



**XUNTA DE GALICIA**  
CONSELLERÍA DE MEDIO AMBIENTE  
E DESENVOLVEMENTO SOSTIBLE  
Dirección Xeral de  
Calidade e Avaliación Ambiental

## **GALICIAN MINISTRY OF ENVIRONMENTAL SERVICES AND SUSTAINABLE DEVELOPMENT**

**Headquarters of Environmental  
Quality and Evaluation**

**Interpretive Technical Guide of the  
Application Criteria of Annexes I and II  
of Royal Decree 117/2003.**

Drafting Team and Supervision:

**Xunta de Galicia**

José Gil de Bernabé Sanchez

Industrial Engineer

José Francisco Alonso Picón

Doctorate of Chemical Science  
Doctorate of Pharmacy

Aurora Sáez Díez

Doctorate of Chemical Science

Technical Support:

**SERUMANO Team**

Anxo Mourelle Álvarez

T. Hydraulic Engineer

Felipe Barro Casas

Doctorate of Chemical Sciences  
Specialty in Industrial Chemistry

Sara Presedo Taboada

Environmental Services Consultant

Translator:

Veneatra Paynther Dambreville

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## 1 Objective

The present guide has been developed as a practical manual to interpret the present annexes in Royal Decree 117/2003, on Limiting Volatile Organic Compounds due to the use of solvents in specific activities.

This guide hopes to give solutions to the doubts that may arise during the interpretation of the Royal Decree in specific activities or the thresholds/limits that are involved, after inspecting the following documentation:

- Council Directive 1999/13/EU related to limiting volatile organic compounds due to the use of organic solvents in specific activities and installations.
- Royal Decree 117/2003, on Limiting Volatile Organic Compound Emissions due to the use of solvents in specific activities.
- The correction of misprints and errors in Royal Decree 117/2003, 31 January, on Limiting Volatile Organic Compound Emissions due to the use of solvents in specific activities (BOE No.79, 02 April, 2003).
- Royal Decree 227/2006, 24 February, which supplements the legal regime on the limitation of volatile organic compounds in specific paints, varnishes and vehicle refinishing products.
- Support Guide on the Implementation of Royal Decree 117/2003, on Limiting Volatile Organic Compound Emissions due to the use of solvents in specific activities. Ministry of Environmental Services. February 2007.
- CD-ROM Support Guide on the Implementation of Royal Decree 117/2003, on Limiting Volatile Organic Compound Emissions due to the use of solvents in specific activities. Ministry of Environmental Services.

## 2 Basic Concepts

In this section, the concepts used in the reference documentation which are considered of interest for specific connotations are defined below:

**Organic Solvent:** shall mean any volatile organic compound which is used alone or in combination with other agents, and without undergoing a chemical change, to dissolve raw materials, products or waste materials or is used as a cleaning agent to dissolve contaminants, or as a dissolver, or as a dispersion medium, or as a viscosity adjuster, or as a surface tension adjuster, or a plasticiser or as a preservative. (Article 2, Royal Decree 117/2003).

**Volatile Organic Compound (VOC):** shall mean any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under particular conditions of use. (Article 2; Royal Decree 117/2003).

**Organic Compound:** shall mean any compound containing carbon and one or more of the following elements: hydrogen, halogens, oxygen, sulphur, phosphorous, silicon or nitrogen with the exception of carbon oxides and inorganic carbonates or bicarbonates. (Article 2; Royal Decree 117/2003).

**Consumption:** shall mean the total input of organic solvents used in an installation per natural year or in any other 12-month period, except any volatile organic compounds that are recovered for its future reuse. (Article 2; Royal Decree 117/2003).

Royal Decree 117/2003 affects those installations in which the development of some activities is provided for in Annex I. These installations must calculate its consumption of organic solvents taking into account the definitions of *organic solvent* and *consumption* established by said Royal Decree.

It may be emphasized in this point that the organic solvent consumption includes, in addition, the raw materials that are organic materials in itself, in which those raw materials contain organic solvents whose quantity of their consumption must be calculated on the basis of the data provided by the suppliers or manufacturers who indicate the composition of these materials.

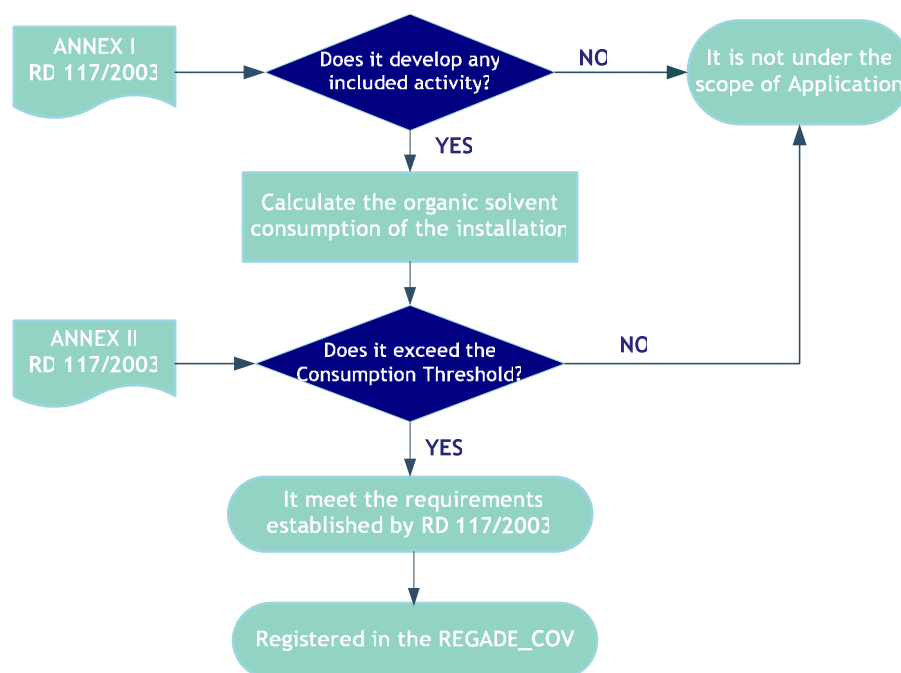
In the case of an installation, which recovers organic solvents for reuse, the quantity of recovered and reused solvents in the year to be taken into account, will not be included in the consumption calculation.

