**INTERNATIONAL ELECTROTECHNICAL COMMISSION SYSTEM FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES (IECEx SYSTEM)**

**TITLE: Compilation of comments and Observations on -** **ExTAG/674/CD – Draft ExTAG Decision Sheet – The number of impact test conducted on the equipment**

**Circulated to: ExTAG – IECEx Testing and Assessment Group**

**INTRODUCTION**

This document contains the compilation of comments, as well as observations, from the originator, CQM, CN, on ExTAG/674/CD – Draft ExTAG Decision Sheet – The number of impact test conducted on the equipment.

A revised document *ExTAG/674A/CD– Revised Draft ExTAG Decision Sheet – The number of impact test conducted on the equipment* has been prepared for consideration during the 2022 ExTAG Remote Meeting.

***Please inform the Secretariat immediately of any omissions or errors at-***

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**ExTAG Secretariat**

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| **ExCB/**  **ExTL**  **674** | **Clause/ Sub-clause** | **Paragraph Figure/**  **Table** | **Type of**  **comment**  **General/**  **technical/**  **editorial** | **COMMENTS** | **Proposed change** | **Observation**  **(to be completed by the originator)** |
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| **CCCMT**  **CN** | 26.4.2 | / | editorial | Maybe more impacts are required if the sample has different kinds of cable glands, light-transmitting parts made of glass, etc. | IEC 60079-0:2017 clause 26.4.2”The test shall be made on at least two samples of the equipment, see 26.4.1. The test shall **at least** be made at two separate places on each sample. For equipment with light-transmitting parts made of glass, only one of those two tests shall be on the glass.” | The intention of the TAG is to specify the minimum number of impacts. The draft has been modified to illustrate this more clearly. |
| **CMD**  **In consultation with**  **Intertek India Private Limited, Karandikar Laboratories Pvt. Ltd., and KL Certification Services** |  |  |  | **We 'agree with proposed answer' given in draft ExTAG/674/CD.** |  | Noted. |
| **CNEX-Global BV** | **-** | **-** | **t** | **In general, where the standard refers to cl. 26.4.2, the testing shall be made on minimum two samples, with minimum two impacts on each sample.**  **However, where supplementary requirements are given for specific parts of a product, the reference regarding impact tests to cl. 26.4.2, shall be read to mean that these parts shall additionally be impact tested with the testing done on minimum two samples, with minimum two impacts on each sample.**  **This is in line with the text in cl. 26.4.2, which states that for equipment with multiple materials or areas of concern, more than two**  **samples or impact sites may need to be considered to adequately evaluate the impact**  **resistance of the equipment.**  **In the example given, the minimum required number of impacts would then become:**  **- 2 samples for enclosure (1x) + glass window (1x)**  **- 2 samples for fan hood:**  **(2x each)**  **- 2 samples PER applied cable gland type and size**  **(2x each)**  **In total minimum 12 impacts.** | **Revise text of the DS to clarify that where supplementary requirements related to impact tests are included in the standard, these test requirements shall be read to mean additional to the impact testing of the product itself.** | Since it is required two impacts on the housing, one of which could be the impact on the light-transmitting part made of glass. It does not need to perform 2 impacts on fan hood or cable gland. So four impacts are required as minimum requirements. |
| **CQM**  **CN** |  |  |  | **Support to publish.** |  | Noted. |
| **DEK**  **NL** |  |  | **te** | **IEC 60079-0 cl. 26.4.2 7th paragraph clarifies “for equipment with materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment.”**  **Therefore we think there is no need for further clarification.**  **There is no maximum number of impact locations for such equipment given in the standard. The sheet gives a fixed number.**  **Therefore we think the proposed answer of the sheet is in contradiction with the 7th paragraph.** | **Withdraw this sheet** | The intention of the TAG is to specify the minimum number of impacts. The draft has been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **DEKRA / BVS**  **DE** |  |  | **General** | **We do not agree with the proposed DS.**  **Reasons:**  **It is unclear to us whether this DS refers only to the exact scenario presented or whether this scenario is meant as an example. Therefore, in our view, the question and answer are too vague.**  **In any case, we are of the opinion that for complex test objects with many potential mechanical weak points, the number of impact points must be increased above the number 2 (2 x 2). We read the standard as relating the number of impacts to each independent part of the structure where a weak point is potentially expected.