

GENERAL SPECIFICATION

CORROSION

GS EP COR 355

External protection of piping and equipment by thermal spray coating

07	11/2019	General review
06	10/2017	General review
05	11/2016	Update of Qualified Paint Supplier
04	09/2015	General revision
03	09/2013	General review - Paint supplier review
00	10/2009	First issue
Rev.	Date	Purpose of the revision

Owning entity: DSO/IP/TEC	Managing entity: DSO/IP/TEC/COR
Other Approving entity(ies):	



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1. Scope

This General Specification defines the technical requirements for the execution of Thermal spray coating (TSC) works of new built piping, equipment and metallic structure.

The specification is based on very high durability protection (as defined in [ISO 12944-1](#)) more than 20 years.

Thermal spray coatings can be used as the protective coatings for atmospheric exposure, under thermal insulation, hot surface, sea water immersion and all others conditions describe in particular specification approved by Company.

2. Reference documents

This document is the TOTAL E&P transposition of the TOTAL S.A. Harmonized GS GR COR 810.

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published at the effective date of this document.

Reference	Title
ASTM A380	Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel - Parts, Equipment, and Systems
ASTM D4285	Standard Test Method for Indicating Oil or Water in Compressed Air
ASTM D4940	Standard Test Method for Conductimetric Analysis of Water Soluble Ionic Contamination of Blast Cleaning Abrasives
EN 10204	Metallic products - Types of inspection documents
ISO 209	Aluminium and aluminium alloys - Chemical composition
ISO 2063	Thermal spraying - Metallic and other inorganic coatings - Zinc, aluminium and their alloys
ISO 2808	Paints and varnishes - Determination of film thickness
ISO 4628-3	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting
ISO 8501 (Parts 1; 3)	Preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness - Parts 1; 3

Reference	Title
ISO 8502 (Parts 3; 6; 9)	Preparation of steel substrates before application of paints and related products. Tests for the assessment of surface cleanliness - Parts 3; 6; 9
ISO 8503 (Parts 1; 2)	Preparation of steel substrates before application of paints and related products - Surface roughness characteristics of blast-cleaned steel substrates - Parts 1; 2
ISO 11124 (Parts 2; 3; 4)	Preparation of steel substrates before application of paints and related products Specifications for metallic blast-cleaning abrasives - Parts 2; 3; 4
ISO 11126 (Parts 4; 7; 9; 10)	Preparation of steel substrates before application of paints and related products - Specifications for non-metallic blast-cleaning abrasives - Parts 4; 7; 9; 10
ISO 12944 (Parts 1; 3; 4; 7; 8)	Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Parts 1; 3; 4; 7; 8
ISO 14918	Thermal spraying - Qualification testing of thermal sprayers
ISO 14919	Thermal spraying - Wires, rods and cords for flame and arc spraying - Classification - Technical supply conditions
ISO 16276-1	Corrosion protection of steel structures by protective paints systems - Assessment of, and acceptance criteria for, the adhesion/cohesion (fracture strength) of a coating - Part 1: Pull-off testing
ISO 19840	Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Measurement of, and acceptance criteria for, the dry-film thickness of coating on rough surfaces
NACE No. 12 / AWS C2.23M / SSPC-CS 23.00	Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel
SSPC-SP1	Solvent Cleaning

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published.

Reference	Title
GS EP COR 350	External protection of offshore and coastal structures and equipment by painting



3. Applicability

This general specification is applicable to metallic piping, equipment or structure when a thermal spray coating has been specified by Company.

It is applicable on carbon steel, low alloy or stainless steel.

This specification is applicable to onshore and offshore structures.

4. Definitions of terms

For the purpose of this document, the following terms and definitions apply:

Company:	Any entity of the TOTAL Group mentioned in the contract or the order.
Contractor:	Entity that enters into a Contract with the Company performing the work covered by this specification.
Manufacturer:	Entity responsible for manufacturing products.
Supplier/Vendor:	Entity which supplies products or services.

5. Surfaces to be coated

The principles of good workmanship described in [ISO 2063](#) apply for application of thermal spray coatings and sealers.

Only sealers (tie coat) specified in Appendix 1 are allowed.

The sealers based on epoxy resin shall be applied for operating temperature resistance less than 80°C.

For temperature above 80°C, silicon based sealer shall be considered.

All surfaces are to be protected using the relevant specified process.

Carbon steel flange bolt hole ID, if accessible shall be TSC coated. TSC overspray into bolt hole is allowed.

For location where TSC cannot be applied, an alternative solution could be proposed to Company for approval.

6. Items not to be coated

The following items are not requested to be coated:

- Valve stems, flange faces, instrumentation components (pressure gauges, etc.) and any other machined contact surfaces
- Surfaces within 5 cm of pipe joint ends or steel edges for welding operations
- Electrical wiring and cabling, plastics, rubber, and glass
- Nameplates, permanent labels, or instruction decals
- Gasket and bolting.