



EUROPEAN  
COMMISSION

Brussels, 25.9.2014  
COM(2014) 581 final

ANNEXES 1 to 6

**ANNEXES**

**to the**

**proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE  
COUNCIL**

**on requirements relating to emission limits and type-approval for internal combustion  
engines in non-road mobile machinery**

{SWD(2014) 281 final}

{SWD(2014) 282 final}

## ANNEXES

### ANNEX I

#### Definition of engine sub-categories referred to in Article 4

Table I-1: Sub-categories of engine category NRE defined in Article 4 point (1)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
NRE	CI	variable	$0 < P < 8$	NRE-v-1	Maximum net power
	CI		$8 \leq P < 19$	NRE-v-2	
	CI		$19 \leq P < 37$	NRE-v-3	
	CI		$37 \leq P < 56$	NRE-v-4	
	all		$56 \leq P < 130$	NRE-v-5	
			$130 \leq P \leq 560$	NRE-v-6	
			$P > 560$	NRE-v-7	
	CI	constant	$0 < P < 8$	NRE-c-1	Rated net power
	CI		$8 \leq P < 19$	NRE-c-2	
	CI		$19 \leq P < 37$	NRE-c-3	
	CI		$37 \leq P < 56$	NRE-c-4	
	all		$56 \leq P < 130$	NRE-c-5	
			$130 \leq P \leq 560$	NRE-c-6	
			$P > 560$	NRE-c-7	

Table I-2: Sub-categories of engine category NRG defined in Article 4 point (2)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
NRG	all	variable	$P > 560$	NRG-v-1	Maximum net power
		constant	$P > 560$	NRG-c-1	Rated net power

Table I-3: Sub-categories of engine category NRSh defined in Article 4 point (3)

Category	Ignition	Speed mode	Power	Swept volume	Sub-	Reference
----------	----------	------------	-------	--------------	------	-----------

	type		range (kW)	(cm <sup>3</sup> )	category	power
NRSh	SI	variable or constant	0<P<19	SV<50	NRSh-v-1a	Maximum net power
				SV≥50	NRSh-v-1b	

Table I-4: Sub-categories of engine category NRS defined in Article 4 point (4)

Category	Ignition type	Speed mode	Power range (kW)	Swept volume (cm <sup>3</sup> )	Sub-category	Reference power
NRS	SI	variable, rated; or constant	0<P<19	80≤SV<225	NRS-vr-1a	Maximum net power
				SV≥225	NRS-vr-1b	
				80≤SV<225	NRS-vi-1a	
				SV≥225	NRS-vi-1b	
		variable, intermediate	19≤P<30	SV≤1000	NRS-v-2a	Maximum net power
				SV>1000	NRS-v-2b	
				30≤P<56	any	NRS-v-3

For engines <19kW with SV<80cm<sup>3</sup> in machinery other than hand-held machinery, engines of the category NRSh shall be used.

Table I-5: Sub-categories of engine category IWP defined in Article 4 point (5)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
IWP	all	variable	37≤P<75	IWP-v-1	Maximum net power
			75≤P<130	IWP-v-2	
			130≤P<300	IWP-v-3	
			300≤P<1000	IWP-v-4	
			P≥1000	IWP-v-5	
		constant	37≤P<75	IWP-c-1	Rated net power
			75≤P<130	IWP-c-2	
			130≤P<300	IWP-c-3	
			300≤P<1000	IWP-c-4	
			P≥1000	IWP-c-5	

Table I-6: Sub-categories of engine category IWA defined in Article 4 point (6)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
IWA	all	variable	$560 \leq P < 1000$	IWA-v-1	Maximum net power
			$P \geq 1000$	IWA-v-2	
		constant	$560 \leq P < 1000$	IWA-c-1	Rated net power
			$P \geq 1000$	IWA-c-2	

Table I-7: Sub-categories of engine category RLL defined in Article 4 point (7)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
RLL	all	variable	$P > 0$	RLL-v-1	Maximum net power
		constant	$P > 0$	RLL-c-1	Rated net power

Table I-8: Sub-categories of engine category RLR defined in Article 4 point (8)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
RLR	all	variable	$P > 0$	RLR-v-1	Maximum net power
		constant	$P > 0$	RLR-c-1	Rated net power

