

Proposal for amendments to UN Regulation No. 110

The text reproduced below has been prepared by the experts from OICA to comment the document GRSG/2019/28 submitted by the experts from NGV Global. For the sake of clarity and readability the modifications to the current text of the Regulation are **highlighted in yellow** for new text.

I. Proposal

Annex 3A: Table 6.7 Change of Design

Design change	Type of test												
	Burst hydrostatic A.12	Cycling ambient temp A.13	Acid environment A.14	Bonfire A.13	Penetration A.16	Flow Tolerance A.17	High temp creep A.18	Stress rupture A.19	Drop test A.20	Permeation A.21	Boss Torque A.25	Cycling A.27	PRD Performance A.24
Fibre manufacturer**	X	X					X*	X*	X*	X†	X†	X†	
Metallic cylinder or metal liner material	X	X	X*	X	X*	X	X*	X*	X*				
Plastic liner material		X	X				X			X†	X†	X†	
Fibre material***	X	X	X	X	X	X	X	X	X	X†	X†	X†	
Resin material			X		X	X	X	X	X				
Diameter change ≤ 20 per cent	X	X											
Diameter change > 20 per cent	X	X		X	X*	X			X				
Length change ≤ 50 per cent	X			X†									
Length change > 50 per cent	X	X		X†					X				
Working pressure change ≤ 20 per cent @	X	X											
Dome shape	X	X								X†	X†	X†	
Opening size	X	X											
Coating change			X										
End boss design (Change in liner interface, composite interface or layer design)										X†	X†	X†	
Change in manufacturing Process	X	X											
Pressure relief device				X									X

X=required

* test not required on metal (CNG-1) designs

† Test only required on all composite (CNG-4) designs

‡ Test only required when length increases

@ Only when thickness changes proportional to diameter and/or pressure change

** according to definition “equivalent fibre” in ISO 11119-3:2013

*** as long as change is no “new fibre type” as defined in ISO 11119-3:2013

II. Justification

This proposal is intended to further specify some items for design change. These clarifications are needed, because otherwise there could be the need for additional tests.

For fibre manufacturer:

- Added a reference to ISO 11119-3:2013 definition of “equivalent fibre” for clarification. If the change is within ISO parameters, limited tests according to Table 6.7 of Annex 3A will be reasonable.

For fibre material:

- Added a reference to ISO 11119-3:2013 definition of “new fibre type” for clarification. If the change is within ISO parameters, limited tests according to Table 6.7 of Annex 3A will be reasonable.

For resin material:

- A.20 Drop test can not be omitted, because it’s extremely dependent on the quality or strength of the laminate, which can only be evaluated in the interaction of resin / fibre

End boss design:

- Added “(Change in liner interface, composite interface or layer design)” for clarification. There were concerns raised, that change of “dome shape” could lead to problems with enlacement of the boss (A.25 Boss torque test). As there is already a change of “end boss design” defined, it should be clarified to not need additional tests when changing the “dome shape”.