1. Scope

The current Australian Standard AS 3772:2020 for pre-engineered fire protection systems for cooking equipment sets out the requirements for the design, installation, commissioning and maintenance of pre-engineered fire protection systems used for the protection of unclosed cooking appliances that produce grease-laden vapours, and which may have an open surface of cooking oil or fat. The standard also provides the requirements that the key components of a pre-engineered fire suppression system must meet.

This document specifies the evaluation (testing) and recognition requirements and pathways for CSIRO's Fire System Laboratory and other ActivFire® Scheme Recognised Agencies for Conformity Evaluation (RACE). These requirements ensure that key mechanical components of pre-engineered fire suppression systems are verified and validated for fitness for purpose under the CSIRO ActivFire® Scheme.

Protection of enclosed ovens, water boilers and similar appliances, along with components such as control and indicating equipment (CIE), detectors and actuators, is excluded from the scope of this specification.

Evaluation of conformity of the storage containers to Australian requirements is also excluded from the scope of this specification.

This document supersedes the previous Scientific Services Laboratory (SSL) Appraisal Specification FAS-111.

2. Referenced documents

Documents referenced by this Technical Specification are listed in Table 1.

Table 1 List of documents referenced by this Technical Specification

AS 3772:2020	Pre-engineered fire protection systems for cooking equipment.
UL 300:2024	Standard for Safety Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment
UL 1254:2019 Ed 6	Standard for Safety Pre-Engineered Dry and Wet Chemical Extinguishing System Units
NFPA17A: 2024	Standard for Wet Chemical Extinguishing Systems
AS ISO / IEC 17025:2018	General requirements for the competence of testing and calibration laboratories

3. Pre-evaluation requirements

In addition to the application requirements of CSIRO's ActivFire Scheme document AF-D001, the Applicant seeking product evaluation and certification by CSIRO shall provide the following information and documentation:

1. Details of the fire suppression system including brochures and manual.
2. A list of components of the fire suppression system.
3. Certification of the storage containers meeting the relevant local Workplace Health and Safety regulation (if there is no local Workplace Health and Safety regulation for storage containers, Australian Workplace Health and Safety regulation shall be met).

4. Verification

4.1. Verification activities

Verification of conformity of the fire suppression system, 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 system for the purposes of CSIRO's ActivFire® Scheme.

Activity	Description
1	Verification protocol selection.
2	On site witnessing of the fire extinguishment test for the extinguishing agent to UL 300 or a suitable standard as agreed with CSIRO
3	Verification that the extinguishing agent and mechanical components meet the performance requirements of AS 3772:2020.
4	Verification that the marking and labelling meet the requirements of AS 3772:2020.
5	Review of the design and installation manual(s).
6	Identification of system and component limitations.
7	Initial primary manufacturing unit audit.

4.2. Activity 1

For this activity, ActivFire shall develop a verification schedule for the wet chemical pre-engineering fire suppression system for commercial cooking areas to the requirements of AS 3772. AS 3772 states that the system shall:

a. Provide fire protection for the exhaust hood, ductwork and cooking appliances as specified in AS 3772.
b. Be tested and listed to UL 300, or other equivalent Standard(s), as determined by the listing authority.
c. Be installed in accordance with the requirements of the listing and the manufacturer's listed manual.
d. Include automatic activation as an integral part of their listing.

ActivFire will require the system's fire extinguishment performance to be demonstrated to UL 300, witnessed by CSIRO. ActivFire shall also provide a test plan for the witnessing of the fire extinguishment performance test. The components of the system shall meet UL 1254 or a recognised standard as agreed by ActivFire, while the storage containers shall meet the requirements of AS 3772 itself. Details of the verification schedule is provided in Table 3.