On the other hand, those volatile organic compounds that are used in an installation as reagents must not be taken into account in the total consumption of solvents, given that the definition of organic solvent established by Royal Decree 117/2003 does not include the use of volatile organic compounds with reagents (specific to *volatile organic compounds in use without undergoing any chemical change*). This consideration is especially important in specific epigraphs in Annex I of said Royal Decree, for example, as in Epigraph 6 (Manufacturing of coating preparations, varnishes, inks and adhesives) or in Epigraph 7 (Manufacturing of pharmaceutical products), given that in many cases, volatile organic compounds used in this type of installation are used as reagents.

Finally, at the time the solvent consumption is taken into account in an installation in which some activities included in Annex I of the Royal Decree 117/2003 are developed, the use of the solvent in the process itself as well as the use in cleaning machinery or equipment must be considered. However, the organic solvent consumption in the cleaning of the product must not be taken into account unless the category to which it belongs in the installation specifies otherwise (*First paragraph of Annex I- Royal Decree 117/2003*).

According to Article 1 of the Royal Decree 117/2003, “*The purpose of this directive is to prevent or reduce the direct and indirect effects of emissions of volatile organic compounds into the environment, mainly into air, and the potential risk to human health, by providing measures and procedures to be carried out for the activities defined in Annex 1, in so far as they are operated above the solvent consumption thresholds listed in Annex II*”.

Once the solvent consumption of the installation is calculated, this value is compared with the corresponding consumption threshold according to Annex II of the Royal Decree 117/2003, as indicated in the following flowchart:



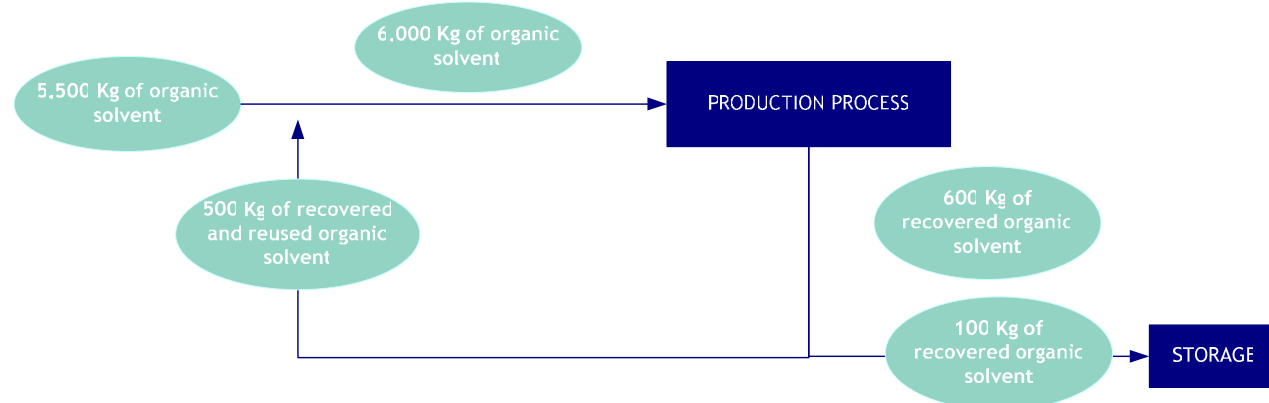
Note: The fact of not being an activity affected by Royal Decree 117/2003 does not imply VOCs are not emitted, nor that this emission should not be subject to emission control programs and, therefore, to declare emissions to the Galician Ministry of Environmental Services and Sustainable Development.

### Case Study

The process occurs in an installation that uses 6,000 kg. of organic solvent per year and equipped with a solvent recovery system in which it is capable of recovering 10% of the organic solvent that enters into the process, in other words, 600 kg. of solvent recovered per year.

Of these 600 kg. of recovered organic solvent, 500 kg. are reused in the same year the declaration is to be made and 100 kg. are stocked (to reuse the next year or for other usage).

The annual outcome of the utilization of organic solvents in an installation would be:



The **organic solvent consumption** of this installation is **5,500 kg**, even though the recovered and reused solvent in the installation should not be taken into account.

### Case Study

An installation uses 150 tons of formol per year in addition to other raw materials to produce adhesives. The production process is based on mixing the different raw material inside a reactor in which heat or cold will be applied depending on the reaction phase it is in.

Furthermore, in said installation, 5 tons per year of toluene is used to clean the equipment in the production process.

The activity developed corresponds to Epigraph 6 of Annex 1 of Royal Decree 117/2003, *Manufacturing of coating preparations, varnishes, inks and adhesives*. The solvent consumption threshold set forth by Annex II of Royal Decree 117/2003 for this type of activity is 100 tons per year.