** |  | The intention of the TAG is to specify the minimum number of impacts. The draft has been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **FIDITAS**  **HR** |  |  | **G** | **Fiditas agrees with clarification given in ExTAG/674/CD but we do not support the ExTAG DS.**  **There are many different constructions of Ex equipment which ask evaluation of ExTL to decide how to choose sample(s) and how make impact test. The ExTAG DS explain only one case but there are many similar situations, should we make ExTAG DS for every such case?**  **For example, if we have enclosure with a few glass windows, different material on different parts of enclosure (metallic and/or non-metallic), different thickness of material, etc… All of that will have influence on number of samples and number of impacts per sample. Do we need ExTAG DS for that? We do not think so.** | **Withdrawn the proposal** | The intention of the TAG is to specify the minimum number of impacts. The draft has been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **FME**  **GB** |  |  | **Technical** | **It would seem that the situation described by the draft DS has already been considered by the maintenance team for 60079-0 and a text was included in the resistance to impact test clause which addresses the fact that more than two samples may be need to be tested if there are multiple areas of concern.** | **This is already addressed by the standard and a DS is not required.** | The intention of the TAG is to specify the minimum number of impacts. The draft has been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **FMG**  **US** |  |  | **ge** | **Without knowing more details about the exact piece of Ex Equipment, it is not possible to agree or disagree with the proposed answer. Sub-clause 26.2 correctly invokes “engineering judgement” to determine the “most unfavourable” configuration as there is no other practical way to address all possible situations.**  **Two sections of 60079-0 apply:**  **26.2: Each test shall be made in the configuration of the equipment considered to be the most unfavourable taking into account the installation instructions.**  **The above text is further clarified by the test below, paying particular attention to the last sentence.**  **7th paragraph of 26.4.2: The points of impact shall be the locations considered likely to be the weakest and shall be on the external parts which may be exposed to impact. If the enclosure is protected by another enclosure, only the external parts of the assembly shall be subjected to the resistance to impact tests. For equipment with multiple materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment.** | **Do not issue Decision Sheet.** | The intention of the TAG is to specify the minimum number of impacts. The draft has been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **KR Hellas**  **KR** |  |  |  | **We do not have any comments for those Draft ExTAG DS.** |  | Noted. |
| **LCIE FR** |  |  | **General** | **We do not agree with the proposed ExTAG DS due to a lack of precision.**  **Clause 26.4.2 of IEC 60079-0 also specifies that “For equipment with multiple materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment.”. That means that more than two impacts may be necessary on the housing for example.**  **Furthermore, the number of impacts will depend on the material of the enclosure. The impact test on a non-metallic enclosure needs to be carried out at the upper and at the lower test temperatures. So, the number of impacts will be higher than for a metallic enclosure.**  **Finally, for the glass, the number of impacts will depend on the number of samples with the possible presence of a cement. Indeed, for an enclosure incorporating a glass window with a cemented joint, if only two samples are used for the type tests of enclosure, then the glass of each sample will have to be tested two times, with one impact at the lower test temperature and one impact at the upper test temperature.** |  | The intention of the TAG is to specify the minimum number of impacts. The draft has been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **NANIO CCVE (RU)**  **ExCB/**  **ExTL** |  |  | **General** | **According to 26.4.2 of IEC 60079-0:2017, the number of impacts depends on the number of the parts of the equipment that are subjected to impact tests under certain operating conditions. So glass windows shall be subjected to one impact test. At the same time, according to note 2 of clause 26.4.1.2.3 of IEC 60079-0:2017, glass light-transmitting parts can be subjected to two impacts: one impact test at low operating temperature and another impact test at high operating temperature. The required number of impacts on the cable gland, fan hood, etc., depends on the availability or unavailability of an additional enclosure, as according to clause 26.4.2 of IEC 60079-0:2017 “if the enclosure of the equipment of Group II and Group III is protected by another enclosure, only the external parts of the assembly shall be subjected to the resistance to impact test”.