ISO/TC 197
Hydrogen technologies

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ISO DIS 19880-8 Collated Comments

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Template for comments and secretariat observations

Date:2017-09-13	Document: DIS 19880-8	Project: WG 28

MB/ NC[1]	Line number	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment[2]	Comments	Proposed change	Observations of the secretariat
FR 1 001				ge	French title is not right : " *Hydrogène gazeux - Stations de remplissage - Partie 8: Contrôle qualité du carburant* "	It should be: "*Hydrogène gazeux - Stations de* ***recharge*** *- Partie 8: Contrôle qualité du carburant*"	
FR 4 002	211			Ed	Table nb is wrong	(yellow or red zone in table 5)	
GB 003			Figure B.1 — Typical SMR Process	te	It refers to the ambigous terms 'ppm' and 'ppb'. Replace it with explicit SI fraction (i.e. if mass, then use mg/kg and μg/kg). See previous comments about ppm.	Replace ambigous terms 'ppm' and 'ppb' with explicit SI fraction (e.g. if mass then mg/kg and μg/kg). Search entire standard for other uses and replace them.	
US 23 004			Table 3	te	The Key for Table 3 seems backwards (compared to the Severity) and lacking detail. Present arrangement indicates that all Severity 3 & 4 items are “acceptable”.	Reverse the Key so that it matches the Severity above it and provide a colour code, ex. green = acceptable, yellow = further investigation needed, and red = unacceptable.	
CA 005		03		ed	The capitalization of terms is inconsistent. Some multi-word terms have all words capitalized and some do not.	Please make it consistent.	
JP 006 01		03.	For all section in Clause 3.	ed	Better to modify as ISO formatting directive specifies.	Add the following sentences after the title of Clause 3. Use lower case for all terms listed in Clause 3. 3. Terms and definitions For the purposes of this document, the following terms and definitions apply. ISO and IEC maintain terminological databases for use in standardization at the following addresses: — ISO Online browsing platform: available at http://www.iso.org/obp — IEC Electropedia: available at http://www.electropedia.org/	

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						3.1 authority having jurisdiction (AHJ) organization, office or individual	
DE 007		03.02		Ed	Please delete the point at the end of the sentence		
DE 008		03.06		Te	Filter can also be used to remove liquids.	Equipment to remove undesired contaminants, e.g. solid or liquid particle from the hydrogen.	
DE 009		03.16		Te	Particulate is meant in this case as Aerosols. Aerosols are suspensions of solid or liquid particles in a gas (usually air). Therefore definition of Particulate has to be corrected.	Proposal for new definition: 3.16 Particulate solid particle and/or liquid droplet that can be entrained somewhere in the delivery, storage, or transfer of the hydrogen fuel	
DE 010		03.21		Te	Leave out the word “temporary”. A reversible effect is not necessarily temporary – this depends e.g. on the application and operation strategy	effect, which results in a degradation of the fuel cell power system performance that can be restored by practical changes of operational conditions and/or gas composition	
DE 011		03.23		Ed	Please delete the point at the end of the sentence		
CA 012		04		ed	Capitalization inconsistency	“Total halogenated compounds” should be changed to “Total Halogenated Compounds”	
FR 2 013		04	Table 1	Te	Harmonise specification for Halogens with ISO 14687 revised	Delete “Total“ leave “halogenated compounds”	
FR 3 014		04	Table 1	Te	Footnote d : remove “total” and “for example”	Replace by “halogenated compounds include: hydrogen chloride (HCl), chlorine	