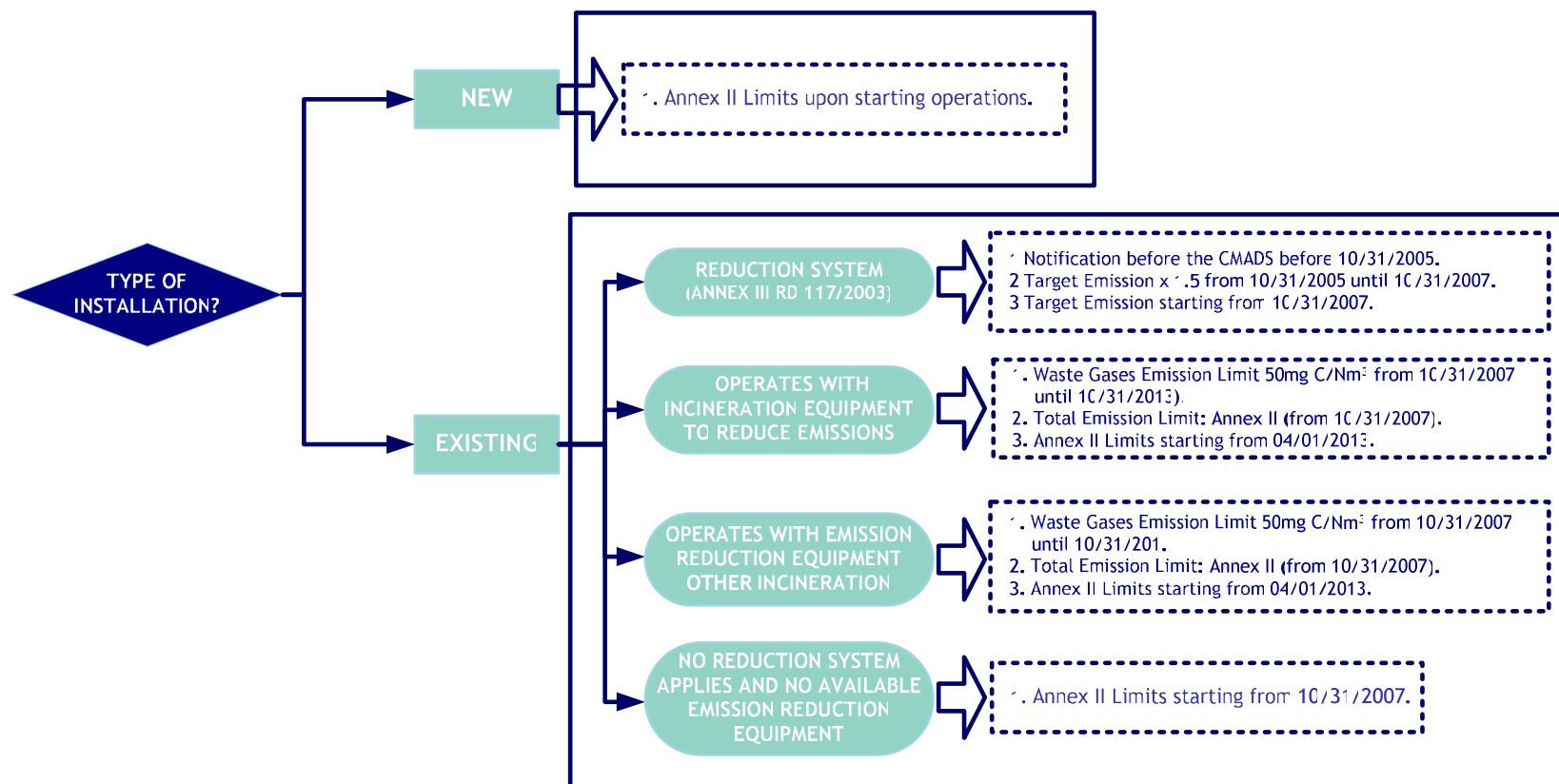
Formol is a volatile organic compound in accordance with what is established in Article 2 of Royal Decree 117/2003, but said Royal Decree does not consider it an organic solvent since it undergoes a chemical change (it is used as reagent) in its utilization. In consequence, it will not be taken into account in the calculation of the installation's organic solvent consumption.

However, toluene used in cleaning equipment, is an organic solvent according what is established in Article 2 of the Royal Decree 117/2003, so therefore, it is indeed taken into account in the consumption.

The organic solvent consumption of this installation is **5 tons**, therefore **it is not found within the scope of application of Royal Decree 117/2003** as it does not exceed the established consumption threshold in Annex II (100 tons).

### 3 Timetable for Installations to Comply with the Requirements

The following diagram shows, in a simplified manner, the compliance timetable of various limited emission values set forth by Royal Decree 117/2003 according to the type of installation or if it is subject to some of the points studied in the one temporary regulation of said Royal Decree.



In the present section, it is important to clarify on the basis of what is established by the Royal Decree 117/2003, when an installation must be considered new or existing as well as the way substantial change cases will be dealt with in an existing installation.

In accordance with the definitions in Article 2 of Royal Decree 117/2003 as understood by:

**Existing Installation:** *Shall mean any installation included in Annex 1 according to Directive 16/2002, which is defined in Paragraph d) of Article 3 or in accordance with sectoral legislation existing before the date on which Royal Decree 117/2003 is brought into effect, an installation that is in operation and authorized or registered, or the subject of a full request for authorization provided that the installation is put into operation no later than one year after the said date.*

The concept of an existing installation, established by the previous definition, varies according to if it is affected or not by Directive 16/2002, 1 July, on the integrated control and prevention of contamination. In consequence, there are two cases in which an installation can be considered existing, which are as follows:

- ✓ Installations included within the scope of application of Directive 16/2003 which as of 3 July 2002 were in operation and authorized or the subject of a full request for authorization of the applicable regulations always providing that the installation is put into operation no later than 12 months after said date.
- ✓ Installations not included within the scope of the application of Directive 16/2003 and at the date of the publication of Royal Decree 117/2003, 8 February 2003, was in operation and authorized or the subject of a full request for authorization of the applicable sectoral legislation for each case always providing that the installation is put into operation no later than one year after said date.