Table I-9: Sub-categories of engine category SMB defined in Article 4 point (9)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
SMB	SI	variable or constant	$P > 0$	SMB-v-1	Maximum net power

Table I-10: Sub-categories of engine category ATS defined in Article 4 point (10)

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	Reference power
ATS	SI	variable or constant	$P > 0$	ATS-v-1	Maximum net power

*ANNEX II*

**Exhaust emission limits referred to in Article 17(2)**

Table II-1: Stage V emission limits for engine category NRE defined in Article 4 point (1)

<b>Emission stage</b>	<b>Engine sub-category</b>	<b>Power range</b>	<b>Engine ignition type</b>	<b>CO</b>	<b>HC</b>	<b>NOx</b>	<b>PM mass</b>	<b>PN</b>	<b>A</b>
		<b>kW</b>		<b>g/kWh</b>	<b>g/kWh</b>	<b>g/kWh</b>	<b>g/kWh</b>	<b>#/kWh</b>	
Stage V	NRE-v-1 NRE-c-1	0<P<8	CI	8,00	(HC+NOx≤7,50)		0,40 <sup>1)</sup>	-	1,10
Stage V	NRE-v-2 NRE-c-2	8≤P<19	CI	6,60	(HC+NOx≤7,50)		0,40	-	1,10
Stage V	NRE-v-3 NRE-c-3	19≤P<37	CI	5,00	(HC+NOx≤4,70)		0,015	1x10 <sup>12</sup>	1,10
Stage V	NRE-v-4 NRE-c-4	37≤P<56	CI	5,00	(HC+NOx≤4,70)		0,015	1x10 <sup>12</sup>	1,10
Stage V	NRE-v-5 NRE-c-5	56≤P<130	all	5,00	0,19	0,40	0,015	1x10 <sup>12</sup>	1,10
Stage V	NRE-v-6 NRE-c-6	130≤P≤560	all	3,50	0,19	0,40	0,015	1x10 <sup>12</sup>	1,10
Stage V	NRE-v-7 NRE-c-7	P>560	all	3,50	0,19	3,50	0,045	-	6,00

<sup>1)</sup> 0,6 for hand-startable, air-cooled direct injection engines

Table II-2: Stage V emission limits for engine category NRG defined in Article 4 point (2)

<b>Emission stage</b>	<b>Engine sub-category</b>	<b>Power range</b>	<b>Engine ignition type</b>	<b>CO</b>	<b>HC</b>	<b>NOx</b>	<b>PM mass</b>	<b>PN</b>	<b>A</b>
		<b>kW</b>		<b>g/kWh</b>	<b>g/kWh</b>	<b>g/kWh</b>	<b>g/kWh</b>	<b>#/kWh</b>	
Stage V	NRG-v-1 NRG-c-1	P>560	all	3,50	0,19	0,67	0,035	-	6,00

Table II-3: Stage V emission limits for engine category NRSh defined in Article 4 point (3)

<b>Emission stage</b>	<b>Engine sub-category</b>	<b>Power range</b>	<b>Engine ignition</b>	<b>CO</b>	<b>HC + NOx</b>
-----------------------	----------------------------	--------------------	------------------------	-----------	-----------------

			type		
		kW		g/kWh	g/kWh
Stage V	NRSh-v-1a	0<P<19	SI	805	50
Stage V	NRSh-v-1b			603	72

Table II-4: Stage V emission limits for engine category NRS defined in Article 4 point (4)

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	HC + NOx
		kW		g/kWh	g/kWh
Stage V	NRS-vr-1a NRS-vi-1a	0<P<19	SI	610	10
Stage V	NRS-vr-1b NRS-vi-1b			610	8
Stage V	NRS-v-2a	19≤P≤30		610	8
Stage V	NRS-v-2b NRS-v-3	19≤P<56		4,40*	2,70*

\*Optionally, as alternative, any combination of values satisfying the equation  $(HC+NO_x) \times CO^{0.784} \leq 8,57$  as well as the following conditions:  $CO \leq 20,6$  g/kWh and  $(HC+NO_x) \leq 2,7$  g/kWh

Table II-5: Stage V emission limits for engine category IWP defined in Article 4 point (5)