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						(Cl2) and organic halides (R-X)"	
US 06 015		05	Sent 1	te	"Characteristics" is confusing. 14687-2 clearly lists quality "requirements" and therefore should be described as such. Could also use "threshold values"	The quality requirements ~~characteristics~~ of hydrogen fuel dispensed to PEM fuel cells for road vehicles are listed in ISO 14687-2.	
DE 016		07		Ed	Link to referred clause does not work	Correct the link	
CA 017		07	Paragraph 1	ed	Reference error	Replace with the correct clause number	
JP 018 02		07.	1st Para	ed	Error for referring the Clause	Specify the correct Clause which needs to be referred.	
DE 019		08		Ed	Link to referred clause does not work	Correct the link	
DE 020	18 / 19	08		Ed	…should be maintained throughout the product complete supply chain… Structure of sentence seems to be unusual	…Should be maintained throughout the complete product supply chain…	
US 08 021		08	1	ge	The first sentence under Section 8 contains what appears to be a place holder phrase: "Clause Error! Reference source not found."	Rewrite the first sentence to resolve the reference error.	
US 14 022		08	2	ed	Improper grammar: "It is important to understand that product quality should be maintained throughout the *product complete* supply chain (from production source to HRS nozzle) …."	Revise to: "It is important to understand that product quality should be maintained throughout the complete product supply chain (from production source to HRS nozzle) …."	
US 11 023		08	3rd bullet	te	The H2 Quality Assurance plan should clarify what impurities are being sampled and how often	Sampling (impurities and frequency)	

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US 12 024		08	6th bullet	ed	This bullet list is to summarize what is required in the H2 Quality Assurance. The details of how the plan is developed is listed further in this section. The deleted phrase is extraneous and provides too much detail for this summary.	•Liquid particulate filters~~, if there is a risk producing or having liquids during construction, commissioning and operation or if there is a risk and no validated experience in operation exist~~	
CA 025		08	List of points	ed		"Potential Impurities" should be changed to "Potential impurities"	
US 09 026		08	Para 1	ed	Annex A is not an example.	…Annex ~~A,~~ B, and C, respectively	
US 10 027		08	Para 1	te	The H2 Quality Assurance plan is a fundamental requirement for a station. If the station does not have one, then the sampling requirement needs to be daily to ensure clean fuel.	If no quality assurance plan can be defined either by a prescriptive or a risk assessment approach, the full list of impurities given in the quality specification (Clause 5) shall be analysed on a daily or more frequent basis to ensure that no vehicle receives contaminated fuel.	
US 13 028		08	Para 2	ed	Clarifies which threshold values	It is important to understand that product quality should be maintained throughout the product complete supply chain (from production source to HRS nozzle), such that the impurities that are given in the specification remain below the threshold values listed in Clause 5.	
CA 029		08	Paragraph 1	ed	Reference error	Replace with the correct clause number	
JP 030 03		08.	1st Para	ed	Error for referring the Clause	Specify the correct Clause which needs to be referred.	

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US 15 031		08.01	1	ed	Poor grammar: "…and establish protocol for analysing potential contaminants."	Revise as: "…and establish a protocol for analysing potential contaminants."	
US 16 032		08.01	All	ed	Current text is poorly written and confusing	8.1 Prescriptive Methodology ~~Approach~~ The prescriptive approach to hydrogen quality assurance considers potential sources of contaminants, and establishes a fixed protocol for analysing and addressing potential contaminants. Prescriptive approach can be applied for the clearly identified supply chain. ~~Prescriptive approach can be applied for the clearly identified supply chain. The approach to conducting a quality analysis of the contaminants listed in Clause 5 is to consider the potential sources of contaminants, and establish protocol for analysing potential contaminants.~~ Prescriptive quality assurance plan shall be determined by taking into account all existing hydrogen production methods, hydrogen transportation methods and non-routine procedures. Note: Annex-C is the summary of Japanese Hydrogen Quality Guideline which is an example of prescriptive quality assurance plan~~s~~.	
US 17 033		08.02	1	ed	"….and the evaluation of severity of each impurity…" is unclear as written	State more clearly what is meant by "severity of each impurity".	
US 18 034		08.02	Para 1	ed	Current text is poorly written and confusing	8.2 Risk Assessment methodology ~~for hydrogen quality~~ Risk assessment approach determines ~~consists of the identification of~~ the probability to have each impurity above the threshold values of specifications given in Clause 5 and evaluates the ~~evaluation of~~ severity of each impurity for the fuel cell vehicle.	
US 22		08.02	Para after	te	This sentence belongs in Clause 11 on Remedial	Move to Clause 11	

