1. Scope

The current Australian Standard AS 1074-1989 (R2018) specifies the requirements for:

1. Threaded steel tubes and tubulars,
2. Plain-end steel tubes suitable for screwing as specified in AS 1722.1, and
3. DN 8 to DN 150 inclusive (nominal size) for three types of wall thicknesses – light, medium and heavy.

It was first published as AS B105-1951 and redesignated AS 1074 in 1971. The current version was published in 1989 and reconfirmed in 2018 and this is this fourth edition. All references to AS 1074 or "the Standard" in this document exclusively refers to AS 1074-1989 (R2018).

This Technical Specification specifies verification and recognition requirements and paths for CSIRO's ActivFire® Scheme for steel tubes used in ordinary service as per Section 2 of AS 1074-1989 (R2018).

2. Referenced Documents

Details of the documents referenced by this Technical Specification are detailed in Table 1.

Table 1 List of documents referenced by this Technical Specification

AS 1074-1989 (R2018)	Steel tubes and tubulars for ordinary service.
AS 1650-1989	Hot-dipped galvanized coatings on ferrous articles.
AS/NZS 4792:2006	Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or a specialized process.
AS/NZS 4680:2006	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles.
AS 1722.1-1975	Pipe threads of Whitworth form, Part 1: Sealing pipe threads.
AS ISO 7.1-2008	Pipe threads where pressure tight joints made on the threads, Part 1: Dimensions, tolerances, and designation.
AS ISO 7.2-2008	Pipe threads where pressure-tight joints are made on the threads, Part 2: Verification by means of limit gauges.
AS 1391:2020	Metallic materials – Tensile testing – Method of test at room temperature
ISO 6892-1:2019	Metallic materials – Tensile testing – Method of test at room temperature
AS ISO/IEC 17025:2018	General requirements for the competence of testing and calibration laboratories

3. Pre-verification Requirements

In addition to the application requirements of CSIRO's ActivFire Scheme document AF-D001, the Applicant wishing to have their product evaluated and certified by CSIRO shall provide the following information and documentation:

1. Sizes and wall thickness class of the steel tubes.
2. Stating if the steel tube is welded or seamless.
3. Finishing surface details of the steel tube[1] .
4. End finish options of the steel tubes.
5. Quality management system of the Primary Manufacturing Unit (PMU).

4. Verification

4.1. Verification activities

Verification of conformity of the tubes, for the purposes of CSIRO's ActivFire® Scheme, requires the following activities detailed in Table 2.

Table 2 Activities required by this Technical Specification to evaluate the conformity of the steel tubes for the purposes of CSIRO's ActivFire® Scheme.

Activity	Description
1	Factory Production Control (FPC) audit of the primary manufacturing unit (PMU) site of the steel tubes.
2	Verification that the materials of the steel tube meet the performance requirements of AS 1074.
3	Verification that the dimensions and mass of the steel tubes are in accordance with AS 1074.
4	Verification that the steel tubes meet the remaining requirements of AS 1074.
5	Review of markings on the steel tubes, and marketing materials.
6	Identification of product limitations.

4.2. Activity 1

To meet the requirements of Activity 1 of this Technical Specification, representatives of CSIRO's Fire Systems Laboratory and/or CSIRO's ActivFire® Scheme shall conduct an initial FPC audit of the PMU in accordance with the audit activities are described in CSIRO ActivFire® Scheme document AF-D008 and the requirements described in below.

[1] If the steel tubes are galvanised coated, the applicant shall provide details of the standard that the galvanized coating is applied to.

Table 3 Additional criteria and evidence of conformance required for the audit of a AS 1074 steel tube manufacturing unit.

No	Activity	Requirements	Notes
1.	Identification of steel rolls	• All steel rolls in the store are identifiable and clearly labelled. The PMU shall be able to identify the details of the steel roll through the label either physically or through a database. • Details of the steel row include, but are not limited to, the following: o Origin of the steel roll. o Date the steel row was manufactured. o Material composition of the steel row. o Thickness of the steel row. o Length of the steel row.	
2.	A unique batch number is assigned to every manufactured steel tube.	• System controls are in place to ensure that a unique batch number is assigned to every manufactured steel tube. • The unique batch number shall allow the PMU to at a minimum identify the following: o The steel roll used to manufacture the steel tube. o Date the steel tube was manufactured. o Size and class of the steel tube.	
3.	Checking of quality of the steel tubes.	• The PMU shall have a process in place to ensure that all steel tubes manufactured are tested and checked for quality in accordance with Clause 2.8 of AS 1074. • Any defective steel tubes shall be separated from the other steel tubes. • Non-destructive testing of seamless and welded steel tubes shall be in accordance with Clause 2.8 of AS 1074	The applicant shall provide CSIRO with details of which type of test is being conducted prior to the audit.

