CTCE1000-D24** – Moderate Environment  
Selection Criteria Purchaser Defined (US  
Customary Units)

**CTCE1000-D24M** – Moderate Environment  
Selection Criteria Purchaser Defined  
(SI Units)

**CTCE1000-D25** – Purchaser Defined  
Environment Selection Criteria (US  
Customary Units)

**CTCE1000-D25M** – Purchaser Defined  
Environment Selection Criteria (SI Units)

## 1. Introduction

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### 1.1 Purpose

This Practice provides requirements for the selection of industrial coating systems.

### 1.2 Scope

This Practice describes the criteria for the selection of industrial coating systems for insulated and uninsulated substrates of structural steel, equipment, vessels, tanks, and piping. This Practice does not include criteria for the selection of industrial coating systems for insulated items in cyclic temperature service, internal linings, underground substrates, maintenance coating, architectural coatings, or color selection.

## 2. References

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Applicable parts of the following Practice and industry codes and standards shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

### 2.1 Process Industry Practices (PIP)

- PIP CTSE1000 - *Application of External Coatings*

### 2.2 Industry Codes and Standards

- American National Standards Institute (ANSI)
  - ANSI Z535.1 - *Safety Color Code*
- NACE International
  - NACE Standard SP0198-2010 - *Control of Corrosion under Thermal Insulation and Fireproofing Materials - A Systems Approach*
  - NACE 96 Paper No. 477 - *Updated Protective Coating Costs, Products and Service Life*. Gordon H. Brevoort, Kirk R. Shields, and Michael F MeLampey

## 3. Definitions

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*moderate environment*: Industrial and chemical plant area subject to moderate external corrosion

*offshore environment*: Facilities and structures built in and above seawater

*severe environment*: Heavy industrial and chemical plant area subject to aggressive external corrosion


*severe/seacoast environment*: Within five miles of coast/sea water and in the presence of heavy industrial plants subject to aggressive external corrosion

## 4. Requirements

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- 4.1 Coating materials shall be in accordance with this Practice.

- 4.2 Unless otherwise approved by the owner, coating materials used in the same system shall be provided by the same coating manufacturer.
- 4.3 Unless otherwise approved by the owner, coating systems shall be selected in accordance with the Selection Criteria Sheets, *PIP CTCE1000-D11* through *CTCE1000-D25*.
- 4.4 Surface preparation, application, and inspection of external coatings shall be in accordance with *PIP CTSE1000* (Application of External Coatings) and the referenced *PIP CTSE1000* external coating system data sheets.
- 4.5 Coating systems listed in the selection criteria for uninsulated substrates operating at temperatures less than 200°F (93°C) are selected for a minimum of 10 years service life before 3% to 5% breakdown of the topcoat and active rusting begins in accordance with *NACE 96 Paper No. 477*.
- 4.6 Coating systems listed in the selection criteria for insulated substrates shall be selected in accordance with *NACE Standard SP0198-2010*.
- 4.7 Safety colors shall be defined by owner. Color standards and tolerances shall comply with *ANSI Z535.1*.
- 4.8 If specified by the owner, coated fasteners shall be used.

	ASSOC. PIP: CTCE1000	<b>DOCUMENTATION REQUIREMENTS</b>	<b>PIP CTCE1000-D1</b>
	EXTERNAL COATING SYSTEM SELECTION CRITERIA		<b>PAGE 1 OF 2 AUGUST 2013</b>

NO.	DATE	REVISION DESCRIPTION	BY	CHECKED	APPROVED

<b>PROJECT NO.</b>	<b>PROJECT DOCUMENT NO.</b>
<b>FACILITY NAME</b>	
<b>LOCATION</b>	

PIP DOC NUMBER/ PROJ DOC NUMBER		TITLE	REV	DATE	NOTES
CTCE1000	YES <input type="checkbox"/> NO <input type="checkbox"/>	EXTERNAL COATING SYSTEM SELECTION CRITERIA			
CTCE1000-D1	YES <input type="checkbox"/> NO <input type="checkbox"/>	DOCUMENTATION REQUIREMENTS			
CTCE1000-D2	YES <input type="checkbox"/> NO <input type="checkbox"/>	COATING TYPE CODE DEFINITIONS			
CTCE1000-D11	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE ENVIRONMENT SELECTION CRITERIA (US CUSTOMARY UNITS)			
CTCE1000-D11M	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE ENVIRONMENT SELECTION CRITERIA			
CTCE1000-D12	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE/SEACOAST ENVIRONMENT SELECTION CRITERIA (US CUSTOMARY UNITS)			
CTCE1000-D12M	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE/SEACOAST ENVIRONMENT SELECTION CRITERIA (SI UNITS)			
CTCE1000-D13	YES <input type="checkbox"/> NO <input type="checkbox"/>	OFFSHORE ENVIRONMENT SELECTION CRITERIA (US CUSTOMARY UNITS)			
CTCE1000-D13M	YES <input type="checkbox"/> NO <input type="checkbox"/>	OFFSHORE ENVIRONMENT SELECTION CRITERIA (SI UNITS)			
CTCE1000-D14	YES <input type="checkbox"/> NO <input type="checkbox"/>	MODERATE ENVIRONMENT SELECTION CRITERIA (US CUSTOMARY UNITS)			
CTCE1000-D14M	YES <input type="checkbox"/> NO <input type="checkbox"/>	MODERATE ENVIRONMENT SELECTION CRITERIA (SI UNITS)			
CTCE1000-D21	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE ENVIRONMENT SELECTION CRITERIA PURCHASER DEFINED (US CUSTOMARY UNITS)			
CTCE1000-D21M	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE ENVIRONMENT SELECTION CRITERIA PURCHASER DEFINED (SI UNITS)			
CTCE1000-D22	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE/SEACOAST ENVIRONMENT SELECTION CRITERIA PURCHASER DEFINED (US CUSTOMARY UNITS)			
CTCE1000-D22M	YES <input type="checkbox"/> NO <input type="checkbox"/>	SEVERE/SEACOAST ENVIRONMENT SELECTION CRITERIA PURCHASER DEFINED (SI UNITS)			
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