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035			Table 3		measures and reporting	If a vehicle is found to have hydrogen with contamination that exceeds the specification in Clause 5 and the source is unknown, the stations which could potentially be the source shall investigate their hydrogen supply chain and take appropriate actions.	
US 19 036		08.02	Table 2	ed	In Severity Class 3, change third bullet in the second column from *compromises* to *compromise*.	*Change the sentence as follows:* Gradual power loss that does not compromise safety	
US 20 037		08.02	Table 2		As an alternative or expansion of the risk criteria, both qualitative and quantitative examples of a particular severity level should be considered. This will help the understanding of each level and perhaps more accurate understanding of the risk.	Please consider refining the descriptions of the various risk levels and adding both qualitative and quantitative. Example for quantitative levels for severity: 0 – no effect, meets H2 quality specification. 4 – permanent, life-limiting damage within 1-10 fuelings 3 – permanent, life-limiting damage within 10-100 fuelings 2– permanent, life-limiting damage within 100-1000 fuelings 1– permanent life-limiting damage if more than 1000 fuelings.	
US 21 038		08.02	Table 2	ge	Requires specific procedure, light maintenance	Requires specific service/maintenance procedure, light maintenance	
DE 039		08.02	Table 2	Ed	Shift footnote to column “Severity Class”. The annotation is true for Class 4 in general	4[1]	
CA 040		08.02	Table 2	ed	Some points have periods at the end	Take out the periods	
CA 041		08.02	Table 2	ed	Grammar error	“Gradual power loss that does not compromises safety” should be changed to “Gradual power loss that does not compromise safety”	

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DE 042		08.03	Footnote 2	Ed	Insert a space character after ISO	ISO 14687-2:2012	
DE 043		08.03	Footnote 3	Ed	Insert a space before ppm	100 ppm – 300 ppm	
GB 044		08.03	Impact of impurities on fuel cell powertrain	te	Remove use of ppm. The column headings of table 4 refer to ppm. The 'maximum particulates row uses ppm to mean mg/kg. However the preamble to the table refers to 14687-2 which uses ppm to mean µmol/mol. The format ppm is used elsewhere to mean cm^3/m^3 and even mg/L, Thus there is significant ambiguity which is made worse by the fact that many people don't know it's ambiguous. The SI authorities and modern standards use explict SI fractions as appropriate and warn against or deprecate use of ambiguous formats such as ppm (e.g. ISO 4226 (Air quality — General aspects — Units of measurement)). It's not possible for me to determine what each instance of ppm means within this draft but it should be replaced with the appropriate SI fraction (mg/kg, cm^3/m^3, µmol/mol, etc).	Replace all instances of ppm with the appropriate explicit SI fraction (mg/kg, cm^3/m^3, µmol/mol, etc) throughout the document.	
US 24 045		08.03	Para 1	ed	Level 1 is not defined or discussed and is therefore unknown to the reader	Add definition of Level 1 Column six gives the Level 1 value needed for the risk assessment approach to define the quality assurance. Level 1 is the…	
US 25 046		08.03	Table 4 Footnote 2	te	The values will not be able to be copied from 14687 to this table since some contaminate categories may change. This text clarifies that they will be update in next version of 19880-8	Threshold value according to hydrogen specification of ISO14687-2:2012. To be updated in next version of document ~~replaced~~ with updated values when ISO 14687 is revised.	

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US 26 047		08.03	Table 4 Footnote 4	te	The limits are not finalized, so the text should be less specific	~~When~~ If the threshold limit is changed from 100 ppm to 300 ppm, as anticipated, the severity class for all inert gases (N2 + Ar +He) in a range of 100~~ppm~~ - 300ppm ~~will~~ should be 0.	
US 27 048		08.03	Table 4	ed	Improves clarity	Change column titles to Severity Class (less than ISO 14687-2 Threshold) Severity Class (ISO 14687-2 to Level 1 Threshold) Severity Class (greater than Level 1 Threshold)	
US 28 049		08.03	Table 4	ed	Improve clarity of table	Change " Already SC4 if ISO Spec exceeded" to "4" and add footnote Change " Without test data for proposed level 1 value validation already SC4 if ISO Spec exceeded" to "4" and add footnote	
US 29 050		08.03	Table 4 Footnote 4	te	"considered" is not a clear word. Proper guidance should be provided because the table has a range	Higher value to be ~~considered~~ used for risk assessment approach until more specific data is available.	
US 30 051		08.03	Table 4	te	Column 3 in Table 4 with severity class values for levels below the standard value is confusing and not required for the risk assessment.	Delete Column 3 (third from left), titled "Severity Class for 0 ppm ≤ Concentration < ISO Value"	
US 31 052		08.03	Table 4	ge	Column 5 - Title is confusing	Please change Title to: “Severity Class for Concentration at Level 1 Value”	
US 32 053		08.03	Table 4	ge	Level 1 is not defined in the document	Please provide definition of what is “Level 1 Value”. It will be helpful to explain the rational for the selection of Level 1 Values	
US 33 054		08.03	Table 4	ge	Column 7 – Title needs revision	Please change Title to: “Severity Class for Concentration ≥ Level 1	