**Substantial Change:** *Is defined in Paragraph e) of Article 3 in Directive 16/2002 for installations included in its Annex I (any change in an installation that, in the opinion of the competent authority who exercises integrated environmental authorization and in accordance with the established criteria in Article 10.2, can have significant negative effects on security, human health or the environment). For the rest of the installations, those changes, in the opinion of the competent authority, which can have significant negative effects on security, human health or the environment. In all cases, it will be taken into consideration the said change in the nominal capacity of the installation that will mean an increase in the emission of volatile organic compounds by more than 25% with regards to small installations or more than 10% for the rest.*

In addition, Point 3 in Article 3 of Royal Decree 117/2003 establishes “when an installation will be the object of a substantial change or remains included within the scope of application of the present Royal Decree for the first time as a consequence of a substantial change, the part of the installation which will be the object of said modification will be considered as a new installation and its titleholder must request authorization or make the notification referring to Sections 1 and 2 of this article, as well as comply with the remaining obligations which are established in this Royal Decree. However, the former will be considered as an existing installation if the overall total emissions of the changed installation does not exceed the level that would have been reached if the substantially changed party had been treated as a new installation.”

On the basis of the preceding paragraph, when an installation is the object of a substantial change, it could be considered as an existing or new installation. In order to find out in which of the two cases the said installation is situated, one must calculate the total emission, applying the limits of a new installation to the substantially changed part and add it to the emissions of the existing installation. If the total actual emissions of the installation (including the change) does not exceed this sum, the installation would be considered existing and inasmuch would not be obligated to comply with the limits set in Royal Decree 117/2003 until 31 October 2007. If, on the contrary, the total emissions exceed the calculations, the changed part must be treated as new and, therefore, must meet the requirements of the Royal Decree from the moment it is put into operation.

The following shows a case study approaching the application of Article 3.3, based on the document “Guidance on Solvent Emissions (Scotland) Regulations 2004” and the *Support Guide in the Implementation of RD 117/2003 on Limiting VOC Emissions due to the use of Solvents in Specific Activities (Ministry of Environmental Services)*”.

### Case Study

An existing activity designed to coat plastic pieces has two confined lines. Each of the existing two lines has a total VOC emission of 5 t/year making the total VOC emission of the installation 10 t/year. The employer proposes to add a third line which means a substantial change in the installation.

The substantial change could be addressed as:

1. **A new installation** in as far as it would meet all requirements of Royal Decree 117/2003 from the moment it is put into operation.
2. **An existing installation** in as far as it would not be obliged to meet the requirements of Royal Decree 117/2003 until 31 October 2007.

The total VOC emission of the installation must be calculated, taking into account the existing part as the projected change, assuming that the substantial change to be made would meet the requirements the Royal Decree establishes, to know if said change must be addressed as an existing or new installation.

In this case, the substantial change to be made, if it would meet the established requirements of the Royal Decree, would have the following characteristics:

Waste Gas Emissions: 100 mg C/ Nm<sup>3</sup>

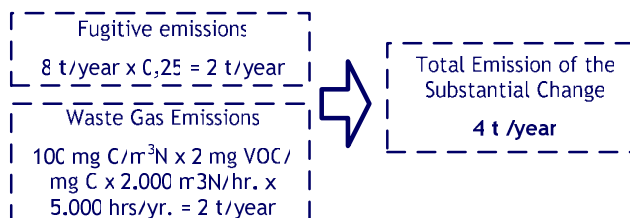
Fugitive VOC Emissions: 25% Solvent Entry.

(Epigraph 8, Annex II, Royal Decree 117/2003)

Assuming the following additional data:

Solvent entry in the projected new line: 8 t/year.  
 Characteristics of the entry solvent:  
 pm = 240 g/mol.  
 N° of carbon atoms / molecule of solvent= 10.  
 Caudal del foco canalizado: 2.000 m<sup>3</sup>N/h  
 Horas de trabajo/año de la línea: 5.000 h/año

The following corresponding calculations are related to the total VOC emission of the substantial change if it were in compliance with the limit values established by the Royal Decree 117/2003:



Therefore, the total emission of the installation after the substantial change would be  $5 + 5 + 4 = 14$  t/year (assuming that this change meets the requirements of the Royal Decree).

Once the previous calculations have been made, one can look at the following cases:

1. The new projected line meets the requirements established by the Royal Decree and therefore, the total emission of the installation, once the said substantial change is made will be  $\leq 14$  t/year. In this case, the installation after making said substantial change will be considered as an **existing installation**.
2. The new projected line does not meet requirements established by the Royal Decree (it emits  $150 \text{ mg C/m}^3\text{N}$ , which would mean a Total VOC Emission in said line of 5 t/year), but reduces the emissions in the existing lines to 4 t/year in each one. The total emission of the installation after the substantial change would be  $4 + 4 + 5 = 13$  t/year ( $< 14$  t/calculated year. In this case, even though the new line would not meet the established requirements, to obtain a total emission result of  $< 14$  t/calculated year, the installation after making said substantial change will be considered as an **existing installation**, in consequence, none of the three lines would be obliged to meet the requirements of Royal Decree 117/2003 until 31 October 2007.
3. The new projected line does not meet requirements established by the Royal Decree (it emits  $150 \text{ mg C/m}^3\text{N}$ , which would mean a Total VOC Emission in said line of 5 t/year), and does not reduce the emissions of the existing lines. The total emission of the installation after the substantial change would be  $5 + 5 + 5 = 15$  t/year ( $> 14$  t/calculated year). In this case, the part of the installation which would be the object of said change will be considered as a new installation which would be obliged to meet the requirements of Royal Decree 117/2003 when put into operation (the two existing lines would not be obliged to meet the requirements of Royal Decree 117/2003 until 31 October 2007).

