

Fire-Rated Pipe Support Systems

AS:2419.1, AS:1530.4, NCC

Design Load Compliance Assessment Against Australian Standards

1. Purpose

This document outlines the compliance requirements for fire-rated pipe support systems and evaluates selected commercially available systems against applicable Australian Standards.

The objective is to:

- Define **minimum compliance requirements**
 - Assess whether tested systems **demonstrate compliance**
 - Identify **gaps between testing and required performance**
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2. Applicable Standards

The following standards govern compliance:

- **AS 2419.1** – Fire Hydrant Installations
- **AS 1530.4:2014** – Fire Resistance Testing
- **National Construction Code (NCC)**

These collectively define performance expectations for **fire-rated support systems for essential services**.

3. Fire Resistance Requirement

Minimum requirement:

FRL 60/-/-

Compliance requires:

- Testing in accordance with **AS 1530.4**
 - Performance under **design load conditions (AS 2419.1)**
 - Testing that reflects **actual installation configuration**
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4. Critical Requirement: DESIGN LOAD

Per **AS 2419.1.8.7.2(b)**:

Design Load = 2 × water-filled pipe weight + 115kg per support

Example Loads:

- 100mm @ 4m = **282kg**
- 150mm @ 4m = **421kg**
- 25mm @ 4m = **124kg**

This is the **minimum load that MUST be applied in testing**.

5. Compliance Criteria

A compliant system must demonstrate:

- ✓ Testing at or above AS 2419.1 design load
 - ✓ Full assembly tested (including anchors to structure)
 - ✓ Installation conditions matching real-world application
 - ✓ Compliance with AS 1530.4 test methodology
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6. Assessment of Market Systems

The following systems have been reviewed based on publicly available test reports and engineering documentation.

6.1 TBA Firefly (Wrap System)

Published Test Data

- Tested load: **120kg**
- Reference: Warrington Fire Report 200416

Observed Gaps

- Tested load **significantly below required design load**:
 - 100mm requirement: 282kg
 - 150mm requirement: 421kg
- No evidence of **anchorage to building structure** in testing
- Test setup utilises **non-representative suspension method**
- System **fully encapsulated**, limiting realistic heat transfer behaviour
- Tested loads fall **below even the minimum 25mm pipe design load** (124kg)

Assessment

The testing does not demonstrate compliance with AS 2419.1 design load requirements or AS 1530.4 installation conditions.

6.2 Protect-A-Pipe / Diverse Fire Group (Encapsulated Cover System)

Published Test Data

- Tested load: **64kg – 101kg**
- Reference: Exova Warrington Report 44337600.1

Observed Gaps

- Tested loads fall **below even the minimum 25mm pipe design load** (124kg)
- No inclusion of **direct anchorage to structural element**
- Test specimen installed via **independent frame**, not representative of site conditions
- Load application does not reflect **AS 2419.1 requirements**

Assessment

The system does not demonstrate compliance with:

- AS 2419.1 design load requirements
 - AS 1530.4 requirement for representative installation
 - NCC performance intent for essential service supports
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6.3 Trafalgar (Wrap System – Engineered Assessment)

Published Data

- Engineered load used: approx. **126kg total**
- Reference: Red Engineering Report JN20-00222

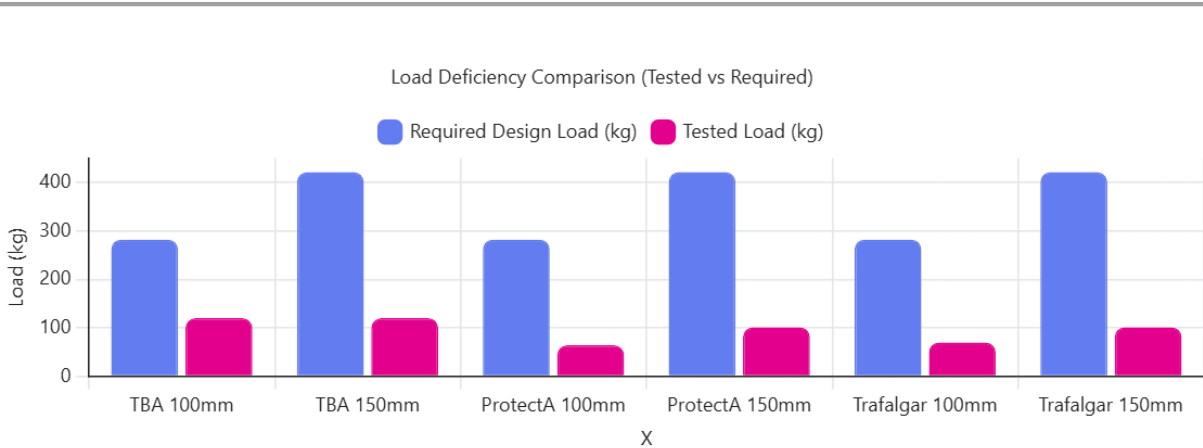
Observed Gaps

- Design load used is **substantially below required AS 2419.1 loads**
 - Required for 150mm @ 4m: 421kg
- No inclusion of **anchorage to building structure**
- Report acknowledges potential system **failure under conditions**
- Relies on **engineered judgement rather than compliant test evidence**
- Load used corresponds approximately to **25mm pipe requirement**, not hydrant pipe sizes
- The actual report has been acknowledged as non-conforming by RED Engineering themselves

Assessment

The system does not demonstrate compliance with:

- AS 2419.1 design load requirements
- NCC requirements for structural performance under fire conditions
- AS 1530.4 testing methodology for full system validation



7. Summary of Findings

Across all three systems reviewed:

Common Non-Conformances Identified

- **Design load not achieved in testing**
(Shortfalls of approximately 200%–600%)
 - **Fixings to structure not included in testing**
 - **Test configurations not representative of real installations**
 - **Load application inconsistent with AS 2419.1 requirements**
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8. Implications for Compliance

Fire-rated pipe supports are classified as **critical components of essential fire systems**.

Failure to meet required criteria means:

- Systems may not perform under **fire conditions**
 - Structural integrity of pipework **cannot be assured**
 - Compliance with **NCC and Australian Standards is not demonstrated**
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9. Compliant Benchmark (Fire Rated Solutions)

Based on reviewed documentation, Fire Rated Solutions demonstrates:

- Testing at **≥ 424kg**
 - Full system assembly tested, including **anchors**
 - Test conditions matching **real installation**
 - FRL achieved:
 - Required: 60/-/-
 - Achieved: **90/-/-**
 - Independent certification: **ActivFire (CSIRO)**
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10. Conclusion

The evaluation of available systems indicates:

A number of commonly marketed solutions do not demonstrate compliance with the minimum requirements of Australian Standards.

Key Determination

Systems that:

- Are tested below AS 2419.1 design loads
- Do not include full assembly in testing
- Do not replicate real installation conditions

cannot be verified as compliant with AS 2419.1, AS 1530.4, or NCC requirements and are not fit for purpose.