**  **The number of impact tests may also vary depending on the materials used and the design features of the equipment, that is also stated in clause 26.4.2 of IEC 60079-0:2017:**  **"For equipment with multiple** **materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment."**  **For example, if the housing or the hood of the sample is made of different materials and/or varied in geometry, the number of the points of impact shall be increased accordingly, compared to the number specified clause 26.4.2 for some average general cases: «The test shall be made on at least two samples of the equipment. The tests shall be made at two separate places on each sample».**  **Accordingly, in each particular case, based on the specific features of the operating conditions, the location and the number of areas of concern for each specific equipment, the number of the points of the impact test depends specifically, based on the results of the examination of the technical documentation and visual** **inspection of the actual design of the equipment. In this case, all parts of the samples (unfavorable ones, areas of concern) should be subjected to**  **impact tests, the mechanical damage of which can invalidate the type of protection of the particular equipment.**  **In our opinion, IEC 60079-0:2017 standard contains sufficient and complete requirements for the impact test, depending on the particular design of the product and the materials used in it.**  **Therefore, the text of the draft of the decision sheet shall be clarified if it is necessary to develop it.** |  | The comments are accepted and the scenario to be considered as been modified to be more specific.  The intention of the TAG is to specify the minimum number of impacts. The draft has also been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **NEPSI**  **CN** |  |  | **G** | **The description regarding the background as well as the Q&A is in line with the standard IEC 60079-0, and there should be no misunderstanding in practice. Therefore, we consider it is not necessary to generate an ExTAG decision sheet specifically for the certain equipment enumerated in the question.** |  | The intention of the TAG is to specify the minimum number of impacts. The draft has also been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **PTB**  **DE** | **Answer** |  | **T** | **Clause 26.4.2 of 60079-0 point out the following: …. For equipment with multiple materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment.  To make it clear change the text in the Decision as follows:** | **Answer:**  **Four impacts are required. Impact should be performed on the housing itself, the glass window, fan hoods and the cable gland as a minimum. More impact sites may be necessary to evaluate the impact resistance of the whole equipment.** | The comments are accepted and the draft has also been modified to illustrate this more clearly. |
| **PTB**  **DE** | **Answer** |  | **T** | **As specified in 26.4.1.2.2 and 26.4.1.2.3 min two or four test samples are required.   To make it clear change the text in the Decision Sheet as follows:** | **Answer:**  **Four impacts are required on each test sample. Impact should be performed on the housing itself, the glass window, fan hoods and the cable gland.** | The comments are accepted and the draft has also been modified to illustrate this more clearly. |
| **QPS**  **CA** | **-** | **-** | **GENERAL** | **It is unclear exactly what the equipment is that is requiring clarification of testing requirements. While the number of tests seems to be correct, ExTL have the ability to waive testing where deemed not applicable. The ExTAG process is not intended remove this ability for ExTL when evaluating products.**  **It seems this DS is being use a dispute resolution.** | **Provide clarification of equipment**  **Include “as deemed applicable by the ExTL” to testing** | The scenario to be considered as been modified to be more specific.  The intention of the TAG is to specify the minimum number of impacts. The draft has also been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **RISE**  **SE** |  |  |  | **We agree with the draft Decision sheet but suggest it should be clarified that two of the impacts shall be done on one sample and the two additional impacts shall be done on the other sample.** | **See comment.** | Noted. |