#### 4 Scope of Application of Royal Decree 117/2003

For the purpose of clarifying a few points with respect to the potential affect of an installation based on Royal Decree 117/2003, each one of the following activity categories included in Annex I are analysed, as well as the consumption threshold established by Annex II for each category and the different emission limit values.

**1. Adhesive Coatings:** All activities in which an adhesive is applied to a surface, with the exception of adhesive coatings and laminating associated with printing activities (*Annex I, Category I*).

Those installations which develop this type of activity and use more than **5 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (Consumption Threshold, Epigraph 16, Annex II A).

The limits for emissions established by said Royal Decree for these types of installations vary according to the quantity of organic compounds used and if techniques are utilized which can enable the reuse of the recovered solvent (*Epigraph 16, First Special Regulation, Annex II A*), establishing four different groups.

- Group **1.a**: Installations, which develop adhesive coating activity that uses between 5 and 15 tons of organic solvents in one natural year, and **DO NOT** use techniques that enable the reuse of recovered solvent. The following table indicates the emission limits (Epigraph 16, Annex II A):

| Subcategory                                                                             | Waste Gas Emission Limit Values<br>(mg C/Nm <sup>3</sup> ) | Fugitive Emission Limit Values<br>(% of Solvent Entry) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------|
| Consumption of 5 to 15 t/year and <b>NO</b> utilization of solvent recycling techniques | 50                                                         | 25                                                     |

- Group **1.b**: Installations, which develop adhesive coating activity that uses **between 5 and 15 tons** of organic solvents in one natural year and **DO** use techniques that enable the reuse of recovered solvent, are used. The following table indicates the emission limits (Epigraph 16, Annex II A):

| Subcategory                                                                  | Waste Gas Emission Limit Values<br>(mg C/Nm <sup>3</sup> ) | Fugitive Emission Limit Values<br>(% of Solvent Entry) |
|------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------|
| Consumption of 5 to 15 t/year and <b>DO</b> use solvent recycling techniques | 150                                                        | 25                                                     |

- Group **1.c**: Installations, which develop adhesive coating activity that uses more than 15 tons of organic solvents in one natural year, and **DO NOT** use techniques that enable the reuse of recovered solvent. The following table indicates the emission limits (Epigraph 16, Annex II A):

| Subcategory                                                                                  | Waste Gas Emission Limit Values<br>(mg C/Nm <sup>3</sup> ) | Fugitive Emission Limit Values<br>(% of Solvent Entry) |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------|
| Consumption of more than 15 t/year and <b>NO</b> utilization of solvent recycling techniques | 50                                                         | 20                                                     |

- Group **1.d**: Installations, which develop adhesive coating activity that uses **more than 15 tons** of organic solvents in one natural year and **DO** use techniques that enable the reuse of recovered solvent. The following table indicates the emission limits (Epigraph 16, Annex II A):

| Subcategory                                                                       | Waste Gas Emission Limit Values<br>(mg C/Nm <sup>3</sup> ) | Fugitive Emission Limit Values<br>(% of Solvent Entry) |
|-----------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------|
| Consumption of more than 15 t/year and <b>DO</b> use solvent recycling techniques | 150                                                        | 20                                                     |

**2. Coating Activities:** Any activity in which a single or multiple application of a continuous film of a coating is applied (*Category 2, Annex I*).

Inside the activities of this category, only those coating activities on specific surfaces are subject to the present Royal Decree as follows:

**a) Coating activities on the following types of vehicles:**

**Group 2.a.1. New Cars:** As defined in Royal Decree 2028/1986, 6 June, on grouping together equivalent types of vehicles, trailers, semi-trailers and its parts or pieces as vehicles in categories:

- M1 (*vehicles designed for the transportation of passengers comprising no more than 8 seats in addition to the driver's seat*).
- N1 (*vehicles designed for the transportation of goods and having a maximum weight inferior to 3.5 tons*), in the measure in which they are coated in the same installation as M1 vehicles.

**Group 2.a.2. Truck Cabins:** Defined as the interior space of the driver and all the integrated space for the technical equipment of the vehicles in categories:

- N2 (*vehicles designed for the transportation of goods having a maximum weight superior to 3.5 tons but inferior to 12 tons*)
- N3 (*vehicles designed for the transportation of goods having a maximum weight superior to 12 tons*) in Royal Decree 2028/1986.

**Group 2.a.3. Vans and Trucks:** Defined as vehicles in Categories N1 (*vehicles designed for the transportation of goods and having a maximum weight inferior to 3.5 tons*), N2 and N3, but not including truck cabins in Royal Decree 2028/1986.

**Group 2.a.4.: Buses:** Defined as vehicles in categories:

- M2 (*vehicles designed for the transportation of passengers comprising more than 8 seats in addition to the driver's seat and have a maximum weight that does not exceed 5 tons*).
- M3 (*vehicles designed for the transportation of passengers comprising more than 8 seats in addition to the driver's seat and have a maximum weight that exceeds 5 tons*) in the Royal Decree 2028/1986.

**Group 2.a.5. Trailer trucks:** as defined in categories:

- 01 (trailer trucks which have a maximum weight being inferior to 0.75 tons).
- 01 (trailer trucks which have a maximum weight superior to 0.75 tons but inferior to 3.5 tons).
- 01 (trailer trucks which have a maximum weight superior to 3.5 tons but inferior to 10 tons).
- 01 (trailer trucks which have a maximum weight superior to 10 tons) in Royal Decree 2028/1986.

Those installations which develop coating activities on any of these types of vehicles and use more than **0.5 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (Consumption Threshold, Epigraph 6, Annex II A).