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US 34 055		08.03	Table 4	te	Column 6 - Level 1 Value [ppm] NA is not clear since the meaning of NA is not defined.	Eliminate the NA and use the comments in column 7 for both columns 6 and 7 by merging these cells	
DE 056		08.03	Table 4	Ge	Information regarding the severity class below ISO 14687 threshold level is not relevant for the risk assessment approach. Furthermore the column questions the current ISO 14687 threshold values which could potentially unsettle users of the ISO 19880-8 standards.	Delete column 3 from table 4 and keep/provide information for threshold value discussion in ISO 14687 (TC197 WG27)	
DE 057		08.03	Table 4	Ge	Title of columns 5 and 7 could be confusing.	Change title of column 5: Severity class to be considered for RA approach for: ISO Value ≤ Concentration ≤ Level 1 Value Change title of column 7: Severity class to be considered for RA approach for: Level 1 Value ≤ Concentration ≤ 100%	
DE 058		08.03	Table 4	Ge	Use a consistent description: “ISO 14687-2 Threshold Value” instead of “ISO Value”		
DE 059	2	10		Ed	…following:a new… Free character after colon missing	…following: a new…	
US 35 060		10	1st bullet	ed	Editorial change	Change first bullet into summary sentence Place bullet in place of the colon in "following:a" The hydrogen quality plan shall identify any non-routine conditions and subsequent required actions. Some common non-routine conditions include the following • a new production system is constructed at a production site or a new HRS is first commissioned	
US 07 061		7	1	ge	The first sentence under Section 7 contains what appears to be a place holder phrase: “Clause Error! Reference source not found.”	Rewrite the first sentence to resolve the reference error.	

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JP 062 06		A 15.	[2]	ed	SAE J2719_201109 is not the current version. If it is not needed to specify the specific version, the year of version should not be specified.	Delete the year published, and follow the ISO formatting directive. Replace [2} with following item. [2] SAE J2719, Hydrogen Fuel Quality for Fuel Cell Vehicles	
DE 063	5	A.1		Ed	H2 The number of individual atoms is indicated by an index.	H_2	
US 44 064		A.10	4sent	ed	Both words mean the same thing and only one word is needed	Delete one Changing/altering	
US 45 065		A.14	2	ed	The last sentence in paragraph 2 is unclear.	"…actions shall be taken by the hydrogen fueling station (HRS) to minimize transport of these operating fluids into the vehicle fuel cell powertrain."	
US 46 066		A.14	3	ed	Sentence 1 has a typo (what should be that).	"The contamination due to aerosols is of extreme importance that will…."	
US 47 067		A.15		ed	Bibliography is separate element from Annex A per ISO/IEC Directives Part 2	Move Bibliography to end of document as last, separate item	
DE 068		A.15		Ed	Harmonize bibliography formatting (spaces between number and description)		
CA 069		A.15		ed	References [1], [2], [10], [11] are not formatted properly	Proper indentation is required.	
JP 070 05		A.15	[1]	ed	Better to modify as ISO formatting directive specifies.	Replace with following item; [1] ISO 14687: 2012, *Hydrogen fuel — Product specification — Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles*	

