



Standard Guide for Videoborescoping of Tubular Products for Sanitary Applications¹

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1. Scope

1.1 This standard covers guidelines for ordering and examining tubular products for sanitary applications by videoborescoping. This method uses movable camera probe at the end of a cable to examine the interior of a tubular product. The image is then transmitted to an external monitor for analysis. The method is normally used when inside surface imperfections, not normally detected by other nondestructive methods, may result in contamination of the product which is contained by the tubular product.

2. Referenced Documents

2.1 ASTM Standards:

A 941 Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys

3. Terminology

3.1 Definitions:

3.1.1 For definition of some of the terms used in this specification, refer to Specification A 941.

3.2 Other Definitions:

3.2.1 *collar*—a device which fits around the probe tip to control distance from the product surface and angle of viewing to ensure a consistent magnification factor.

3.3 Definitions of Terms Specific to This Standard:

3.3.1 *inclusion*—a nonmetallic particle embedded in the product surface.

3.3.2 *nick*—a surface imperfection resulting from material removal or compression usually caused by a mechanical means. It usually has a length to width ratio less than 5.

3.3.3 *oxide*—a darker, non-reflective area that is the result of improper protective gas coverage during a high temperature operation or insufficient chemical cleaning.

3.3.4 *pit*—a sharp edged surface depression usually caused by the removal of an embedded particle but may also be caused by selective metal removal by a chemical means.

3.3.5 *shrinkage*—a line of irregular shallow pores which occur along the center of a weld.

3.3.6 *scratch*—a long depression caused by a mechanical means. It usually has a length-to-width ratio greater than 5.

3.3.7 *slag pocket*—a pit, usually in a weld, caused by a particle of slag (metal oxides, carbides, fluorides or similar) which may have been cold worked into the surface. The pocket may or may not still contain slag during the examination.

3.3.8 *starburst*—a series of slag pockets where the center one is usually the largest and smaller ones radiate outward.

3.3.9 *tube*—a generic term for all tubular products including both pipe and tube.

4. Ordering Information

4.1 It is the responsibility of the purchaser to specify all of the requirements that are desired under this specification. Such requirements may include, but are not limited to, the following:

4.1.1 Number of tubes to be inspected.

4.1.2 The amount of probe to tube rotation, if desired (Section 8).

4.1.3 Any special probe coverage (Section 8).

4.1.4 Special probe feed rates (Section 8).

4.1.5 Any special acceptance criteria (Section 6).

4.1.6 Supply of recording tapes and whether traceability is required (Section 9).

4.1.7 Information to be identified on recording tapes (Section 9).

4.1.8 Whether customer witnessing is required (Section 10).

4.1.9 Whether Certification is required (Section 11).

5. Significance and Use

5.1 This specification establishes some the key factors which govern the interpretation of videoborescoping tubular products for a specific application. It is recognized that the requirements for one application may be very different than those of another. Therefore, the specification allows for the inspection to be customized for the application by the user by allowing the purchaser to specify parameters which may be important for the application.

6. Acceptance Criteria

6.1 The purpose of this inspection is to identify imperfections on the ID surface of the tube which may be detrimental to the end use. These imperfections could have a variety of shapes, sizes and causes which may or may not have impact on

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