Table 3 Verification schedule for the components of the system required to demonstrate conformity to CSIRO Technical Specification TS-020

Standard	Clause	Title	System / components to be evaluated	Notes
UL 1254	32	Flow distribution test	Fully charged extinguishing system units	• Test report for the flow distribution by the registrant or an accredited testing facility shall be provided to CSIRO four weeks prior to the fire tests and may be completed by the registrant. • This test is used to determine system arrangement that produces the lowest discharge rate and amount of extinguishing agent.
	33	Hydrostatic pressure test	Discharge valve assembly and other pressure retaining device	• Testing to Clause 33.2 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm
	34	30-Day elevated temperature test	Fully charged extinguishing system units	• Testing to Clause 34 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	35	Temperature cycling test		• Testing to Clause 35 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	36	Salt spray corrosion test		• Testing to Clause 36 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	37	Wet chemical extinguishing agent exposure test	Metallic Parts	• Testing to Clause 37 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	38	500 Cycle Operation Test	Discharge valves, including actuation devices but excluding fusible element types	• Testing to Clause 38 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.

Standard	Clause	Title	System / components to be evaluated	Notes
	39	One-year time leakage test	Storage container including actuating components	• Testing to Clause 39 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	40	Mounting device test	Mounting brackets for storage containers / valve assemblies	• Testing to Clause 40 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	41	Flexible hose assembly low temperature test	Flexible hose assembly	• Testing to Clause 41 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	42	Flexible hose assembly cycling test		• Testing to Clause 42 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	43	Flexible hose assembly fire exposure test		• Testing to Clause 43 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	44	Operation test of manual actuators	Manual actuators and pull stations	• Testing to Clause 44 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	45	Pneumatic operation test	Valves and other components intended to be pneumatically operated by a master valve or by other pneumatic means	• Testing to Clause 45 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	46	Pressure relief tests	Burst disc	• Testing to Clause 46 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.

Standard	Clause	Title	System / components to be evaluated	Notes
	47	Vibration and shock resistance test	Extinguishing system including the mounting bracket	• Testing to Clause 47 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm. Or • Testing to IEC 60068-2-6 for vibration and IEC 60068-2-27 for shock resistance by an accredited laboratory either NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	48	Elastomeric parts test	Plastic material part providing a seal	• Testing to Clause 48 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	49	10-day moist ammonia air stress cracking test	Brass parts	• Testing to Clause 49 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	50	Aging tests – plastic materials	Plastic materials	• Testing to Clause 50 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	53	Calibration test – gauges and indicators	Gauges and indicators	• Testing to Clause 53 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	54	Burst strength test – gauges and indicators		• Testing to Clause 54 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	55	Overpressure test - gauges	Gauges	• Testing to Clause 55 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.

Standard	Clause	Title	System / components to be evaluated	Notes
	56	Impulse test - gauges		• Testing to Clause 56 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	57	Pressure gauge relief test		• Testing to Clause 57 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	58	Water resistance test – gauges and indicators		• Testing to Clause 58 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	59	Nameplate exposure test	Nameplate	• Testing to Clause 59 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	60	Nameplate adhesion test		• Testing to Clause 60 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
	61	Nameplate abrasion test		• Testing to Clause 61 of UL 1254 from UL or an accredited laboratory either by NATA or recognised under the International Laboratory Accreditation Cooperation (ILAC) Framework; CSIRO to confirm.
UL 300	6	Cooking Appliance Extinguishment Tests	Complete system, worst-case system as determined by Flow Distribution in Clause 32 of UL 1254	The system shall be tested with each type of cooking appliance with which it is intended to be used.
	7	Hood and Duct (Full Scale) Extinguishment Tests	Complete system, worst-case system as determined by Flow Distribution in Clause 32 of UL 1254	For systems intended to protect the hood and duct of a restaurant cooking area.

Standard	Clause	Title	System / components to be evaluated	Notes
AS 3772	5.2.1	Storage containers - General	Storage container	• The storage container shall be designed and approved to hold the specific extinguishing agent. • The storage container shall be of a suitable material to resist environmental conditions such as corrosion. • The storage container shall conform to AS 2030.1, AS 2470, AS/NZS 3509 and be approved for use and will need to meet Australian Workplace Health and Safety Regulations. • Final conformance of the pressurized container with local regulatory requirements shall be made by the local Authority Having Jurisdiction (AHJ).