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DE 071	3	A.4		Ed	H2 The number of individual atoms is indicated by an index.	H_2	
US 36 072		A.4	1	ed	I think “Carbon causes….” should have been “Carbon monoxide causes….”	Change y=the start of line 1 to: “Carbon monoxide causes….”	
DE 073		A.5		Te	Contamination should not be related to the PEM (membrane) only, but to the full cell	Methane is one of the very few hydrocarbons that do not contaminate PEM fuel cells.	
US 37 074		A.6		ed	This is not a sentence - It can lead to water management issues lead to the decrease in limiting current and increase in over-potential.	*Change the sentence as follows:* It can lead to water management issues that may limit the current and increase the over-potential.	
US 39 075	7	A.6		te	It is recommended that K+ and Na+ not exceed 0.05 μmol/mol.	Please delete sentence. The ISO 14687 standard does not include the cations or any other alkaline impurities.	
US 40 076		A.6	1	ed	The first sentence under A.6 is unclear as written.	Revise to: “Water is an issue for hydrogen dispensing systems due to the potential formation of ice in the onboard vehicle tank system and/or fuel cell components.”	
US 41 077		A.6	1	ed	Which components?	Specify or provide examples of components impacted.	
US 38 078		A.6	1st sent	ed	Follow proper ISO formatting	Add hyphen On-board	
US 42 079		A.7		ed	Should include a comma between sulphur dioxide and carbonyl sulfide.	The specific sulphur compounds that are addressed are in particular: hydrogen sulfide, sulfur dioxide, carbonyl sulfide, carbon disulfide, methyl mercaptan.	
US 43 080	3	A.7		ed	sulfur dioxide carbonyl sulfide	sulfur dioxide, carbonyl sulfide	

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US 02 081		All	All	ed	Problem with pdf conversion	Correct all "error" cross references Check that all cross references are correct	
US 03 082		All	All	ed	Since this document discusses methane and Total hydrocarbons separately, clarifying total does not include methane will help the reader understand the differences	Consider using "Total Non-methane hydrocarbons" (Total NMHC) where appropriate Clause 4 Clause A.9 All tables in Annex B	
US 04 083		All	All	ed	Editorial	Check that the 2 in H_2 are subscripted	
US 05 084		All	All Tables	ed	Editorial	Check formatting of titles in all tables (especially Annex B) and font size	
DE 085	5	Annex A		Ed	…that further impurities exists.	…that further impurities exist.	
DE 086	7	Annex A		Ed	…fuel cell power train.	…fuel cell powertrain.	
JP 087 04		Annex A and all titles for other Annexes.		ed	The formatting of the title of Annex need to be modified as ISO formatting directive specifies.	Change the format as follows; (Centering the title) (Other Annexes are needed to be modified with the same manner) Annex A (informative) Impact of impurities on fuel cell powertrains	
JP 088		Annex B	Second Table 5 in page 27	ed	Formatting Fonts in this table are not unified.	Make the fonts in the table consistent.	

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08							
US 52 089		Annex B	Table 5	ge	Double analysis + trip at xx ppm	Please provide clear explanation of this statement	
US 53 090		Annex B	Table 5	ge	Column 4 - Existing barriers	This title for the column does not justify the context of this column. Please provide a better title for Column 4. Overall text in each row of Column 4 not clear.	
JP 091 07		Annex B	Table 5 to 8 and another Table 5	ed	Table number for Table 5 comes out twice. Table numbers in Annex B should start from Table B.1	Renumber the table numbers; Table B.1 to Table B.5	
US 48 092		Annex B	Tables	ed	All tables need to be renumbered per ISO/IEC Directives Part 2. Tables also need to be referenced in document.	Change table numbering to Table B.#, restart numbering of tables at 1. Add sentences in appropriate locations in document to refer to each table.	
JP 093 09		Annex C	Table 9 to 12 and Table C.13	ed	Table numbers in Annex C should start from Table C.1	Renumber the table numbers ; Table C.1 to Table C.5	
US 54 094		Annex C	Tables	ed	All tables need to be renumbered per ISO/IEC Directives Part 2. Tables also need to be referenced in document.	Change table numbering to Table C.#, restart numbering of tables at 1. Add sentences in appropriate locations in document to refer to each table.	
JP 095 10		Annex D	Figure D.2	ed	Typo, Figure number	Change the figure number to; Figure D.1.	
JP 096 11		Annex D	Table 14 to 19	ed	Table numbers in Annex D should start from Table D.1	Renumber the table numbers ; Table D.1 to Table D.6	
US 62 097		Annex D	Tables	ed	All tables need to be renumbered per ISO/IEC Directives Part 2. Tables also need to be	Change table numbering to Table D.#, restart numbering of tables at 1.	