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	HC	NOx	PM mass	PN	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	#/kWh	
Stage V	IWP-v-1 IWP-c-1	37≤P<75	all	5,00	(HC+NOx≤4,70)		0,30	-	6,00
Stage V	IWP-v-2 IWP-c-2	75≤P<130	all	5,00	(HC+NOx≤5,40)		0,14	-	6,00
Stage V	IWP-v-3 IWP-c-3	130≤P<300	all	3,50	1,00	2,10	0,11	-	6,00
Stage V	IWP-v-4 IWP-c-4	300≤P<1000	all	3,50	0,19	1,20	0,02	1x10 <sup>12</sup>	6,00
Stage V	IWP-v-5	P>1000	all	3,50	0,19	0,40	0,01	1x10 <sup>12</sup>	6,00

	IWP-c-5								
--	---------	--	--	--	--	--	--	--	--

Table II-6: Stage V emission limits for engine category IWA defined in Article 4 point (6)

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	HC	NOx	PM mass	PN	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	#/kWh	
Stage V	IWA-v-1 IWA-c-1	$560 \leq P < 1000$	all	3,50	0,19	1,20	0,02	$1 \times 10^{12}$	6,00
Stage V	IWA-v-2 IWA-c-2	$P \geq 1000$	all	3,50	0,19	0,40	0,01	$1 \times 10^{12}$	6,00

Table II-7: Stage V emission limits for engine category RLL defined in Article 4 point (7)

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	HC	NOx	PM mass	PN	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	#/kWh	
Stage V	RLL-c-1 RLL-v-1	$P > 0$	all	3,50	(HC+NOx $\leq$ 4,00)		0,025	-	6,00

Table II-8: Stage V emission limits for engine category RLR defined in Article 4 point (8)

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	HC	NOx	PM mass	PN	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	#/kWh	
Stage V	RLR-c-1 RLR-v-1	$P > 0$	all	3,50	0,19	2,00	0,015	$1 \times 10^{12}$	6,00

Table II-9: Stage V emission limits for engine category SMB defined in Article 4 point (9)

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	NOx	HC
		kW		g/kWh	g/kWh	g/kWh
Stage V	SMB-v-1	$P > 0$	SI	275	-	75

Table II-10: Stage V emission limits for engine category ATS defined in Article 4 point (10)

<b>Emission stage</b>	<b>Engine sub-category</b>	<b>Power range</b>	<b>Engine ignition type</b>	<b>CO</b>	<b>HC + NOx</b>
		<b>kW</b>		<b>g/kWh</b>	<b>g/kWh</b>
Stage V	ATS-v-1	P>0	SI	400	8

**Specific provisions on hydro-carbon (HC) limits  
for fully and partially gaseous fuelled engines**

1. For the sub-categories where an A factor is defined, the HC limit for fully and partially gaseous fuelled engines indicated in the table is replaced by the one calculated with the following formula:

$$HC = 0,19 + (1,5 \cdot A \cdot GER)$$

where GER is the average gas energy ratio over the appropriate cycle. Where both a steady-state and transient test cycle applies, the GER shall be determined from the hot-start transient test cycle. Where more than one steady-state test cycle applies, the average gas energy ratio shall be determined for each cycle individually.

If the calculated limit for HC exceeds the value of  $0,19 + A$  the limit for HC shall be set to  $0,19 + A$ .