4.3. Activity 2

To meet the requirements of Activity 1, representatives of CSIRO's Fire Systems Laboratory and/or CSIRO's ActivFire Scheme witness and validates the testing of fire extinguishment by the system's extinguishing agent to UL 300 or a suitable standard as agreed with CSIRO. A smaller test program may be agreed, upon presentation of evidence.

A test report prepared by the registrant in English shall be provided to CSIRO along with any data and video recordings.

Please note that a flow distribution test in accordance with Clause 32 of UL 1254 is required to be conducted prior to the witnessing of the fire extinguishment tests.

4.4. Activity 3

To meet the requirements of Activity 3, the registrant of the product shall supply evidence of conformity covering the requirements as described in Table 3, if applicable. The evidence of conformity can be supplied by either by a Recognised Agency for Conformity Evaluation (RACE), an accredited facility[1] as agreed by CSIRO or by the Applicant as agreed by CSIRO. The evidence of conformity shall be in a report format and in English at a minimum.

[1] An accredited facility is a testing laboratory that holds accreditation to ISO 17025 and the test standard from an organisation recognised by an International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC-MRA) signatory.

4.5. Activity 4

To meet the requirements of Activity 4, the marking and labelling of the system shall undergo the assessment detailed in Table 4 by CSIRO.

Table 4 Assessment requirements for the marking, labelling and manual of the system.

Standard	Clause	Title	System / components to be evaluated	Notes
AS 3772	5.2.3	Labelling	Storage container	N/A
	6.3.5	Marking	Discharge nozzle	N/A

4.6. Activity 5

The design and installation manual of the system intended for use shall be provided to CSIRO for review. The design and installation manual shall contain a title, document no (if applicable), version no., date of issue, details of the business entity and the business entity address. The manual shall be written in English, include all relevant components and any system or component limitations.

The system or component limitations shall be included in the report by CSIRO's Fire System Laboratory and/or RACE.

4.7. Activity 5

The RACE shall identify any product limitation from their evaluation activities including the following:

- The operating temperature of the extinguishing agent.
- The maximum distance the nozzle may operate from.
- The maximum number of nozzles in the systems.
- The maximum hose length of the system.
- The pressure vessels (containers) must be registered in accordance with the relevant regulations in the jurisdiction in which they are used.
- The pressure vessels (containers) are coloured in accordance with AS/NZS 1841.1.

4.8. 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 with the relevant test standard under its Scope of Accreditation, or as agreed with CSIRO.

Where test reports were originally produced in a language other than English, suitable translations shall 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 evaluation and the specimens in the endorsed test report is considered a critical requirement. Where external reports do not provide sufficient product identification, additional evaluation to specified requirements may be required.

4.9. Reporting

The verification of conformity report shall include the following information:

a. A statement of conformity with reference to CSIRO Technical Specification TS-020 and unambiguous designation that the system has been evaluated in accordance with this technical specification.
b. A description of the system.
c. Limitation of the product.
d. List of documentation used for the verification of conformity including the document ID, version number, and issue date.

5. Ongoing Verification of Conformity

5.1. Ongoing verification of conformity activities

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

Table 5 Activities required to demonstrate ongoing conformity of the fire suppression system.

Activity	Description	Notes
1	Audit of the Primary Manufacturing Unit (PMU) every three years from the issue date of the Certificate of Conformity.	• Details of the audit activities are described in CSIRO ActivFire® Scheme document AF-D008. • If the Registrant has multiple Certified fire suppression systems 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 fire suppression systems.
2	Witnessing of selected fire suppression test to the relevant test witnessed in Activity 2 in Section 4 every six (6) years.	• This activity may be combined with activity 1 of the ongoing verification of conformity activities. • If the Registrant has multiple Certified fire suppression systems with the Scheme, the Scheme shall work with the Registrant to conduct the revalidation testing within the same period.

Document Review

Version: 1

Issued date: 28-Aug-25

Authorised by: Kai Loh

Document version no:	Issued date:	Change description:
1	28 August 2025	• Initial issue