No	Activity	Requirements	Notes
4.	A defined Quality Control (QC) test schedule exist for the steel tubes.	• The PMU shall have a test schedule for the steel tubes to test the steel tubes mechanical properties (yield strength, tensile strength, elongation, and ductility) and galvanised coating (if applicable).	• Mechanical properties (yield strength, tensile strength, and elongation) of the steel tube shall be tested to ISO 6892-1:2019 or AS 1391:2020 by an accredited facility[2]. • Ductility of the steel tubes shall be tested in accordance with Clause 2.9 of AS 1074. • Galvanised coating (if applicable) shall conform to galvanised coating standards listed in Table 1.
5.	QC test records	• The PMU shall have records of all QC test results and have it available for references. • Good laboratory practice is always followed; white out is never used, a single line is always made through an incorrect data entry, the operator initials/signs an erroneous data entry.	-
6.	Routine QC approval of product is controlled.	• The PMU shall ensure that the routine QC approval of steel tubes is always followed. • Inspection of the QC test schedule demonstrates that all QC tests have test results recorded, that the test results are within minimum/maximum tolerances.	-

[2] An accredited facility is a testing laboratory that holds accreditation to ISO 19705 and the test standard from an organisation recognised by an International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC-MRA) signatory.

No	Activity	Requirements	Notes
7.	Concessional QC approval of product is controlled.	• The PMU shall ensure that the process for concessional approval of steel tubes is always followed. • Inspection of the QC test schedule demonstrates that all QC tests have test results recorded, that the out-of-spec test result has been approved by an authorised person.	
8.	Workmanship in accordance with Clause 2.10 of AS 1074	• The PMU shall ensure that the finished steel tubes are cleanly finished and free from defects. • The steel tube dimensions shall be within the tolerances specified in Clause 2.4 of AS 1074. • The threads (if applicable) shall be clean, well cut and within the tolerances of AS ISO 7.1-2008 and AS ISO 7.2-2008 except as permitted by Clause 2.5 of AS 1074. • The ends of the steel tube shall be cut cleanly and square with the axis of the tube. • Steel tubes shall be straight within a 1:500 measured at the centre of the length. • Galvanised tubes (if applicable) shall have surfaces on which the coating is continuous, as smooth, and evenly distributed as possible and free from defects. • Galvanised tubes (if applicable) of DN 8 to DN 25 inclusive, shall be capable to having a 230 mm long rod of the appropriate diameter given in Table 2.4 of AS 1074 passed through them.	• Dimensions of the steel tube and the thread sizes of the steel tubes shall be verified back at CSIRO from samples selected during the audit. • Samples shall be selected and weighed using a calibrated scale for their mass and recorded by a CSIRO representative. • The applicant shall demonstrate to a CSIRO representative that galvanised tubes of DN 8 to DN 25 inclusive, are capable of having a 230 mm long rod of the appropriate diameter given in Table 2.4 of AS 1074 passed through them. • All other conformance requirements shall be inspected by a CSIRO representative visually.

4.3. Activity 2

To meet the requirements of Activity 2 of this Technical Specification, CSIRO's ActivFire® Scheme in its quotation shall provide a list of steel tube samples the scheme requires. Test reports detailing the chemical and mechanical properties of those selected samples by an accredited facility to AS 1391:2020 or ISO 6892-1:2019 as agreed by CSIRO shall be provided to CSIRO for verification purposes.

The steel used to manufacture the tubes are ≤0.045% of sulphur and ≤0.045% of phosphorus. The carbon equivalent calculated using the following equation shall not exceed 0.4:

$$Cabon\ equivalent = c + \frac{Mn}{6}$$

The steel has the following properties:

1. Minimum yield strength of 195 MPa.
2. A tensile strength of between 320 MPa and 460 MPa.
3. An elongation of not less than 20% on a gauge length of $\sqrt[5.65]{S_o}$ where S_o is the original cross-sectional area of the test piece.