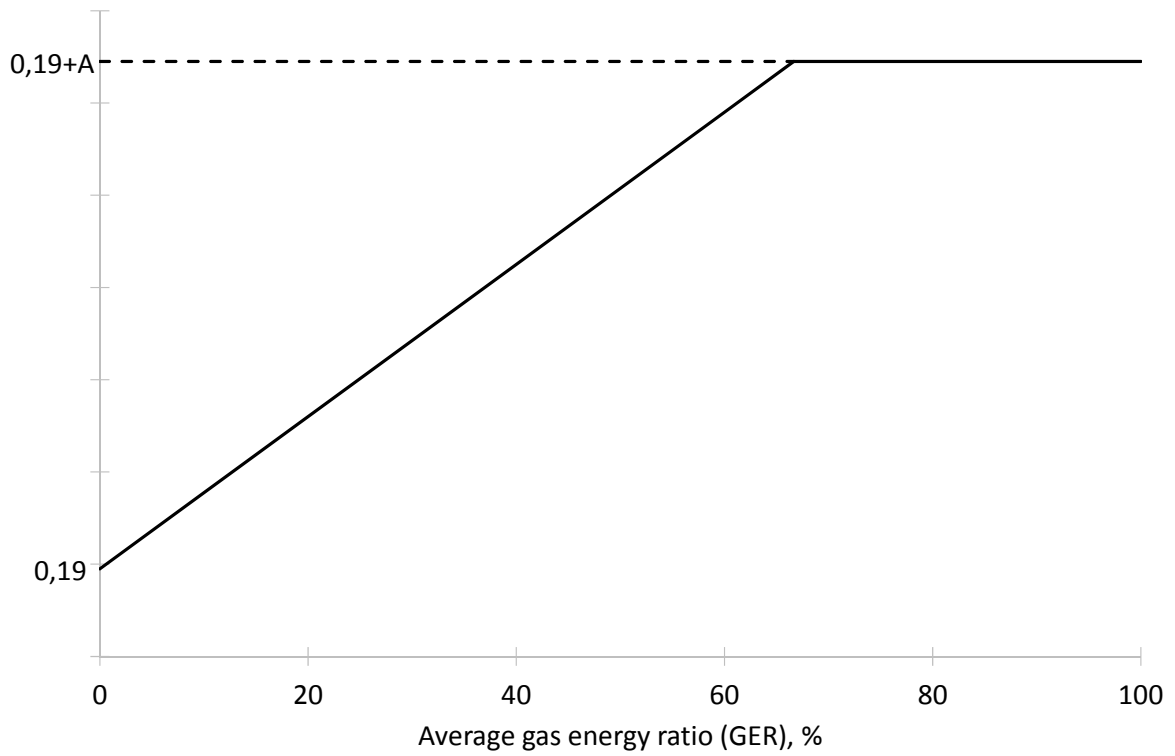


Figure 1. Schematic of HC emission limit as function of average gas energy ratio (GER)

2. For sub-categories with a combined HC and NO<sub>x</sub> limit, the combined limit value for HC and NO<sub>x</sub> shall be reduced by 0,19 g/kWh and apply for NO<sub>x</sub> only.
3. For non-gaseous fuelled engines the formula does not apply.

*ANNEX III*

**Timetable for the application of this Regulation  
in respect of EU type-approvals and placing on the market**

Table III-1: Dates of application of this Regulation for engine category NRE

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
NRE	CI	0<P<8	NRE-v-1 NRE-c-1	1 January 2018	1 January 2019
		8≤P<19	NRE-v-2 NRE-c-2		
	CI	19≤P<37	NRE-v-3 NRE-c-3	1 January 2018	1 January 2019
		37≤P<56	NRE-v-4 NRE-c-4		
	all	56≤P<130	NRE-v-5 NRE-c-5	1 January 2019	1 January 2020
		130≤P≤560	NRE-v-6 NRE-c-6	1 January 2018	1 January 2019
		P>560	NRE-v-7 NRE-c-7	1 January 2018	1 January 2019

Table III-2: Dates of application of this Regulation for engine category NRG

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
NRG	all	P>560	NRG-v-1 NRG-c-1	1 January 2018	1 January 2019

Table III-3: Dates of application of this Regulation for engine category NRSh

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	

				<b>EU type-approval of engines</b>	<b>Placing on the market of engines</b>
NRSh	SI	0<P<19	NRSh-v-1a NRSh-v-1b	1 January 2018	1 January 2019

Table III-4: Dates of application of this Regulation for engine category NRS

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
NRS	SI	0<P<56	NRS-vr-1a NRS-vi-1a NRS-vr-1b NRS-vi-1b NRS-v-2a NRS-v-2b NRS-v-3	1 January 2018	1 January 2019

Table III-5: Dates of application of this Regulation for engine category IWP

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
IWP	all	37<P<300	IWP-v-1 IWP-c-1 IWP-v-2 IWP-c-2 IWP-v-3 IWP-c-3	1 January 2018	1 January 2019
		300≤P<1000	IWP-v-4 IWP-c-4	1 January 2019	1 January 2020
		P≥1000	IWP-v-5 IWP-c-5	1 January 2020	1 January 2021