| **TC 31** |  |  | **ge** | Without knowing more about the particular piece of Ex Equipment, it is not possible to agree or disagree with the proposed answer.  Two additional sections of 60079-0 apply:  **26.2:** Each test shall be made in the configuration of the equipment considered to be the most unfavourable taking into account the installation instructions.  The above text is further clarified by the test below, paying particular attention to the last sentence.  **7th paragraph of 26.4.2:** The points of impact shall be the locations considered likely to be the weakest and shall be on the external parts which may be exposed to impact. If the enclosure is protected by another enclosure, only the external parts of the assembly shall be subjected to the resistance to impact tests. For equipment with multiple materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment. | Do not issue Decision Sheet. | the scenario to be considered as been modified to be more specific.  The intention of the TAG is to specify the minimum number of impacts. The draft has also been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **TestSafe**  **AU** |  |  |  | **We consider that proposed answer is not clear**  **Further, impact points need to be selected as being the weakest points. Therefore glass should be impacted on each sample.**  **Also if gland is already certified item, it does not need to be impacted again.** | **The selected points for impact should be the weakest one for the type of protection applied.**  **A glass is usually the weakest and should be impacted once on each sample.**  **For example if impact is waived on enclosure, justification is provided to detail that wall thickness of enclosure is greater than thickness of gland or fanhood .** | The comments are accepted and the draft has also been modified to illustrate this more clearly. |
| **TIIS**  **JP** |  |  | **general** | **Agree.**  **It is better to specify the requirements when more than two samples are subjected to the test to cover all material or areas in concern.** | **Add the following text after the proposal answer.**  **When additional samples are subjected to the resistance to impact test in accordance with the 3rd sentence of the 7th paragraph in 26.4.2 (For equipment with multiple material or ...), tests on the fan hood and the cable glands are not required for these additional samples.** | The comments are accepted and the draft has also been modified to illustrate this more clearly.  For the scenario, only performing two impacts, one on weakest point of enclosure, one on the glass is not sufficient. |
| **UL BR do Brasil**  **BR** | **26.4.2** | **Answer** | **General** | **ULBR has no objection to the publication of a decision sheet on this topic, but feels that the question it answers is covered adequately by the current text in IEC 60079-0:2017, namely the sixth and seventh paragraphs of Clause 26.4.2. If the decision sheet is published, expanded and clarified text per the proposal provided herein is suggested.** | **Revise the answer to ExTAG/674/CD to read:**  **ANSWER:** **A minimum of four impact locations per sample are required. The housing, the glass window, the fan hood, and the integrated cable gland shall be impacted to comply with Table 15 and Clauses 26.4.2 and 17.2.3.2 in IEC 60079-0:2017. Attention is drawn to the seventh paragraph of Clause 26.4.2, which states “for equipment with multiple materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment.”** | The comments are accepted and the draft has also been modified to illustrate this more clearly. |
| **UL LLC**  **US** | **26.4.2** | **Answer** | **General** | **UL has no objection to the publication of a decision sheet on this topic but feels that the question it answers is covered adequately by the current text in IEC 60079-0:2017, namely the sixth and seventh paragraphs of Clause 26.4.2. If the decision sheet is published, expanded and clarified text per the proposal provided herein is suggested.** | **Revise the answer to ExTAG/674/CD to read:**  ANSWER: A minimum of four impact locations per sample are required. The housing, the glass window, the fan hood, and the integrated cable gland shall be impacted to comply with Table 15 and Clauses 26.4.2 and 17.2.3.2 in IEC 60079-0:2017. Attention is drawn to the seventh paragraph of Clause 26.4.2, which states “for equipment with multiple materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment.” | The comments are accepted and the draft has also been modified to illustrate this more clearly. |
| **UL Demko**  **DK** | **26.4.2** | **Answer** | **General** | **UL Demko has no objection to the publication of a decision sheet on this topic but feels that the question it answers is covered adequately by the current text in IEC 60079-0:2017, namely the sixth and seventh paragraphs of Clause 26.4.2. If the decision sheet is published, expanded and clarified text per the proposal provided herein is suggested.** | **Revise the answer to ExTAG/674/CD to read:**  **ANSWER: A minimum of four impact locations per sample are required. The housing, the glass window, the fan hood, and the integrated cable gland shall be impacted to comply with Table 15 and Clauses 26.4.2 and 17.2.3.2 in IEC 60079-0:2017. Attention is drawn to the seventh paragraph of Clause 26.4.2, which states “for equipment with multiple materials or areas of concern, more than two samples or impact sites may need to be considered to adequately evaluate the impact resistance of the equipment.”** | The comments are accepted and the draft has also been modified to illustrate this more clearly. |