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					referenced in document.	Add sentences in appropriate locations in document to refer to each table.	
US 49 098		B	Table B.3 CO Row	te	CO poisoning has occurred at HRS that receive H2 from centralized production, but additional clean up is required at the station. The added text clarifies this	No potential ~~at HRS level~~ <u>if no purification done at HRS</u>	
US 50 099		B	Table B.3 H2O row	te	Water has been a common contaminate in HRS due to improper purging, improper cleaning of pipes, condensation, icing, etc. The occurrence has been much higher than 1:1000000.	Change probability to 2 or 3	
US 51 100		B	Table B.3 H2O row	te	He is commonly used for a final leak check and improper purging has led to several cases of contamination.	Change probability to 2 or 3	
DE 101	1-3	B.1		Ed	Revise wording and include full stop after first sentence	When the study has been conducted for each step within the supply chain i.e. production, distribution and fueling the highest probability is selected as the compounded probability. Table B.4 gives an example.	
DE 102		B.1	Figure B.1	Ge	Description and reference of the figure in the text is missing.	Please provide a description if the figure in the text or delete figure.	
DE 103		B.1	Table 5	Ed	Adjust table labeling (also for all following tables) and correct references within the text.	Table B.1	
DE 104		B.1	Table 5	Ed	Adjust width of last column (no line break)		
DE 105		B.1	Table 8	Ed	Clarify caption (“Supply Chain”)	Supply chain probability	
DE		B.1	Table 8	Ge	Column “Severity reduction measures” is not	Remove column	

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106					needed and out of the scope of this standard.		
CA 107		B.1 and B.2	p. 22-27	ed	The color schemes of the 2 examples of risk analysis are not standardized.	Standardize the color schemes of the two examples.	
DE 108		B.2	Table 5	Ge	Remove “?”	If the cause is not known, we should rather write “tbc”	
DE 109		B.2	Table 5	Ed	The number of individual atoms is indicated by an index.	O_2…H_2…N_2…H_2O…	
DE 110		B.2	Table 5	Ed	Harmonize text formatting (font, font size, etc.)		
US 55 111		C.6.01		ed	Refers to Annex F, however Annex F does not exist in the draft.	Consider adding Annex F with record keeping form example.	
US 56 112		C.8		ed	Correct to indicate Table C.5 (labelled as Table C.13) provides non-routine analysis work.	Table C.5 provides the non-routine analysis work defined on the basis of the attitudes stated in Clauses C.3, C.4 and C.5.2. The table gives the analytical species classified by hydrogen dispensing sites and hydrogen production, purification and transportation methods.	
US 57 113		C.9		ed	Add reference to first sentence.	As per the requirements of ISO 14687-2, particulates are to be no more than 1 mg/kg in concentration. *Or As per the requirements ~~of~~, particulates are to be no more than 1 mg/kg in concentration.*	
DE 114		C.9	Footnote 5	Ed	The number of individual atoms is indicated by an index.	H_2S	
DE		C.9	Footnote 6	Ed	The number of individual atoms is indicated by an	O_2/H_2O	

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MB/ NC[1]	Line number	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment[2]	Comments	Proposed change	Observations of the secretariat
115					index.		
US 59 116		C.9	Footnotes to Table 12 (C.4)	ed	Do footnotes 2 & 4 refer to the previous footnotes from Table 4 in Clause 8.3?	??	
US 61 117		C.9	Footnotes to Table C.13 (C.5)	ed	Does Footnote 1 refer to the previous footnote from Table 3 in Clause 8.2?	??	
US 58 118		C.9	Para 3	ed	Poor grammar	~~6 micron meter or less fine particles, it does not affect the fuel cell vehicle has been confirmed~~ It has been confirmed that particulates less than 6 microns does not affect the fuel cell vehicle.	
CA 119		C.9	Paragraph 3	ed	Very difficult to understand	"6 micron meter or less fine particles, it does not affect the fuel cell vehicle has been confirmed" should be changed to "Fine particles with particle size of 6 microns or less has been confirmed to not affect the fuel cell vehicle."	
DE 120		C.9	Table 12	Ed	Adjust width column 3+4 (no line break)		
CA 121		C.9	Table 12	ed	The text alignment is inconsistent. Some columns are centered and some are justified on both sides. The alignment is also inconsistent across the different rows.	Please make it consistent.	
US 60 122		C.9	Table C.13	ed	Table C.13 should be labelled as Table C.5	Label table C.13 as Table C.5	
US 64 123		D.1		ed	Last sentence references 7.4. Assume this is a Clause, but Clause 7.4 does not exist in this draft.	Not sure how to correct.	
DE 124	3	D.1		Ed	Reference to paragraph 7.4 is not correct.	Please correct reference	