4.4. Activity 3

To meet the requirements of Activity 3 of this Technical Specification, CSIRO's ActivFire® Scheme in its quotation shall provide a list of steel tube samples the scheme requires. The Producer shall provide those samples to CSIRO for verification purposes.

The samples shall be weighed and measured in accordance with Clause 2.4 of AS 1074. The permissible variation of steel tubes dimensions and mass shall be in accordance with Clause 2.4 of AS 1074.

4.5. Activity 4

To meet the requirements of Activity 4 of this Technical Specification, the Producer shall submit a declaration, declaring the following:

1. The screw threads comply with AS ISO 7.1-2008 and AS ISO 7.2-2008 except as permitted by Clause 2.5 of AS 1074.
2. The tubes are supplied in standard lengths of 6.50 m ± 0.08 m in accordance with Clause 2.6 of AS 1074.
3. The threads of all steel tubes are protected against corrosion and tubes larger than DN 80 have a protecting ring affixed to the screwed end in accordance with Clause 2.12 of AS 1074.

4.6. Activity 5

To meet the requirements of Activity 5 of this Technical Specification, images of the markings on the steel tube shall be taken of the steel tubes during the audit process by a CSIRO representative. The applicant shall also provide photographical evidence of the markings of all the steel tube dimensions that is subject to verification. Markings on the steel tubes shall meet the requirements of Clause 2.11 of AS 1074 and have a unique batch number.

CSIRO will also review all marketing material that intends to have the ActivFire® mark (including websites), ensuring that the marketing material contains accurate information of the product.

4.7. Suitability of external evidence

Assessment of the suitability of external agencies (laboratory) evidence shall be conducted in accordance with the CSIRO Recognition Framework.

Evidence of conformity, in the form of endorsed test reports written in English, are required to be submitted in full and shall be provided by a National Association of Testing Authorities (NATA) ISO 17025 accredited laboratory and the relevant test standard, or as agreed with CSIRO.

Where test reports were originally produced in a language other than English, suitable translations may be supplied in addition. Submitted external test reports must provide sufficient detail to describe the product being evaluated in full and in detail and establish that an evaluation schedule was designed and applied to each component submitted to the external agency.

External evidence can only be accepted where verification between the product submitted for verification and the specimens in the endorsed test report is considered a critical requirement. Where external reports do not provide sufficient product identification, evaluation activities to specified requirements may be required.

4.8. Reporting

The verification of conformity report shall include the following information:

a. A statement of conformity with reference to CSIRO Technical Specification TS-017 and unambiguous designation that the product has been evaluated in accordance with this technical specification.
b. A description of the product including photographs of the product.
c. Limitation of the product, if applicable.
d. List of documentation used for the verification of conformity including the document ID, version number, and issue date.
e. Software and firmware version, if applicable.
f. All other information in accordance with the reporting requirements of AS ISO/IEC 17025:2018.

5. Ongoing Verification of Conformity

5.1. Ongoing verification of conformity activities

To maintain ongoing certification with CSIRO's ActivFire® Scheme, the steel tubes shall be subject to a post-certification surveillance activity described in Table 5.

Table 4 Activities required to demonstrate ongoing conformity of the steel tubes.

Activity	Description	Notes
1	Factory Production Control (FPC) audit of the Primary Manufacturing Unit (PMU) every two years from the issue date of the Certificate of Conformity.	• Details of the audit activities are described in CSIRO ActivFire® Scheme document AF-D008 and Activity 1 of Section 4. • If the Registrant has multiple Certified steel tube ranges with the Scheme that are manufactured at the same PMU, the Scheme shall work with the Registrant to conduct the PMU audit within the same period for the other Certified steel tubes products.
2	Verification of steel tube sizes	• Sizes of selected samples of the steel tubes shall be checked and verified in accordance Clause 2.4 of AS 1074 during the FPC audit.
3	Verification of the steel tube material properties	• Test reports shall be provided to CSIRO for the selected samples of steel tubes during the FPC audit. • The properties shall be in accordance with the requirements of Activity 2 of Section 4.

Document Review

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1	8-May-2025	• Initial issue
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