Table III-6: Dates of application of this Regulation for engine category IWA

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
IWA	all	560≤P<1000	IWA-v-1 IWA-c-1	1 January 2019	1 January 2020
		P≥1000	IWA-v-2 IWA-c-2	1 January 2020	1 January 2021

Table III-7: Dates of application of this Regulation for engine category RLL

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
RLL	all	P>0	RLL-v-1 RLL-c-1	1 January 2020	1 January 2021

Table III-8: Dates of application of this Regulation for engine category RLR

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
RLR	all	P>0	RLR-v-1 RLR-c-1	1 January 2020	1 January 2021

Table III-9: Dates of application of this Regulation for category SMB

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
SMB	SI	P>0	SMB-v-1	1 January 2018	1 January 2019

Table III-10: Dates of application of this Regulation for engine category ATS

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
ATS	SI	P>0	ATS-v-1	1 January 2018	1 January 2019

ANNEX IV

**Non-road steady-state test cycles (NRSC)**

Table IV-1: NRSC test cycles for engines of category NRE

Category	Speed mode	Purpose		NRSC
NRE	variable	Variable speed engine having a reference power less than 19 kW	NRE-v-1 NRE-v-2	G2 or C1
		Variable speed engine having a reference power greater than or equal to 19 kW but not more than 560 kW	NRE-v-3 NRE-v-4 NRE-v-5 NRE-v-6	C1
		Variable speed engine having a reference power greater than 560 kW	NRE-v-7	C1
	constant	Constant speed engine	NRE-c-1 NRE-c-2 NRE-c-3 NRE-c-4 NRE-c-5 NRE-c-6 NRE-c-7	D2

Table IV-2: NRSC test cycles for engines of category NRG

Category	Speed mode	Purpose		NRSC
NRG	variable	Variable speed engine for generating set	NRG-v-1	C1
	constant	Constant speed engine for generating set	NRG-c-1	D2

Table IV-3: NRSC test cycles for engines of category NRSh

Category	Speed mode	Purpose		NRSC
NRSh	variable or constant	Engine having a reference power of not more than 19 kW, for use in handheld machinery	NRSh-v-1a NRSh-v-1b	G3

Table IV-4: NRSC test cycles for engines of category NRS

Category	Speed mode	Purpose		NRSC
NRS	variable, intermediate	Variable speed engine having a reference power of not more than 19 kW, intended for <u>intermediate speed</u> application	NRS-vi-1a NRS-vi-1b	G1

	variable, rated; or constant	Variable speed engine having a reference power of not more than 19 kW, intended for <u>rated speed</u> application; constant speed engine having a reference power of not more than 19 kW	NRS-vr-1a NRS-vr-1b	G2
	variable or constant	Engine having both a reference power between 19 kW and 30 kW and a total swept volume of less than 1 litre	NRS-v-2a	G2
		Engine having a reference power of greater than 19 kW, other than engine having both a reference power between 19 kW and 30 kW and a total swept volume of less than 1 litre	NRS-v-2b NRS-v-3	C2

Table IV-5: NRSC test cycles for engines of category IWP

Category	Speed mode	Purpose		NRSC
IWP	variable	Variable speed engine intended for propulsion that operates on a fixed-pitch propeller curve	IWP-v-1 IWP-v-2 IWP-v-3 IWP-v-4 IWP-v-5	E3
	constant	Constant speed engine intended for propulsion that operates with a controllable-pitch or electrically coupled propeller	IWP-c-1 IWP-c-2 IWP-c-3 IWP-c-4 IWP-c-5	E2

Table IV-6: NRSC test cycles for engines of category IWA

Category	Speed mode	Purpose		NRSC
IWA	variable	Variable speed engine having a reference power that is greater than 560 kW intended for auxiliary use on inland waterway vessels	IWA-v-1 IWA-v-2	C1
	constant	Constant speed engine having a reference power that is greater than 560 kW intended for auxiliary use on inland waterway vessels	IWA-c-1 IWA-c-2	D2

