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Technical Assistance to Support to Effective Air Emissions and Radiation Monitoring, and Improved Environmental Management in Belarus (SAQEM)

The Project is financed by the European Union

«Belshina» JSC Pilot Solvent Management Plan: analysis on the compliance with Emission Limit Values

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Проект реализуется консорциумом, возглавляемым Human Dynamics

Reference Legislation

- Chapter V and annex VII of the Industrial Emissions Directive (IED)
- Annex VI of the Gothenburg Protocol (GP)
- ЭкоНиП 17.01.06-001-2017

Relevant Categories

GP, Annex VI, p.3 (j) and **IED, Annex VII, part I, p.10**

"Conversion of natural or synthetic rubber" *means any activity of mixing, crushing, blending, calendering, extruding and vulcanization of natural or synthetic rubber and additionally activities for the processing of natural or synthetic rubber to derive an end product;*

ЭкоНиП 17.01.06-001-2017 – Table E.33

Переработка натурального или синтетического каучука *означает любую деятельность по смешиванию, дроблению, компаундированию, каландрованию, экструдированию и вулканизации натурального или синтетического каучука и наряду с этим деятельность по переработке натурального или синтетического каучука в конечный продукт.*

Relevant Categories...

GP, Annex VI, p.3 (g) and **IED, Annex VII, part I, p.7**

*"**Manufacturing of coatings, varnishes, inks and adhesives**" means the manufacture of coating preparations, varnishes, inks and adhesives, and of intermediates as far as they are produced in the same installation by mixing pigments, resins and adhesive materials with organic solvents or other carriers. This category also includes dispersion, predispersion, realization of a certain viscosity or colour and packing the final products in containers;*

ЭкоНиП 17.01.06-001-2017 – Table E.37

***Производство покрытий, лаков, типографских красок и клеев** означает производство средств для покрытий, лаков, типографских красок, клеев и промежуточных химических соединений, если они изготавливаются на одном и том же оборудовании путем смешивания красителей, смол и связующих веществ с органическими растворителями или другими содержащими их веществами. В эту категорию также включаются диспергирование, предварительное диспергирование, придание материалам определенной вязкости или цвета и упаковка готовых изделий в тару;*

Applicable Emission Limit Values related each category

- **GP and IED**

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm³)	Fugitive emission limit values (percentage of solvent input)		Total emission limit values	
			New installations	Existing installations	New installations	Existing installations
Manufacture of coating mixture, varnishes, inks and adhesives (> 100)	100—1 000	150	5		5 % of solvent input	
	> 1 000	150	3		3 % of solvent input	
Rubber conversion (> 15)		20 (1)	25 (2)		25 % of solvent input	

Applicable Emission Limit Values related each category

- **ЭкоНиП 17.01.06-001-2017**

Таблица Е.37 – Нормы выбросов загрязняющих веществ при прочих видах деятельности, связанных с выделением летучих органических веществ

Вид деятельности	Норма выбросов ЛОС	Примечание
Изготовление покрытий, лаков, красителей и клеящих веществ	$ПЗВ_0$ = 150 мг /м^3 $ПЗВ_н$ = не более 5% от исходного количества растворителя по весу Или общее ПЗВ не более 5% от исходного количества растворителя по весу	крупные установки с ежегодным потреблением растворителя более 1000 т

Таблица Е.33 Нормы выбросов загрязняющих веществ при обработке резины

Вид деятельности	Норма выбросов ЛОС	Примечание
Производство резины	1 кг/т производимой резины	потребление растворителей> 15 тонн/год
Производство шин	2,5 кг/т шин	от материалов, применяемых в технологии
Новые и существующие установки: переработка природного или синтетического каучука	ПЗВ - 25% расхода растворителей	потребление растворителей> 15 тонн/год

Applicable Emission Limit Values totally for both categories

Article 59

Control of emissions

1. Member States shall take the necessary measures to ensure that each installation complies with either of the following:

(a) the emission of volatile organic compounds from installations shall not exceed the emission limit values in waste gases and the fugitive emission limit values, or the total emission limit values, and other requirements laid down in Parts 2 and 3 of Annex VII are complied with;

(b) the requirements of the reduction scheme set out in Part 5 of Annex VII provided that an equivalent emission reduction is achieved compared to that achieved through the application of the emission limit values referred to in point (a).

6. Installations where two or more activities are carried out, each of which exceeds the thresholds in Part 2 of Annex VII shall:

(a) as regards the substances specified in paragraph 5, meet the requirements of that paragraph for each activity individually;

(b) as regards all other substances, either:

(i) meet the requirements of paragraph 1 for each activity individually; or

(ii) have total emissions of volatile organic compounds not exceeding those which would have resulted had point (i) been applied.

