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Technical Bulletin
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Testing Comparison of ANSI Z89.1-2014 and CSA Z94.1-2015 Standards for Industrial Head Protection

Description

The provincial Occupational Health and Safety Regulations that governs products for head protection vary across Canada. Please reference your applicable jurisdictional regulations for your worksite. Below is a selection of differences between the CSA and ANSI standards for industrial head protection.

Industrial Head Protection*

Test Description	ANSI/ISEA Z89.1 - 2014, All Classes	CSA Z94.1-2015, All Classes
Pre-Conditioning Cold	-30°C for > 4hr (optional lower temp)	-30°C for 4-24 hr
Pre-Conditioning Hot	49°C for > 2hr	50°C for 4-12 hr
Pre-Conditioning Wet	49°C 2hr min immersion	18-27°C 4-24h immersion
Pre-Conditioning Solvent Wipe	No solvent wipe pre-conditioning requirement specified	50% toluene, 50% isooctane mix, apply 30 seconds
Pre-Conditioning Aging	No aging pre-conditioning requirement specified	70°C for 7 days, UV exposure for 2 days (then impact)
Impact - top	3.6kg spherical face impactor dropped onto helmet yielding velocity of 5.5m/s (54.5J impact energy)	Assembly (helmet + 5kg headform) dropped onto flat anvil at max deceleration of 85g resulting in impact energy of 55J
Impact – side, front and rear (ANSI/ISEA Z89.1 – 2014 Type II and CSA Z94.1 – 2015 Type 2 only)	Helmet dropped from a height yielding impact velocity of 3.5 m/s. Impact to occur within the boundaries of the defined protection test lines. Maximum acceleration shall not exceed 150g	Assembly (helmet + 5kg headform) dropped onto flat anvil at max deceleration of 150 g resulting in impact energy of 30J anywhere in the defined test area
Penetration - Top	1kg pointed steel penetrator dropped onto helmet to yield velocity of 7.0 m/s	Helmet dropped onto pointed steel anvil with 30J impact energy
Penetration – side, front and rear (ANSI/ISEA Z89.1 – 2014 Type II and CSA Z94.1 – 2015 Type 2 only)	1kg pointed steel penetrator dropped onto helmet within the boundaries of the defined protection test lines to yield velocity of 5.0 m/s	Helmet dropped onto pointed steel anvil with 15J of energy anywhere in the defined test area.
Coverage	No coverage area requirement specified	Requires head protection to cover at least area above the test line as mentioned in Clause 6.3.1 and pictured in Figure 2.
Passive Retention Test	Chin strap retention test required for Type II helmets that are provided with a chin strap. Elongation of strap not to exceed 25 mm.	Upward load of 12.0N force at constant rate for 10 sec. Front/back tested separately. Change in angle not to exceed 45º.
Ignition Test	No ignition test requirement specified	Liner to not ignite when in contact with a rod heated to 600ºC no glow after removal of rod.

*Please note that the table does not represent a comprehensive list of key differences. Refer to ANSI and CSA standards for full details.

Additional support to assist with fulfilling your provinces regulatory requirements may be available by contacting your 3M Sales andTechnical Representatives.

To meet ANSI Z89.1-2014 Type II and CSA Z94.1-2015 Type 2 requirements, the product must also comply with the corresponding Type I / Type 1 requirements.

The information provided herein is intended for industrial/occupational use by persons with the knowledge and technical skills to use such information. For additional information, including important safety and warranty information regarding 3M Personal Safety products, please refer to 3M Product Literature available upon request.

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