ORLAB Technical Note

Ophthalmic Product Series

Issue 5

A series of technical notes to aid understanding of standards, reasons for failure to comply and hints on avoiding the problem.

Accreditation number 1923

Accredited since 1985

Differences between AS/NZS 1337.1:2010 AND EN166:2001

General

One of the objectives of Committee SF-006 in revising AS/NZS 1337 was "to align the Standard more closely with other published standards including the CEN Standards pending the development of equivalent ISO Standards". One of the policies of Standards Australia is to develop standards that are technically equivalent to international, *de facto* international standards or regional standards. The main driver in this is to eliminate or minimise the need for retesting of products. The need to retest is seen as a non-tariff barrier to trade and there needs to be a genuine reason to maintain such a difference in standards and testing.

"Technical equivalence" does not mean that the compliance values must be the same but that the test methods must be the same. Setting a higher or lower compliance value is not a problem when the test method is the same. For instance, AS/NZS 1067:2003, the sunglass standard, requires a minimum Q_{Blue} of 0.70 where EN 1836:2005 sets 0.40 as the minimum. All that is necessary is to examine the test report and re-interpret the result in terms of the different compliance value. In other cases the test method may be different and retesting is necessary.

Consistent with CEN practice (and ISO), reading and understanding EN 166 requires access to other EN standards whereas AS/NZS 1337.1 is a stand-alone document. That was an explicit decision of Committee SF-006.

It is possible to re-interpret parts of a report to EN 166 to establish compliance with AS/NZS1337.1. The aim of this technical note is to show what can and cannot be established regarding compliance with AS/NZS 1337.1 from an EN 166 report.

You should only consider reports from laboratories that have been accredited by their national accreditation authority. As the result of the various MRAs entered in to by NATA, these have the same status as a NATA endorsed report. If they are not accredited, there is no guarantee of the quality of the laboratory and its work.

Differences

AS/NZS 1337.1:2010 Clause	Comments
2.2.3 Dimensions	There is no equivalent section in EN166. This needs to be checked on eye protectors for AS/NZS approval.
2.4.3 Transmittance properties	For untinted eye protectors, there are no explicit transmittance requirements in EN 166 other than that they are category 0 (≥80% luminous transmittance). EN 172 sets out the requirements for sunglare filters. AS/NZS sets UV and coloration requirements for all eye protectors. The UV requirement 280 to 315nm category 0 to 2 is a maximum of 0.05 times the luminous transmittance whereas EN 172 has 0.1 times. The Australian committee has never apologised for insisting on more stringent UV requirements. The draft ISO sunglass standard is consistent with AS/NZS standards. There is also an ambiguity because the writers of the EN standard were not consistent in the precision with which they specified the requirements. 0.1 has a slightly different meaning from 0.10. In the first case 0.14 will round down to 0.1 (and pass) where in the second it exceeds 0.10 (and fails). EN 166 lacks an "Outdoor untinted" category. The advice from industry to SF-006 was that this was a useful provision, so it was retained. The traffic signal specifications for the calculation of the Q values are different. Recalculation from the spectral transmittance values is necessary. The AS/NZS 1337.1 data are the same as that accepted in the preparation of ISO 12312-1 Sunglasses for general use. So Australian practice is ahead of ISO practice. The data in AS/NZS 1337.1 represent modern traffic signalling practice complying with ISO 16508:1999. Technology has changed since the data of the EN standard (previously used in the German DIN standard) was gathered. In addition, data for modern LED signals are provided in AS/NZS 1337.1 for information. These may be adopted in future revisions of the standard as LED signals become the predominant practice. The same strategy is being adopted by ISO in the draft ISO 12312-1.
2.4.6.1 Spherical and astigmatic power	EN 166 has three optical classes, 1 to 3. The requirements of AS/NZS lie between Class 1 and Class 2. The committee saw no need for multiple classes and was not prepared to adopt the stringent requirements of Class 1. The specification maintained the requirements of the earlier version of AS/NZS 1337. Eye protectors complying with EN Class 1 will comply with AS/NZS. For EN Class 2 the actual data will have to be examined. Some will comply and some won't. Eye protectors meeting only EN Class 3 will not comply with AS/NZS.
2.4.7.3 & 4 Prismatic power	AS/NZS requirements are the same as EN Class 2 and consistent with the earlier AS/NZS 1337.
2.4.8 Scattered light	This is a different test from EN but it is the same test as in the Draft ISO sunglass standard. A laboratory round robin has shown that the method adopted is more valid and has also been adopted in ISO 12312-2. For dark filters, the method is the same as the EN.