The emission limits established by said Royal Decree for these types of installations vary according to the quantity of organic solvents used thereby establishing two different groups:

- Installations which develop a coating activity of the above-mentioned types of vehicles that use **between 0.5 and 15 tons** of organic solvents in a natural year (Epigraph 6, Annex II A).

For installations which develop a coating activity of the above-mentioned types of vehicles that use **between 0.5 and 15 tons** of organic solvents in a natural year, the emission limits established by Royal Decree 117/2003 are shown in the following table (Epigraph 6, Annex II A):

| Limit Value of Waste Gas Emissions<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emission<br>(% of Solvent Entry) |
|---------------------------------------------------------------|----------------------------------------------------------|
| 50                                                            | 25                                                       |

- Installations, which develop a coating activity of the above-mentioned types of vehicles and use **more than 15 tons of organic solvents in a natural year** (Annex II B), except in the case of trailer truck coating in which the emission limits do not vary with an increase in solvent use.

In cases of installations which develop a coating activity of the types of vehicles mentioned at the beginning of this section that use more than 15 tons of organic solvents in a natural year (except in the case of trailer truck coating), the emission limits established by Royal Decree 117/2003 vary according to the type of vehicle which is coated, therefore establishing four different subgroups which are as follows:

- **New Car Coating**, which uses more than 15 tons of organic solvents in a natural year.

For installations, which find themselves in this subgroup, Royal Decree 117/2003 establishes total emission limit values which vary according to if is dealing with new or existing installations and its production capacity, the established emission limit values for each one are as follows (Annex II B):

| Type of Installation                                                                           | Total Emission Limit Value                                                                                               |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| New installation with an annual production of coated goods > 5,000                             | 45 g of emitted solvent/m <sup>2</sup> of the coated product surface<br>or 1.3 kg/vehicle bodywork + 33 g/m <sup>2</sup> |
| New installation with an annual production of coated goods ≤ 5,000 monohull or > 3,500 chassis | 90 g of emitted solvent/m <sup>2</sup> of the coated product surface<br>or 1.5 kg/vehicle bodywork + 70 g/m <sup>2</sup> |
| Existing installation (no established production threshold)                                    | 60 g of emitted solvent/m <sup>2</sup> of the coated product surface<br>or 1.9 kg/vehicle bodywork + 41 g/m <sup>2</sup> |

- **New Truck Cabin Coating** that uses more than 15 tons of organic solvents in a natural year.

For installations, which find themselves in this subgroup, Royal Decree 117/2003 establishes total emission limit values that vary according to if is dealing with new or existing installations and its production capacity, the established emission limit values for each one are as follows (Annex II B):

| Type of Installation                                                         | Total Emission Limit Value                                           |
|------------------------------------------------------------------------------|----------------------------------------------------------------------|
| New installation with an annual production of coated goods $\leq 5,000$      | 65 g of emitted solvent/m <sup>2</sup> of the coated product surface |
| New installation with an annual production of coated goods $> 5,000$         | 55 g of emitted solvent/m <sup>2</sup> of the coated product surface |
| Existing installation with an annual production of coated goods $\leq 5,000$ | 85 g of emitted solvent/m <sup>2</sup> of the coated product surface |
| Existing installation with an annual production of coated goods $> 5,000$    | 75 g of emitted solvent/m <sup>2</sup> of the coated product surface |

- **New Van and Truck Coating** which uses more than 15 tons of organic solvents in a natural year.

For installations, which find themselves in this subgroup, Royal Decree 117/2003 establishes total emission limit values that vary according to if is dealing with new or existing installations and its production capacity, the established emission limit values for each one are as follows (Annex II B):

| Type of Installation                                                         | Total Emission Limit Value                                            |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| New installation with an annual production of coated goods $\leq 2,500$      | 90 g of emitted solvent/m <sup>2</sup> of the coated product surface  |
| New installation with an annual production of coated goods $> 2,500$         | 70 g of emitted solvent/m <sup>2</sup> of the coated product surface  |
| Existing installation with an annual production of coated goods $\leq 2,500$ | 120 g of emitted solvent/m <sup>2</sup> of the coated product surface |
| Existing installation with an annual production of coated goods $> 2,500$    | 90 g of emitted solvent/m <sup>2</sup> of the coated product surface  |

- **New Bus Coating** that uses more than 15 tons of organic solvents in a natural year.

For installations, which find themselves in this subgroup, Royal Decree 117/2003 establishes total emission limit values that vary according to if is dealing with new or existing installations and its production capacity, the established emission limit values for each one are as follows (Annex II B):

| Type of Installation                                                         | Total Emission Limit Value                                            |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| New installation with an annual production of coated goods $\leq 2,000$      | 90 g of emitted solvent/m <sup>2</sup> of the coated product surface  |
| New installation with an annual production of coated goods $> 2,000$         | 70 g of emitted solvent/m <sup>2</sup> of the coated product surface  |
| Existing installation with an annual production of coated goods $\leq 2,000$ | 120 g of emitted solvent/m <sup>2</sup> of the coated product surface |
| Existing installation with an annual production of coated goods $> 2,000$    | 90 g of emitted solvent/m <sup>2</sup> of the coated product surface  |

## b) Coating activities on metallic and plastic surfaces including airplane surfaces, boat surfaces, etc.

Those installations which develop any of these types of activities and that use more than **5 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Consumption Threshold, Epigraph 8, Annex II A*).

