Annex B
(normative)

Manufacturing procedure qualification for PSL 2 pipe

B.1 Introduction

B.1.1 This annex specifies additional provisions that apply if manufacturing procedure qualification is ordered for PSL 2 pipe [see 7.2 c) 41)] or if Annex H and/or Annex J applies.

B.1.2 In special cases (e.g. first supply or new steel grade) the purchaser may, when ordering large quantities, ask for data demonstrating that the requirements specified in this International Standard can be met using the proposed manufacturing route.

B.1.3 Verification of the manufacturing procedure shall be by the provision of acceptable data from previous production or by qualification in accordance with Clause B.3 or B.4 or both.

B.2 Additional information to be supplied by the purchaser

The purchase order shall indicate which of the following provisions apply for the specific order item:

a) qualification in accordance with Clause B.3 or Clause B.4 or both (see B.1.3);

b) frequency and amount of testing (see B.4.2);

c) hardenability (bead-on-plate or bead-on-pipe) tests (see B.4.5);

d) welding parameters and acceptance criteria for hardenability tests (see B.4.5).

B.3 Characteristics of the manufacturing procedure

Before production commences or at the manufacturer’s risk from the initial production run, the manufacturer shall supply the purchaser with information on the main characteristics of the manufacturing procedure. This specification shall include at least the following:

a) for all pipe:

1) steel producer,

2) steel making and casting techniques,

3) target chemistry,

4) hydrostatic test procedure,

5) non-destructive inspection procedures;

b) for welded pipe:

1) strip/plate manufacturing method, including heat-treatment method (N or Q) if applicable,
2) non-destructive inspection procedures for the strip/plate,
3) pipe-forming procedures, including preparation of edges, control of alignment and shape,
4) pipe heat-treatment procedure, where applicable, including in-line heat treatment of the weld seam,
5) specification for the seam welding, including repair-welding procedure to be used together with previous qualification records for this procedure. This shall include sufficient information of the following kind:
   i) for EW and LW pipes:
      — mechanical test results from seam-heat-treated pipes made from thermomechanically rolled strip (including hardness tests of the HAZ),
      — metallography;
   ii) for SAW and COW pipes:
      — mechanical test results (including hardness test results for the HAZ),
      — deposited weld metal analysis;
c) for SMLS pipe:
   1) pipe-forming process,
   2) pipe heat-treatment procedure.

B.4 Manufacturing procedure qualification tests

B.4.1 For the qualification of the manufacturing procedure, the mandatory tests specified in Table 18, Table H.3 or Table J.7, whichever is applicable, shall be carried out at the beginning of the production.

B.4.2 The frequency and amount of testing shall be as specified in the purchase order.

B.4.3 The purchaser may ask for characteristic data on other properties (e.g. weldability) of the product.

NOTE Purchaser requests for weldability data on particular steel grades can require specific weldability testing to be conducted. In such instances, it is the responsibility of the purchaser to supply the manufacturer with details of the welding processes and parameters for which weldability data are required. It is important to consider weldability testing of newly developed steel grades such as L690 or X100 and L830 or X120 where data are otherwise unavailable.

B.4.4 The manufacturer may offer prequalification data from previous production for approval by the purchaser.

B.4.5 If agreed, hardenability tests (bead-on-plate or bead-on-pipe) shall be performed. Welding parameters and acceptance criteria shall be as specified in the purchase order.