Table IV-7: NRSC test cycles for engines of category RLL

Category	Speed mode	Purpose		NRSC
RLL	variable	Variable speed engine for propulsion of locomotives	RLL-v-1	F

	constant	Constant speed engine for propulsion of locomotives	RLL-c-1	D2
--	----------	---	---------	----

Table IV-8: NRSC test cycles for engines of category RLR

Category	Speed mode	Purpose		NRSC
RLR	variable	Variable speed engine for propulsion of railcars	RLR-v-1	C1
	constant	Constant speed engine for propulsion of railcars	RLR-c-1	D2

Table IV-9: NRSC test cycles for engines of category SMB

Category	Speed mode	Purpose		NRSC
SMB	variable or constant	Engines for propulsion of snowmobiles	SMB-v-1	H

Table IV-10: NRSC test cycle for engines of category ATS

Category	Speed mode	Purpose		NRSC
ATS	variable or constant	Engines for propulsion of ATV or SbS	ATS-v-1	G1

### Non-road transient test cycles

Table IV-11: Non-road transient test cycle for engines of category NRE

Category	Speed mode	Purpose		
NRE	variable	Variable speed engine having reference power greater than or equal to 19 kW but not more than 560 kW	NRE-v-3 NRE-v-4 NRE-v-5 NRE-v-6	NRTC

Table IV-12: Non-road transient test cycle for engines of category NRS<sup>(1)</sup>

Category	Speed mode	Purpose		
NRS	variable or constant	Engine having a reference power of greater than 19 kW, other than engine having both a reference power between 19 kW and 30 kW and a total swept volume of less than 1 litre	NRS-v-2b NRS-v-3	LSI-NRTC

<sup>(1)</sup> Only applicable for engines with maximum test speed  $\leq 3400$ rpm.





ANNEX V

**Emission durability periods referred to in Article 24(1)**

Table V-1: Emission durability periods (EDP) for engine category

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
NRE	CI	variable	$0 < P < 8$	NRE-v-1	3000
	CI		$8 \leq P < 19$	NRE-v-2	
	CI		$19 \leq P < 37$	NRE-v-3	5000
	CI		$37 \leq P < 56$	NRE-v-4	8000
	all		$56 \leq P < 130$	NRE-v-5	
			$130 \leq P \leq 560$	NRE-v-6	
			$P > 560$	NRE-v-7	
	CI	constant	$0 < P < 8$	NRE-c-1	3000
	CI		$8 \leq P < 19$	NRE-c-2	
	CI		$19 \leq P < 37$	NRE-c-3	
	CI		$37 \leq P < 56$	NRE-c-4	8000
	all		$56 \leq P < 130$	NRE-c-5	
			$130 \leq P \leq 560$	NRE-c-6	
			$P > 560$	NRE-c-7	

Table V-2: Emission durability period (EDP) for engine category

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
NRG	all	constant	$P > 560$	NRG-v-1	8000
		variable		NRG-c-1	

Table V-3: Emission durability period (EDP) for engine category NRSh

Category	Ignition type	Speed mode	Power range (kW)	Swept volume (cm <sup>3</sup> )	Sub-category	EDP (hours)
NRSh	SI	variable or	$0 < P < 19$	SV < 50	NRSh-v-1a	50/125/300 <sup>1)</sup>

		constant		SV $\geq$ 50	NRSh-v-1b	
--	--	----------	--	--------------	-----------	--

<sup>1)</sup> EDP hours correspond to the EDP categories Cat 1/Cat 2/Cat 3 as defined in the delegated acts.

Table V-4: Emission durability period (EDP) for engine category

Category	Ignition type	Speed mode	Power range (kW)	Swept volume (cm <sup>3</sup> )	Sub-category	EDP (hours)
NRS	SI	variable, rated; or constant	0<P<19	80 $\leq$ SV<225	NRS-vr-1a	125/250/500 <sup>1)</sup>
		variable, intermediate			NRS-vi-1a	
		variable, rated; or constant		SV $\geq$ 225	NRS-vr-1b	250/500/1000 <sup>1)</sup>
		variable, intermediate			NRS-vi-1b	
		variable or constant	19 $\leq$ P<30	SV $\leq$ 1000	NRS-v-2a	1000
				SV>1000	NRS-v-2b	5000
			30 $\leq$ P<56	any	NRS-v-3	5000

<sup>1)</sup> EDP hours correspond to the EDP categories Cat 1/Cat 2/Cat 3 as defined in the delegated acts.

