

WS51W AND WS52W Classification System: What is the difference?

AS 1670.1 clause 3.26 and AS 1670.1 Appendix B call for cables with increased fire and mechanical protection. In this article, we explain the differences in cable classifications.

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AS/NZS 3013 covers the fire and mechanical performance of wiring system elements for electrical installations. Within this standard, it summarises the classification system that was established to define the performance of a wiring system. This means that all elements of a cabling system have been tested and have passed the tests defined in this standard. These tests ensure that a cabling system can and will maintain circuit integrity under fire conditions for a specified time period and from mechanical impacts during non-fire conditions.

These tests classify each element with a three-part rating, 'WSxxx', e.g. **WS51W** or **WS52W** measuring:

- Fire Resistance
- Impact Resistance
- Water Spray Resistance.

5 Fire Resistance

The fire resistance test subjects cables to intense heat and flame conditions designed to simulate real fire scenarios. The cables must maintain circuit integrity, meaning they continue to function without failure while exposed to fire for a specified duration. This ensures that essential services relying on these cables remain operational during emergencies, providing critical safety and reliability.

All FireSense Fire Rated series cables provide a two-hour (120-minute) fire resistance rating of **WS51W** or **WS52W**.

Cables failing to achieve a two-hour fire rating should not be used where fire-rated cables are required.

Degree of protection indicated by the first characteristic numeral (protection against fire conditions)	
First characteristic numeral	Minimum time for which the test is conducted (mins)
1	15
2	30
3	60
4	90
5	120

SOURCE: AS/NZS 3013

2 Impact Resistance

This represents the degree of mechanical impact and cutting force that a cable can be subjected to without failure when operating at maximum allowable continuous operating temperature (i.e. 110°C).

This rating specifically tests the strength of the protective outer sheath and the quality of the cable's construction and materials. Generally:

- FR cables with conductors <1.50mm or TPS cable will only have a Level 1 Protection (Light).
- FR cables with conductors >=1.50mm should have at least a Level 2 Protection (Moderate).

Most mechanical services standards will require a cable with **WS52W** as a minimum. This represents 6x improvement in impact strength and 3x improvement in cutting strength over a **WS51W** cable.

WS51W cables CANNOT be used in applications where **WS52W** is required.

Note: A WSX1 TPS cable has light impact resistance and no fire resistance.

FireSense are the Fire Rated cable specialists and our cables have been designed and manufactured by experts ensuring they meet the needs of the fire, electrical and mechanical industries.

FireSense cables have all relevant certifications and approvals, are independently certified, environmentally friendly meeting Green Building Council of Australia guidelines, and are the only full range of ActivFire certified fire cables in Australia. www.firesense.com.au

Scan to view the FireSense cable range

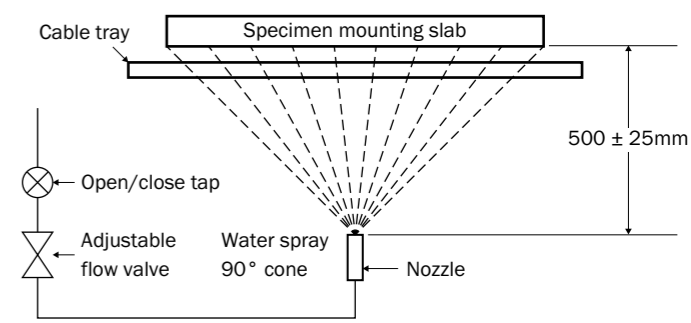


Degree of protection indicated by the second characteristic numeral (protection against mechanical damage)			
1	2	3	4
Second characteristic numeral	Test criteria		Level of impact protection
	Impact test (Appendix D) J	Cutting test (Appendix E) kN	
1	2.5	0.3	Light
2	15	1.0	Moderate
3	50	5.0	Heavy
4	500	5.0	Very Heavy
5	5000	5.0	Extremely Heavy

SOURCE: AS/NZS 3013

W Water Spray

Once the cable has been tested in the fire test for 120 minutes, the cable is then subjected to water spray to simulate a sprinkler in a true condition. The mica tape insulation must not break down during a water spray of 12.5L/min for 180 seconds. All FireSense Fire Rated series cables have been awarded a **W** rating.



SOURCE: AS/NZS 3013