The emission limits established by said Royal Decree for these types of installations **apply to coating activities on metallic and plastic surfaces** including airplanes, boats, etc., which **can be carried out in confined conditions** and vary according to the quantity of organic compounds used, establishing two different groups (*Epigraph 8, Annex II A*):

- Installations which develop a coating activity on metallic and plastic surfaces including airplanes, boats, etc. that can be carried out **in confined conditions that use between 5 and 15 tons of organic solvents in a natural year**. The following table indicates the limit values:

| Subcategory                           | Limit Value of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emission<br>(% of Solvent Entry) |
|---------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|
| Solvent consumption of 5 to 15 t/year | 100                                                          | 25                                                       |

For those installations which develop a coating activity on metallic and plastic surfaces that can be carried out in confined conditions that use between 5 and 15 tons of organic solvents in a natural year and which are performed in **unconfined conditions**, the waste gas emission limit value is not applied (*First Special Regulation, Epigraph 8, Annex II A*)

- Installations which develop a coating activity on metallic and plastic surfaces including airplane surfaces, boat surfaces, etc. that can be carried out **in confined conditions which use more than 5 and 15 tons of organic solvents in a natural year**.

On the other hand, the emission limits established also differentiate those installations that are being included in this second group and are performing drying activities in addition to coating.

The following table indicates those emission limit values:

| Subcategory                                          | Limit Value of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emissions<br>(% of Solvent Entry) |
|------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------|
| Solvent consumption > 15 t/year and drying activity  | 50                                                           | 20                                                        |
| Solvent consumption > 15 t/year and coating activity | 75                                                           | 20                                                        |

Those coating activities included in this category which **can not be developed in confined conditions** (such as ship construction, painting airplanes, etc.) will always remain **exempt** from emission limit values indicated in the previous table and when the titleholder of the installation is accredited before a competent authority which is using the best techniques available. Moreover, it must establish an emission reduction system in accordance with what is noted in Annex III of Royal Decree 117/2003, except if it can be demonstrated before a competent authority that this possibility is not technically or economically feasible (*Fourth Special Regulation, Epigraph 8, Annex II A*).

### c) Coating activities on wood surfaces

Those installations which develop this type of activity and use more than **15 tons of organic solvents in a natural year** remain included within the scope of application of Royal Decree 117/2003 (Consumption Threshold, Epigraph 10, Annex II A).

The emission limits established by said Royal Decree for these types of installations vary according to the quantity of organic solvents used and therefore establishing two different groups (*Epigraph 10, Annex II A*):

- Installations which develop wood coating activity that use **between 15 and 25 tons** of organic solvents in one natural year. The following table indicates those emission limit values:

| Subcategory                            | Limit Value of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emission<br>(% of Solvent Entry) |
|----------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|
| Solvent consumption of 15 to 25 t/year | 100                                                          | 25                                                       |

For those installations which develop coating and wood drying activities and use between 5 and 15 tons of organic solvents in a natural year and is performed in **unconfined conditions**, the waste gas emission limit value does not apply (First Special Regulation, Epigraph 10, Annex II A).

- Installations which develop wood coating activity that use **more than 25 tons** of organic solvents in a natural year. The emission limits established also differentiate those installations that are being included in the second group of the indicated groups and are performing drying activities in addition to coating.

| Subcategory                                         | Value Limit of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive<br>(% Solvent Entry) |
|-----------------------------------------------------|--------------------------------------------------------------|----------------------------------------------|
| Solvent consumption > 25t/year and drying activity  | 50                                                           | 20                                           |
| Solvent consumption > 25t/year and coating activity | 75                                                           | 20                                           |

#### d) Coating activities on textiles, fabrics, film and paper surfaces

Those installations which develop any of these types of activities and use more than **5 tons of organic solvents in a natural year** remain included within the scope of application of Royal Decree 117/2003 (Consumption Threshold, Epigraph 8, Annex II A).

The emission limits established by said Royal Decree for these types of installations vary according to the quantity of organic solvents used thereby establishing two different groups (*Epigraph 8, Annex II A*):

- Installations which develop a coating activity on textile, fabric, film and paper surfaces to be carried out in confined conditions that use **between 5 and 15 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 8, Annex II A*):

| Subcategory                           | Limit Value of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emission<br>(% of Solvent Entry) |
|---------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|
| Solvent consumption of 5 to 15 t/year | 100                                                          | 25                                                       |

For those installations which develop coating activities on textile, fabric, film and paper surfaces that use between 5 and 15 tons of organic solvents in a natural year and is performed in unconfined conditions, the waste gas emission limit value does not apply (First Special Regulation, Epigraph 8, Annex II A).

- Installations which develop a coating activity on textile, fabric, film and paper surfaces to be carried out in confined conditions that use **more than 15 tons** of organic solvents in a natural year.

The waste gas emission limits established also differentiate those installations, which are being included in this second group, and are performing drying activities in addition to coating.

The following table indicates the emission limits (*Epigraph 8, Annex II A*):

| Subcategory                                          | Limit Value of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emission<br>(% Solvent Entry) |
|------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------|
| Solvent consumption > 15 t/year and drying activity  | 50                                                           | 20                                                    |
| Solvent consumption > 15 t/year and coating activity | 75                                                           | 20                                                    |

In the specific case of installations where textile coating is performed using **nitrogenous solvents** with techniques that permits the reuse of recovered solvents, the waste gas emission limit value applied to coating and drying activities, as a whole, will be 150 mg C/Nm<sup>3</sup> (*Third Special Regulation, Epigraph 8, Annex II A*).

**Rotary silk-screen printing on textile** is not included in this category and falls under the category of printing in the group corresponding to rotary silk-screen printing (f) (*Fifth Special Regulation, Epigraph 8, Annex II A*).

#### e) Leather coating activities

Those installations which develop this type of activity and use more than **10 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Consumption Threshold, Epigraph 13, Annex II A*).