Allowed against Actual Emission Limit Values totally for both categories

- **Not in compliance!!! ???**

	Input, tones	ELV-Total	Allowed Emissions tones	In products tones	Actual Emissions tones
glue production	240	5%	12	228	12
tyre production - solvent	136	25%	34		136
tyre production - glues containing solvent	228	25%	57		228
Total			**103**		**376**

Alternative ways to achieve compliance

Article 59

Control of emissions

1. Member States shall take the necessary measures to ensure that each installation complies with either of the following:

(a) the emission of volatile organic compounds from installations shall not exceed the emission limit values in waste gases and the fugitive emission limit values, or the total emission limit values, and other requirements laid down in Parts 2 and 3 of Annex VII are complied with;

(b) the requirements of the reduction scheme set out in Part 5 of Annex VII provided that an equivalent emission reduction is achieved compared to that achieved through the application of the emission limit values referred to in point (a).

PART 5

Reduction scheme

1. The operator may use any reduction scheme, specially designed for his installation.

2. In the case of applying coatings, varnishes, adhesives or inks, the following scheme can be used. Where the following method is inappropriate, the competent authority may allow an operator to apply any alternative scheme achieving equivalent emission reductions to those achieved if the emission limit values of Parts 2 and 3 were to be applied. The design of the scheme shall take into account the following facts:

(a) where substitutes containing little or no solvent are still under development, a time extension shall be given to the operator to implement his emission reduction plans;

(b) the reference point for emission reductions should correspond as closely as possible to the emissions which would have resulted had no reduction action been taken.

BAT-AEL 2003
BAT- Associated Emission Levels

Prepared in the framework of EGTEI

Prepared by CITEPA, Paris

Final document : 17/05/03

Table 5.3.1 : Emission factors and abatement efficiencies for relevant combinations

RIC PMC SMC	VOC Emission Factor [kg / t tyres]	Abatement efficiency [%]	Q	CI [%]
01 00 00	10	0	5	10
01 00 01	2,5	75	5	10
01 01 00	7	30	5	10
01 02 00	2,5	75	5	10

Q : Quality of data
CI : Confidence Interval

RIC PMC SMC	Investment [€]	Q	CI [%]	Variable OC [€ / y]	Fixed OC [€ / y]	Savings on solvent purchase [€/y]	Q	CI [%]
01 00 00	0	-	-	-	-	0	-	-
01 00 01	1 000 000	4	20	63 000	50 000	-	4	20
01 01 00	40 000 *	5	30	NA	-	135 000	-	-
01 02 00	5 000 000	5	20	NA	-	NA	-	-

BAT-AEL 2019
BAT- Associated Emission Levels

emep

European Environment Agency

Category		Title
NFR	2.D.3.g	Chemical products
SNAP	060301	Polyester processing
	060302	Polyvinylchloride processing
	060303	Polyurethane foam processing
	060304	Polystyrene foam processing
	060305	Rubber processing
	060306	Pharmaceutical products manufacturing
	060307	Paints manufacturing
	060308	Inks manufacturing
	060309	Glues manufacturing
	060310	Asphalt blowing
	060311	Adhesive, magnetic tapes, films and photogr
	060312	Textile finishing
	060313	Leather tanning
	060314	Other
ISIC		
Version	Guidebook 2019	

Table 3-6 Tier 2 emission factors for source category 2.D.3.g Chemical products, manufacture of tyres

Tier 2 emission factors					
Pollutant	Value	Unit	95% confidence interval		Reference
			Lower	Upper	
NMVOC	10	g/kg tyres	6	14	EGTEI (2003)

This section presents the reduction efficiencies for the production of tyres when using improved control measures and the use of less solvent paints. The efficiencies provided in the table below relate to the conventional emission factors in Table 3-6.

Table 3-21 Abatement efficiencies ($\eta_{abatement}$) for source category 2.D.3.g Chemical products, tyre production

Tier 2 Abatement efficiencies					
	Code	Name			
NFR Source Category	2.D.3.G	Chemical products			
Fuel	NA	not applicable			
SNAP (if applicable)	060305	Rubber production			
Technologies/Practices	Tyre production				
Abatement technology	Pollutant	Efficiency	95% confidence		Reference
		Default Value	Lower	Upper	
Process optimisation Use of 70% solvent-based adhesives, coatings, inks and cleaning agents (90 wt-% solvent)	NMVOC	30%	0%	60%	EGTEI (2003)
New processes Use of 25% solvent-based adhesives, coatings, inks and cleaning agents (90 wt-% solvents)	NMVOC	75%	65%	85%	EGTEI (2003)

Allowed against Actual Emission Limit Values totally for both categories

- **Not in compliance!** Still seems achievable after the modernisation of the third plant.

	Input/ Product, tones	ELV-Total % or kg per t	Allowed Emissions tones	In products tones	Actual Emissions tones
glue production	240	5%	12	228	12
tyre production	112500	2.5	281.25		364
Total			**293.25**		**376**

THANK YOU FOR YOUR ATTENTION!