CHANGES TO AS AND NZS STANDARDS FOR GLUING AND FINGERJOINTING

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WHAT IS BEING CHANGED IN GLUING?

- **AS/NZS 4364 (Int) Timber structures-Bond Performance of adhesives – Basic requirements** is a new document that presents a “performance based” approach to adhesive bond performance.

- **Every effort is being made to align this document with ISO 20152 but without imposing ISO time constraints on the process.**
WHAT DOES “PERFORMANCE-BASED” MEAN?

- AS/NZS 4364:1996 HAD THE TITLE *Adhesives, phenolic and aminoplastic for load-bearing timber structures: Classification and performance requirements* WHICH MEANT THAT IT WAS RESTRICTED IN APPLICATION TO WHAT COULD BE CALLED TRADITIONAL WOOD ADHESIVES

- THIS HAS THE DISADVANTAGE OF MAKING IT DIFFICULT FOR ADHESIVE MANUFACTURERS TO INTRODUCE NEW ADHESIVES INTO THE MARKET-PLACE

WHAT DOES “PERFORMANCE-BASED” MEAN?

- AS/NZS 4364 (Interim) DOES NOT MENTION THE ADHESIVE BY CHEMICAL TYPE – COMPARE THE TITLES

*Timber structures-Bond Performance of adhesives – Basic requirements*  
VERSUS  
*Adhesives, phenolic and aminoplastic for load-bearing timber structures: Classification and performance requirements*
WHAT DOES “PERFORMANCE-BASED” MEAN?

- THE NEW DOCUMENT SIMPLY REQUIRES THAT THE ADHESIVE BE SUBJECTED TO SPECIFIED TESTS AND THAT IT MEET SPECIFIED PERFORMANCE REQUIREMENTS.

WHAT PERFORMANCE REQUIREMENTS?

- THAT IT MEET SPECIFIED ANTI-FUNGAL PROPERTIES
- MEET MINIMUM AND MAXIMUM pH LEVELS
- EXHIBIT HYDROLYTICAL STABILITY
- ACHIEVE MINIMUM STRENGTH AND WOOD FAILURE LEVELS IN BLOCK SHEAR TESTS
- EXHIBIT RESISTANCE TO CYCLIC DELAMINATION
- THAT IT NOT CREEP MORE THAN SPECIFIED AMOUNTS AT TEMPERATURES UP TO 80°C
CONTROVERSY

- IT CAN BE ARGUED THAT THE TESTS DO NOT DIRECTLY ADDRESS LONG TERM DURABILITY (30 YEARS OR MORE OF OUTDOOR EXPOSURE)

- THE USA AND CANADA RESPECTIVELY ARGUE IN FAVOUR OF:
  (a) USA - A HIGH TEMPERATURE (230°C) STRENGTH TEST
  (b) CANADA – A HIGH TEMPERATURE (180°C) CREEP TEST

EUROPE, AUSTRALIA AND NEW ZEALAND ARGUE IN FAVOUR OF TESTING AT NO HIGHER THAN 80°C THUS ALIGNING THEMSELVES WITH THE EUROPEAN POSITION

IT IS DEBATABLE WHETHER OR NOT THE ISSUE IS ABOUT NORMAL SERVICE CONDITIONS OR FIRE PERFORMANCE
CONTROVERSY

- IN THE USA’s CASE (230°C) IT IS CLEARLY ABOUT FIRE, THE CANADIAN POSITION (180°C) IS VERY DIFFICULT TO UNDERSTAND

- THE E/A/NZ ARGUMENT IS THAT FIRE RATING HAS AS MUCH TO DO WITH STRUCTURAL FORM AS IT DOES ABOUT GLUE PERFORMANCE – NE’ER THE TWAIN SHALL MEET

RESOLUTION OF CONTROVERSY

- THE ISO STANDARD IS SPLIT INTO TWO PARTS

Timber structures-Bond Performance of adhesives – Basic requirements

Timber structures-Bond Performance of adhesives – Additional requirements

THE LATTER CONTAINS HIGH TEMPERATURE TESTS
RESOLUTION OF CONTROVERSY

- MANUFACTURERS EXPORTING TO THE USA AND CANADA WILL HAVE TO MEET THE HIGH TEMPERATURE (ADDITIONAL) REQUIREMENTS

- ELSEWHERE ONLY THE BASIC REQUIREMENTS MUST BE MET BY THE ADHESIVE MANUFACTURER

- AS/NZS 4364 IS NEARLY IDENTICAL TO THE ISO “BASIC REQUIREMENTS”