The emission limits established by said Royal Decree for these types of installations vary according to the quantity of organic solvents used as well as the type of object on which the coating is performed, thereby establishing three different groups (*Epigraph 13, Annex II A*):

- Group 1: Installations which develop a coating activity on leather furnishings and goods, especially small leather consumer products such as handbags, belts, wallets, etc. that use **more than 10 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 13, Annex II A*):

| Type of Installation                                                                                                                       | Total Emission Limit Values<br>(g of emitted solvent/m <sup>2</sup> of product produced) |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Coating preparations on leather furnishings and goods especially small leather consumer products with a solvent consumption of > 10 t/year | 150                                                                                      |

- Group 2: Installations in which coating activity is developed on other leather objects not included in the previous group that use **between 10 and 25 tons** of organic solvents in one natural year. The following table indicates the emission limits (*Epigraph 13, Annex II A*):

| Type of Installation                                                                        | Total Emission Limit Values<br>(g of emitted solvent/m <sup>2</sup> of product produced) |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Coating preparations on other leather objects with a solvent consumption of 10 to 25 t/year | 85                                                                                       |

- Group 3: Installations in which coating activity is developed on other leather objects not included in the first group which uses **more than 25 tons** of organic solvents in one natural year. The following table indicates the emission limits (*Epigraph 13, Annex II A*):

| Type of Installation                                                                    | Total Emission Limit Values<br>(g of emitted solvent/m <sup>2</sup> of product produced) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Coating preparations on other leather objects with a solvent consumption of > 25 t/year | 75                                                                                       |

Those **coating activities of surfaces** which are **not listed** in the present section remains excluded from within the scope of the application of Royal Decree 117/2003, independent from organic solvents.

**3. Coil Coatings:** Any activity where steel, stainless steel, coated steel, copper alloys or aluminium strips is coated with a either a film forming or laminate coating in a continuous process in the form of a coil (Category 3, Annex 1).

Those installations which develop this type of activity and use more than **25 tons of organic solvents in a natural year** remain included within the scope of application of Royal Decree 117/2003 (*Consumption Threshold, Epigraph 7, Annex II A*).

The emission limits established by said Royal Decree for these types of installations vary according to if it deals with a new or existing installation. The following table indicates the emission limits for each one of the different subcategories (*Epigraph 7, Annex II A*):

| Subcategory            | Limit Value of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emission<br>(% of Solvent Entry) |
|------------------------|--------------------------------------------------------------|----------------------------------------------------------|
| New Installation:      | 50                                                           | 5                                                        |
| Existing Installation: | 50                                                           | 10                                                       |

On the other hand, the emission limits established also differentiate those installations, which are being included in this category and use nitrogenous solvents with techniques that enable the reuse of recovered solvents. The following table indicates the emission limits (*First Special Regulation, Epigraph 7, Annex II A*):

| Subcategory                                                                                                       | Limit Value of Waste Gas Emission<br>(mg C/Nm <sup>3</sup> ) | Limit Value of Fugitive Emission<br>(% of Solvent Entry) |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|
| New installations which use Nitrogenous Solvents with techniques that enable the reuse of recovered solvents      | 150                                                          | 5                                                        |
| Existing installations which use Nitrogenous Solvents with techniques that enable the reuse of recovered solvents | 150                                                          | 10                                                       |

**4. Dry Cleaning:** Any industrial or commercial activity using volatile organic compounds in an installation to clean garments, furnishings and similar consumer goods with the exception of manual removal of stains and spots in the textile and clothing industry (Category 4, Annex I).

Those installations which develop this type of activity are included within the scope of the application of Royal Decree 117/2003 independent of the quantity of solvents that they use given that Annex II of said Royal Decree does not establish any consumption threshold for this category (*Epigraph 11, Annex A*).

The emission limits established by said Royal Decree for these types of installations is 20 g/kg of total emissions expressed in mass of emitted solvent per kilogram of dry cleaning product (*Epigraph 11, Annex II A*).

**5. Footwear Manufacture:** Any activity of producing complete footwear or parts thereof. (Category 5, Annex I).

Those installations which develop this type of activity and use more than **5 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (Consumption Threshold, Epigraph 14, Annex II A).

The total emission value established by the Royal Decree for these types of installations is 25 grams of solvents emitted per pair of complete footwear produced (Epigraph 14, Annex II A, corrected by Corrections of Mistakes and Errors in Royal Decree 2117/2003, 31 January, on the limitation of volatile organic compounds due to the use of solvents in specific activities, BOE No. 79, 02 April, 2003).

Installations that manufacture footwear parts, due to not being able to define its emissions according to the quantity of solvent per pair of complete footwear as established in the Royal Decree, must be categorized according to the specific activities described in Annex I that they carry out (coating preparations, rubber conversion, manufacturing of adhesives, etc.).

Thus, the main activities related to the footwear industry are categorized in Points 1,2,6 and 9 in Annex I of the Royal Decree. As far as companies that manufacture footwear parts are concerned, they must meet emission limit values relative to these established activities because they always exceed emission thresholds that would include them within the scope of the application of the Royal Decree.

**6. Manufacturing of coating preparations, varnishes, inks and adhesives:** The manufacturing of the above-mentioned final products and its and intermediate products when carried out at the same installation, by mixing pigments, resins and adhesive materials with organic solvents or other mediums, including dispersion and pre-dispersion activities, viscosity and tint adjustments and operations for packaging the final product in its container (Category 6, Annex I).

Those installations which develop this type of activity and use more than **100 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (Consumption Threshold, Epigraph 17, Annex II A).

The emission limits established by said Royal Decree for these types of installations vary according to the quantity of organic solvents used thereby establishing two different groups:

- Installations in which the activity of manufacturing coating preparations, varnishes, ink and adhesives that use **between 100 and 1,000 tons** of organic solvents in one natural year. The following table indicates the emission limits (Epigraph 17, