

COMMENTS HANDLING DOCUMENT – VERSION 3 – NOVEMBER 18, 2020

In the following table are all written comments received during the project assembled. An explanation to the columns used are as follows:

Column 1 – Nº: Numbering of comments

Column 2 – Body Reference: The body who have given the comment

Column 3 – Comment on document: A reference to which document the comment belongs

Column 4 – Paragraph/Figure/Table: A reference to which part of the document the comment belongs

Column 5 – Comment: The comment received

Column 6 – Proposed change

Column 7 – Answer by the consortium: A short description on how the comment has been handled

The answers given by the consortium in this document are valid for the time they were written, but the answers may change during the course of the project.

The table below lists the comments that have been handled after the publishing of Version 2 of the Comments Handling Document, dated October 23, 2020.

Nº	Body Reference	Comment on document	Paragraph/ Figure/ Table	Comment	Proposed change	Answer by consortium
192		Theoretical RR	General	addition of optional measurements with regard to heat transmission through façade; add explanation for necessity of secondary opening; explanation, if secondary opening is optional or obligatory.		There will not be any measurements on heat transmission through the façade. Although, measurements are made in the different layers of the façade system, i.e. in the different materials as long as they are combustible materials, and also in cavities. If the floor to façade junction is to be included, the heat transmission through the floor system will be measured for this junction. A question has been sent to the Steering Group whether the floor to façade junction shall be included in the method or not.

						The secondary opening will be mandatory at present. It can be explained in more detail in the scope of the method.
196		Theoretical RR	Assessment method	Is there some system without opening protection? We think there will be always some profile, window sill etc.		This will affect the field of application of the assessed façade system. If no protection by a window frame is used in the test, the field of application will be larger since it is possible to add all different types of windows in the opening.
216		Theoretical RR	Assessment method – Test specimen	At figure 2 "Secondary opening (see 7.2)" instead "7.3"		Will be corrected
250		Theoretical RR	Assessment method – Test specimen	we consider it appropriate to place Figure 2a from "Exercises.docx" file also in the assessment method, where the joints are well represented		Horizontal and vertical joints will be included in Figures 17 and 18 of the Assessment Method.
251		Theoretical RR	Assessment method – Test specimen	More clarity is required on the requirement of additional test specimen, it should be instead additional tests or probably a worst case scenario identification. Workmanship might not be a controlled procedure since we don't monitor once they have left the laboratory.		Some changes in the text of 6.5 has been made.
254		Theoretical RR	Assessment method – Test specimen	Comments: Implement a fix height of the structural frame. Info about frame and wall is not very clear: - § 4.1 General "The rig utilizes a vertical structural frame, representative of a structural steel framed building" -> what		The text in 4.3 will be changed and clarified on the purpose of the structural frame. An informative annex will be included in the Assessment Method with example on how to build a structural frame.

				<p>about eg. concrete buildings; - § 4.3 Structural frame "Other structural frames such as timber or concrete can be employed for specific applications." -> Which design required? From our point of view the steel supporting construction needs to cover all types of buildings.</p>		
255		Theoretical RR	Assessment method – Test specimen	<p>Implement a fix height of the structural frame. Info structural frame and wall is not very clear: § 4.1 "The rig utilizes a vertical structural frame, representative of a structural steel framed building" -> what about eg. concrete buildings; § 4.3 "Other structural frames such as timber or concrete can be employed for specific applications." -> Which design required? From out point of view the steel supporting construction needs to cover all types of buildings.</p>		<p>The text in 4.3 will be changed and clarified on the purpose of the structural frame. An informative annex will be included in the Assessment Method with example on how to build a structural frame.</p>
256		Theoretical RR	Assessment method – Test specimen	<p>It should be shown on the drawing where the floor separations should be and where some systems should place their fire stop/ fire barrier which are needed in some systems and countries.</p> <p>Maybe add; "The test specimen shall only contain a</p>		<p>A location of floor levels will be included.</p> <p>The placement of fire stops/barriers will be decided by the client since this may differ between different Member States and façade systems. This will be a question for the Field of Application.</p>

				mixture of different designs providing this is representative of end use applications”.		
257		Theoretical RR	Assessment method – Mounting of the Test specimen	additional point to 4 (it was too much symbols there) 4) in 4.3 are mentioned alternative structural frames (timber, concrete) it isn't clear – in what cases are they needed (for example, Specimen 2 of this RR is wooden construction which was tested on steel structural frame, but in end use application no structural frame is used).		The text in 4.3 will be changed and clarified on the purpose of the structural frame. An informative annex will be included in the Assessment Method with example on how to build a structural frame.
258		Theoretical RR	Assessment method – Mounting of the Test specimen	Give detailed instruction with examples		More examples and figures with details will be included There will be informative annexes showing examples on how to do mounting around the openings (combustion chamber and secondary opening). It will also be included example on how to perform the mounting of full external walls on the structural frame.
260		Theoretical RR	Assessment method – Mounting of the Test specimen	7.3 There should be a difference in the materials used for the frames. If they are made of combustible materials, mounting them could have a negative effect on the results. Different rules for the different materials should be added in DIAP. In this regard, can the frame at combustion chamber and at		A proposal will be made to have the option to test with a protection (simulating a window frame) of either a combustible frame or a non-combustible frame. The widest field of application will be to test without any protection, i.e. without using a frame. It will of course also be possible to test with other types of protection of the façade, but this will have a very negative effect on the field of application. Paragraph 7.3 will be rewritten

				secondary opening be different?		
261		Theoretical RR	Assessment method – Mounting of the Test specimen	our answers in 7.1.2 and 7.1.5 in “Exercises.docx” file apply provided that the steel sections in the figure = structural frame, but this is not entirely clear from the figure		This is mainly a comment on the question in the theoretical round robin, and does not have any implications on the Assessment Method.
262		Theoretical RR	Assessment method – Mounting of the Test specimen	Since the framing system could be different to end use, suitable type of fixation should be used to connect cladding systems to framing systems		The aim of the structural frame will be explained in more detail. Its purpose is only to be a stable structure onto which the test specimen (if it is a full external wall) or the supporting construction can be mounted.
264		Theoretical RR	Assessment method – Mounting of the Test specimen	Fig. 10 does not match with fig. 2: 1st transom is located at approx. 3000 mm instead of 2500 mm in fig. 2. This solution seems to be better. - “When only a part of the external wall is tested, such as an ETICS, a supporting construction is necessary onto which the test specimen can be mounted. See 7.1 for more rules.” -> When it is allowed to test only a partly external wall and when not? No indication on the location of fire stops		Will be corrected. Although the structural frame can be designed in different ways since its only purpose is to be a stable frame on which the supporting construction, or the full external wall, can be attached in a safe way. An example on a structural frame will be given in an informative annex. The design of the test specimen will be dependent on the field of application which is outside the scope of the present project.
265		Theoretical RR	Assessment method – Mounting of the Test specimen	“When only a part of the external wall is tested, such as an ETICS, a supporting construction is necessary onto which the test specimen can be mounted. See 7.1 for more rules.” -> When it is allowed to test only a partly external		Will be corrected. The design of the test specimen will be dependent on the field of application which is outside the scope of the present project. The question on when the full external wall or only a part of the wall, or a cladding system

				<p>wall and when not? No indication on the location of fire stops. Fig. 10 does not match with fig. 2: 1st transom is located at approx. 3000 mm instead of 2500 mm in fig. 2. This solution seems to be better</p>		<p>is enough, needs to be tested has not yet been decided. Some kind of definition will be needed, especially for the field of application. Such definition could be that the system shall be mounted on a wall with a outer layer of class A and a protection of K₂30, or something similar.</p>
267		Theoretical RR	Assessment method – Mounting of the Test specimen	<p>In clause 7.2.1 it is said that the second opening shall be incorporated. In clause 12 "Test report" you can get the impression that the second opening is not mandatory (as you have to state in the report the presence of the second opening). What about prefabricated ETICS. Then the main face and the wing have to be mounted separately.</p>		<p>1. Regarding the secondary opening a question has been sent to the steering gropp whether it shall be mandatory or not. Although a better explanation will be incorporated in either case.</p> <p>2. For systems that are delivered in modules, then they shall be possible to test as modules, and thus it may in some cases be possible to mount the main face and the wing separately.</p>
268		Theoretical RR	Assessment method – Conditioning of the Test specimen	<p>Assessment method say : The test rig with the mounted test specimen shall be protected from adverse environmental conditions such as water, wind load and ambient temperatures outside the range +5 °C to +35 °C during the mounting, conditioning and test period. These conditions nearly obliged to test indoor. When tested outdoor, it will be difficult for the laboratory to guaranty to sponsor a reasonable test date.</p>		<p>At present it will be possible to perform the test as well as store and mount the test specimen outdoors, but it will be the responsibility of the test lab to ensure that the requirements on environmental conditions are fulfilled. This may of course be difficult in some cases especially during winter.</p>
277		Theoretical RR	Assessment method –	<p>In 9.1.3 of the method we find the text "...In each location, internal</p>		<p>Will be clarified better in the text.</p>

			Instrumentation	thermocouples shall be positioned at the mid-depth of each combustible layer (see definition in chapter 3) and air cavity within the test specimen with a depth ≥ 10 mm..." not clear enough if the 10 mm are only for the air cavity, or for both the air cavity and the combustible layer. For our results we have read it as both air cavity and combustible layer.		
278		Theoretical RR	Assessment method – Instrumentation	Position of the first thermocouple in Column 1 & 2 has to be mentioned. From the drawing provided one has to guess it is in line with the head of the combustion chamber. Figure 11 is misleading and giving an idea that the internal Tc's can be placed at a distance from the external Tc or specified locations. The concept of measuring the mass loss of wooden crib has to be explained in the standard.		<p>The thermocouples in the columns will be changed. There will be drawings showing the positions in the assessment method.</p> <p>There is an explanation in the text that the maximum distance between the TCs is 50 mm. Although it will be made clarified more in the drawing.</p> <p>Regarding the mass loss measurements it is not yet decided whether it shall be incorporated in the method or not. It is one of several methods examined to measure the heat exposure to the test specimen. In any case the measurement chosen will be explained in more detail.</p>
285		Theoretical RR	Assessment method – Test procedure	10.8.3 in all three rows it would be clearer if instead of for example "failure of more than 2 thermocouples..." is written "failure of 3 or more thermocouples..."		This has been changed in the text.
287		Theoretical RR	Assessment method – Test procedure	In chapter 10.8 invalidation of test, it could be useful to: - declare that the point listed are in addition to all other request of the assessment		LB: This will be considered and clarified.

				<p>method (they are not the only points which invalidate the test)</p> <p>- find a rules about problems that occurred during extinguishing of the fire source</p>		
289		Theoretical RR	Assessment method – Test procedure	<p>10.2 Definition of the start of the test (ignition source / crib) should be made clearer. Inserting a section between 10.5 and 10.6 for "Smouldering" would be useful</p> <p>10.6 For clarification it should be mentioned that the specimen shall not be extinguished after the test.</p> <p>10.8 Can thermocouples be exchanged during the test if they are defective to avoid invalidation of the test?</p>		<p>The start of the test will be harmonized between the two heat exposure tests, and the start of test will be the same. The start of the test is when the sticks are ignited.</p> <p>The question regarding smouldering will be brought to EC. If it shall be included more clarifications are needed, if not some texts needs to be removed from the assessment method.</p> <p>Thermocouples can probably not be exchanged during the test. It is not forbidden, but the safety of the personnel must be considered.</p>
291		Theoretical RR	Assessment method – Test procedure	<p>10.3 Defining start more precisely (test starts with ignition 1st or 2nd pool/wood strip?)</p> <p>10.3.1/2 Specifying exact positions of pools/wooden parts</p> <p>10.8.1 Define invalidity due to weather (What is meant by "significant" in paragraph 5.3?)</p> <p>10.8.2 It would be very unreasonable to state after the test that it was invalid because the heat input was too low, for example 0.5 MJ. If the wooden crib is precisely defined, it can nevertheless be assumed that the</p>		<p>This will be considered, and the method will be clarified. Before and new proposals can be maid we have to wait for the results from the experimental study to be carried out.</p>

				corresponding heat input is correct.		
299		Theoretical RR	Assessment method – Test criteria	After re-reviewing the performance criteria, mass of falling part should be the danger whether determined by mass or area (using area density). The criteria should not be failed by area alone. Would a falling piece of 100 mm × 1000 mm tape be dangerous?		<p>The criteria on falling parts are based on the current regulations in the Member States, and there we have some who have regulations on the maximum size.</p> <p>The requirements will be discussed with the MS and set in accordance with needs.</p>
301		Theoretical RR	Assessment method – Test criteria	The temperature criterion is unclear. Is it a rise in temperature during a duration of 30 seconds or is it the moment the temperature exceeds the threshold of 500°C.		This shall be clarified.
302		Theoretical RR	Assessment method – Test report	1)... and the time of failure..., so in case when specimen passes 60 min test and we write that test result is 60 min does it mean that criterion fails? indeed no, so in the standard should be written "test result 60 min means that criterion didn't failure"		<p>This needs to be clarified further in the text. You are right, a test result showing 60 minutes means that it has not failed the test.</p> <p>An example will be included in the method on how to write the different failure times, and how to interpret the results.</p>
303		Theoretical RR	Assessment method – Test report	point n same remark that the one given for chapter 10.8		Noted
304		Theoretical RR	Assessment method – Test report	The chapter should begin with "In addition to the items required by EN 1363-1 the report shall contain the following:		This is not a fire resistance tests, and it is far from a furnace test. Although some references will be made to EN 1363-1 such as on plate thermometers.
305		Theoretical RR	Assessment method – Test report	- Is it possible to issue a separate classification report? Similar to the reports issued		This is of course always possible, but not necessary. At present the work to be carried out in the project is to finalize a proposal on an assessment method including a test

				according to EN 13501 series?		method and a classification system. As it is written now you will have both the test and classification in the same report.
306		Theoretical RR	Assessment method – Test report	(e) Point 4: is it not sufficient for the inspection body to confirm that the product has been conditioned accordingly? (l) How should the table be completed if the failure criteria have not been met?		our view is that it is not sufficient to just declare that the materials have been conditioned, but it shall also be stated in the report the moisture content of the hygroscopic materials. If you have reached 60 minutes without any failure, then it has passed the test. It is only when you do not reach the 60 minutes you will have a failure. This may need some more explanation in the method.
307		Theoretical RR	Assessment method – DIAP	h) illogical application, see. 7.3.8 of main answers list		Noted. This will be explained in more detail, and we are discussing a way forward to have a more simple and standardised way to perform the tests when a protective frame is used.
308		Theoretical RR	Assessment method – DIAP	Section F) and G) should be replaced by; “When tested with an insulation of either Euroclass E, D, C, B or A2 it can be replaced with an insulation of an better Euroclass with the same thickness and density, when appropriate in regards to the stability of the system”		Noted, but it will be kept as it is until evidence is available that these changes can be made.
309		Theoretical RR	Assessment method – DIAP	- Increasing the number of joints (vertical or horizontal) could negatively affect fire performance. Decrease of joints seems to be safer scenario		Noted and will be considered.
310		Theoretical RR	Assessment method – DIAP	is it possible replace insulation e.g. class D by B or C? It is not described exactly in DIAP.		The field of application is outside the scope of the present project. Only very conservative rules will be included.

311		Theoretical RR	Assessment method – DIAP	Include the extension of the test results when test was conducted in a different environmental condition (For high humidity/temperature ranges)		The field of application is outside the scope of the present project. Only very conservative rules will be included.
312		Theoretical RR	Assessment method – DIAP	<p>1. Direct field of application should allow for alternative mechanical fixings;</p> <p>2. In line with EN13501-1 produces can be only tested to ISO 11925-2 and obtain Euroclass E while the product if tested to EN13283 and ISO11925-2 could obtain higher classes. As such, extend of application of insulation with Euroclass E to higher class could potentially be unsafe.</p> <p>3. DIAP: The allowed change in dimensions of cladding panels needs to be defined</p>		The field of application is outside the scope of the present project. Only very conservative rules will be included.
313		Theoretical RR	Assessment method – DIAP	<p>Are DIAP rules agreed with the national certification bodies, as they must also support the DIAP rules?</p> <p>Are flammable window frames really covered when tested without frames?</p>		The field of application is outside the scope of the present project. Only very conservative rules will be included.
314		Theoretical RR	Assessment method – DIAP	<p>What about size of boards. Only limited change in dimensions should be allowed. Bigger boards can result in less mechanical stability while smaller boards can result in more (critical) joints. Range of allowed fixations (different from these used for the test supporting construction) have to be</p>		The field of application is outside the scope of the present project. Only very conservative rules will be included.

				<p>described. A reaction class E is not Always less fire-safe than a class B, C or D(if the SBI test is not performed on a potential class B product). Increase in number of joints when open joints are used?</p>		
315		Theoretical RR	Assessment method – DIAP	<p>What about size of boards. Only limited change in dimensions should be allowed. Bigger boards can result in less mechanical stability while smaller boards can result in more (critical) joints. Range of allowed fixations (different from these used for the test supporting construction) have to be described. A reaction class E is not always fire-safer than a class B, C or D (if the SBI test is not performed on a potential class B product). No DIAP rules for façade-floor junction available.</p>		The field of application is outside the scope of the present project. Only very conservative rules will be included.
316		Theoretical RR	Assessment method – Classification	<p>unclear what conclusion should be written in case when no classification is possible, in what form</p>		Noted and will be clarified in the method.
317		Theoretical RR	Assessment method – Classification	<p>It should mention that EN 13501-2 supersedes this section when it has been updated. The classification should not be in the test standard in the later versions but is of course needed for now.</p>		Noted. Although in the present project the proposed assessment method will include both a test method and a classification system. EN 13501-2 is only for fire resistance tests, and the façade test is not fire resistance.

318		Theoretical RR	Assessment method – Classification	When floor joint is tested, what sort of classification should be assigned to the tested joint? Also, if the floor joint fail, how would that affect the overall test?		At present no classification can be made on the floor joint, and it is only incorporated in the test method as an optional test, mainly for France.
319		Theoretical RR	Assessment method – Classification	Both a puddle with a diameter of 50 mm and the fall of the entire façade are rated equally. Therefore a grading for low/medium/many falling parts would be better, e.g. LS1- d0/d1/d2 and LS2- d0/d1/d2.		The classification system can be made in different ways, and the proposal so far is based on the discussions held in the previous project. Thus, it was decided to have as few classes as possible to keep it simple. Although, this may be changed if desired by the Member States. The falling part criteria has been brought to the steering group, and it will be decided later.
322		Theoretical RR	Assessment method – Classification	Has to give more detail and be more defined. Maybe more classes have to be made.		LB: The classification system can be made in different ways, and the proposal so far is based on the discussions held in the previous project. Thus, it was decided to have as few classes as possible to keep it simple. Although, this may be changed if desired by the Member States. The falling part criteria has been brought to the steering group, and it will be decided later.
323		Theoretical RR	Assessment method – Classification	Should not the order be like LS1 not falling parts that cover all the classes. The same with LS3 not falling parts, should cover LS 4 falling parts. LS1 not falling parts (best class), LS2 not falling parts, LS3 not falling parts, LS4 falling parts (worst class)?		To be clarified. LS1 means that criteria on both fire spread and falling parts have been passed.
337		Theoretical RR	Assessment method –	Remove this "A mobile extinguishing system shall be		Noted and will be considered.

			Façade to floor junction	prepared before the test in case where the fire would develop at the junction." Or rephrase it to eg. "Care should be taken in the possible failure of the junction during the test" It should be up to the labs themselves how they deal with this challenge, this is a test standard not a course in safety ;)		
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