2.5 & 3.2.7 Low impact resistance	This has always been the entry level eye protector in Australia. In Europe, the entry level is Minimum Robustness, which is a static load test. The AS/NZS low impact is the same as EN166 increased robustness.
2.6 & 3.3.1 Medium impact resistance	The same as the EN Low energy impact.
2.7 & 3.3.2 High energy impact	The same as the EN Medium energy impact.
2.8 & 3,3,3 Extra high energy impact	The same as the EN High energy impact.
2.9 & 3.2.8 Penetration resistance	There is no equivalent requirement in EN166. This test comes from the ANSI standard.
3.2.9 Resistance to ignition	This test is mandatory only for wide-vision goggles, eyeshields, faceshields and hoods. This is the same as EN 166 but it is worth noting that ORLAB does not have a history of this test so that all materials are unknowns at present and need testing. Previously we relied on knowledge from earlier tests to report on performance without extra cost.
3.3.4 Splashes	Only goggles and faceshields are assessable under AS/NZS and EN. Goggles are defined as resting on the face (as against on the bridge of the nose) and have larger dimension requirements than spectacle types. The principle and process of the test is the same but the area to be protected is larger in AS/NZS. Retesting is necessary although it would be possible to do both at the same time if forewarned. Converse;y, a pass on the AS/NZS version indicates a pass for EN.
2.13 & 3.5 Marking	AS/NZS continues the previous marking practice and adds the EN marking practices. Take care that markings do not conflict. Since the EN markings derive from the German DIN practices, the simple associations that “I” for impact is medium impact and “V” for velocity is high impact, “D” is for dust, “C” is for chemical splash, “M” is for molten metal and “G” is for gas are, unfortunately, likely to be lost in future. EN allows goggles to be our high impact (their medium). AS/NZS does not. Therefore the EN “B” markings on goggles are not permitted.
3.3.8 Protection against high temperature	This optional test, which is new to AS/NZS, has no EN equivalent. As a consequence we have, with the agreement of the then chair of the ISO committee, adopted the marking of “H” for hot.
Scheduling of tests	Testing to AS/NZS 1337.1 has always involved repeat testing on the same eye protector. The standard is actually silent on the matter. EN 166 is quite explicit and has a schedule of tests that requires a minimum of 14 pairs, plus 12 for medium/high/extra high impact and 3 more for each additional test like splash. With the agreement of your compliance/certification authority, either strategy may be adopted.

Summary

Re-examine product	Re-evaluate from data in report	Re-calculate from data in report	Test product
Dimensions Markings Schedule of tests	UV transmittance Refractive power Prismatic power Impact grade	Q values	Penetration Scattered light Splash (optional test) High temperature (optional test)

These notes are of a general nature, you should investigate how these standards changes apply to you and your products yourself and not rely solely on these general guidelines.

Questions on use of the Standards Mark and how this might affect your current licences to use the mark, contact www.saiglobal.com or www.benchmarkcertification.com.au.

Technical equivalence works both ways, so that the results of tests for compliance with AS/NZS1337.1 are also evidence of compliance with EN standards. The two major compliance authorities operating in Australia are also notified bodies under the European system for CE marking. In association with them, ORLAB can also provide the testing for CE approval.

Looking forward to the ISO sunglass standard, the only disparities at this stage between AS/NZS 1067:2003 ISO DIS 12312-1 are the compliance value of Q_{Blue} being 0.70 in AS/NZS, 0.40 in EN 1836 and 0.60 in ISO DIS 12312-1 and the ultraviolet limits being 400nm in AS/NZS (consistent with other specifications like the Commission Internationale de l'Éclairage) and 380nm in the EN and ISO DIS (a limit more or less peculiar to the ophthalmic industries).

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