WHAT THE STANDARD DOES NOT DO

- THE NEW ADHESIVE STANDARDS (BOTH ISO AND AS/NZS) MEAN GLULAM AND FINGER JOINT MANUFACTURERS ARE STILL REQUIRED TO PROVE THE ADHESIVE WORKS WITH THEIR SPECIES AND MANUFACTURING PROCESSES

- THE ADHESIVE STANDARD ONLY TESTS THE ADHESIVE AGAINST STANDARD SPECIES UNDER LABORATORY CONDITIONS
WHAT THE STANDARD DOES NOT DO

- Each manufacturer has unique manufacturing equipment and procedures and wood species

- For this reason finger jointing and glulam manufacturing standards contain requirements for so-called "qualification tests" which test your product following manufacture under your specific conditions

WHAT THE STANDARD DOES NOT DO

- An ISO or AS/NZS standard cannot over-ride national building regulations which are legally enforceable documents – hence, in Rome, you will have to do what Roman law says even if the Romans have signed a W.T.O. treaty

- In the end, the laws of a sovereign nation take precedence over national and international standards
FINGER JOINTING STANDARD

- AS/NZS 1491 FOR STRUCTURAL FINGER JOINTING WAS UPGRADED AND BECAME AS5068
- NO FUNDAMENTAL CHANGES BUT CERTAIN POINTS CLARIFIED
- SOME MISCONCEPTIONS

FINGER JOINTING STANDARD - CLARIFICATIONS

- STANDARDS NOW MAKES IT CLEAR THAT IT APPLIES TO THE FINGER JOINT ONLY
- WORK UNDERTAKEN ON THE STATISTICAL BASIS THAT ALLOWS FINGER JOINT STRENGTH TARGETS FOR DAILY QUALITY CONTROL TO BE LINKED TO A TARGET STRESS GRADE
FINGER JOINTING STANDARD – MISCONCEPTIONS

- That there is some change in definition of Service Class 2 conditions – there is not

- If wood moisture content remains below 20% then the product is in Service Class 2 conditions

FINGER JOINTING STANDARD - MISCONCEPTIONS

- That painting a product that is otherwise in Service Class 3 conditions will mean it is in Service Class 2 conditions

- TM004 has no views on this matter and no information on which to base an opinion

- No views on this matter are expressed in either AS/NZS 1491 or AS 5068
FINGER JOINTING STANDARD – WHAT MIGHT HAVE CAUSED THIS VIEW

- There was a diagram used in AS5068 that did not appear in AS/NZS1491 that attempted to define service class 2 (loosely defined as covered outdoor exposure).

- The fundamental definition of 20% remains. So the committee is saying that in the sheltered region it considers that SC2 conditions are met and nothing more.
AS 5068 CHANGES TO ADHESIVE TYPE

- EXTENDED RANGE OF ADHESIVES FOR SERVICE CLASS 2 (MUFs, PURs & APIs ADDED)
- AS/NZS 4364 (Int) SPECIFIES THE PERFORMANCE LEVELS FOR THE NEW ADHESIVES

NO CHANGES TO AS 1328 ADHESIVE TYPE

- NO CHANGES SO FAR

- CURRENTLY CLAUSE 2.3 STATES “The adhesive shall be capable of producing strong and durable joints which maintains the bond integrity throughout the intended life of the structure.”
  - NOTE: Acceptable strength and durability can be achieved by the use of a polycondensation adhesive of the phenolic or aminoplastic type as defined in AS/NZS 4364.
Ensis/Monash TRIALS (PURs) IN DARWIN AND AT MONASH

DARWIN FIELD TRAILS AT CSIRO SITE

MONASH TRIALS IN AN ENVIRONMENTAL CHAMBER

TRIALS ARE APPROACHING 1 YEAR