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US 65 125		D.1.01	3		The first sentence under Section 7 contains what appears to be a place holder phrase: “Error! Reference source not found.”	Rewrite the first sentence to resolve the reference error.	
CA 126		D.1.01	Paragraph 3	ed	Reference error	Replace with the correct clause number	
US 66 127		D.2	1	ge	This section is not useful as written.	If a section on contaminants from “Transportation” is to be included, some information on potential contaminants is needed.	
US 67 128		D.2.02	4th para	ed	For consistency with last sentence in D.2.1, change “wrong” to “poor”	This implies that the probabilities to exceed threshold due to ~~wrong~~ poor purging are in the same order of magnitude for both O_2 and N_2.	
CA 129		D.2.02	Paragraph 2	ed	Typo	“H_20” should be changed to “H_2O”.	
CA 130		D.2.02	Paragraph 4	ed	A space is required between 2 and ppm.	“2ppm” should be changed to “2 ppm”.	
US 68 131		D.3	1st bullet	te	He is commonly used for a final leak check and improper purging has led to several cases of contamination.	• He, N2 or O2 if insufficiently purged after maintenance of HRS	
US 69 132		D.3	3rd bullet	te	Compressor oils or lubricants can cause contamination in addition to cutting oils.	•If ~~cutting~~ oils or lubricants are used during the process, contamination from sulfur, hydrocarbons, or halogenates is possible	

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US 70 133		D.3	Table D.6	te	Water has been a common contaminate in HRS due to improper purging, improper cleaning of pipes, condensation, icing, etc. The occurrence has been much higher than 1:1000000.	Move H_2O to Possible	
US 63 134		D/E	Beginning	ed	Annex D was not only informative. The tables ensured that all H2 Quality Assurance plans account for possible contaminates. It should be kept in the main part of the document. Annex D and E have overlapping information. Annex E also needs an introduction statement	Consider one of the following: -Move Annex D back to Clause 7 and delete E -Merge Annex D/E -Delete Annex D or E	
DE 135	7	D1.01		Ed	Link to referred clause does not work	Correct the link	
US 01 136		General		ed	Check throughout the draft for consistency in references with subscripts and chemicals and chemical formulas.	H_2 vs H2 – O_2 vs O2 – CH_2O_2 vs HCOOH – CH_2O vs HCHO – Ar vs AR – CH_4 vs CH4 – N_2 vs N2 – H2O vs H_2O	
** 137		General		Ed	Refer to the Simple Template for boilerplate text and document structure: https://www.iso.org/drafting-standards.html		
** 138		General		Ed	Have an English speaker review the document before submitting the next draft. ISO/CS editor has already gone through and edited the English but a subject expert should also review the English before releasing the document.		
** 139		General		ed	We do publish vertical text. Restructure tables so that all text is horizontal.		
** 140		General		ed	We cannot use color in tables. Restructure tables so that they do not require color.		
DE 141		Introduction		Ge	From our understanding TC/158 does not develop analytical methods but develops a standard which describes methods how to measure the level of contaminants according to ISO 14687-2 threshold	Please change introduction accordingly.	

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					values.		
CA 142		Table of Content		ed	The capitalization of section titles is inconsistent. Some are all capitalized while some others are not	Please make it consistent.	

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Template for comments and secretariat observations

Date:2017-09-13	Document: DIS 19880-8	Project: WG 28

MB/ NC[1]	Line number	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment[2]	Comments	Proposed change	Observations of the secretariat

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