Table V-5: Emission durability period (EDP) for engine category

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
IWP	all	variable	37 $\leq$ P<75	IWP-v-1	10000
			75 $\leq$ P<130	IWP -v-2	
			130 $\leq$ P<300	IWP -v-3	
			300 $\leq$ P<1000	IWP -v-4	
			P $\geq$ 1000	IWP -v-5	
		constant	37 $\leq$ P<75	IWP -c-1	10000
			75 $\leq$ P<130	IWP -c-2	
			130 $\leq$ P<300	IWP -c-3	
			300 $\leq$ P<1000	IWP -c-4	
			P $\geq$ 1000	IWP -c-5	

Table V-6: Emission durability period (EDP) for engine category IWA

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
IWA	all	variable	$560 \leq P < 1000$	IWA-v-1	10000
			$P \geq 1000$	IWA-v-2	
		constant	$560 \leq P < 1000$	IWA-c-1	
			$P \geq 1000$	IWA-c-2	

Table V-7: Emission durability period (EDP) for engine category RLL

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
RLL	all	variable	$P > 0$	RLL-v-1	10000
		constant	$P > 0$	RLL-c-1	

Table V-8: Emission durability period (EDP) for engine category RLR

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
RLR	all	variable	$P > 0$	RLR-v-1	10000
		constant	$P > 0$	RLR-c-1	

Table V-9: Emission durability period (EDP) for category SMB

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
SMB	SI	variable or constant	$P > 0$	SMB-v-1	400

Table V-10: Emission durability period (EDP) for engine category

Category	Ignition type	Speed mode	Power range (kW)	Sub-category	EDP (hours)
ATS	SI	variable or constant	$P > 0$	ATS-v-1	$500/1000^2)$

<sup>2)</sup> EDP hours correspond to the following total engine swept volumes:  $<100 \text{ cm}^3 / \geq 100 \text{ cm}^3$ .

ANNEX VI

**ATEX emission limit values referred to in Article 32(4)**

Table VI-1: ATEX emission limit values for engine category NRE

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	THC	NOx	PM mass	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	
ATEX	NRE-v-1 NRE-c-1	0<P<8	CI	8	7,5		0,4	6,0
ATEX	NRE-v-2 NRE-c-2	8≤P<19	CI	6,6	7,5		0,4	6,0
ATEX	NRE-v-3 NRE-c-3	19≤P<37	CI	5,5	7,5		0,6	6,0
ATEX	NRE-v-4 NRE-c-4	37≤P<56	CI	5,0	4,7		0,4	6,0
ATEX	NRE-v-5 NRE-c-5	56≤P<130	all	5,0	4,0		0,3	6,0
ATEX	NRE-v-6 NRE-c-6	130≤P≤560	all	3,5	4,0		0,2	6,0
ATEX	NRE-v-7 NRE-c-7	P>560	all	3,5	6,4		0,2	6,0

Table VI-2: ATEX emission limit values for engine category NRG

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	HC	NOx	PM mass	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	
ATEX	NRG-c-1 NRG-v-1	P>560	all	3,5	6.4		0,2	6,0

Table VI-3: ATEX emission limit values for engine category RLL

Emission stage	Engine sub-category	Power range	Engine ignition type	CO	THC	NOx	PM mass	A
----------------	---------------------	-------------	----------------------	----	-----	-----	---------	---

		<b>kW</b>		<b>g/kWh</b>	<b>g/kWh</b>	<b>g/kWh</b>	<b>g/kWh</b>	
ATEX	RLL-v-1 RLL-c-1	P≤560	all	3,5	(HC+NOx≤4,0)		0,2	6,0
ATEX	RLL-v-1 RLL-c-1	P>560 kW	all	3,5	0,5	6,0	0,2	6,0
ATEX	RLL-v-1 RLL-c-1	P>2000 kW and Svc <sup>1)</sup> >5 litres	all	3,5	0,4	7,4	0,2	6,0

<sup>1)</sup>Swept Volume per cylinder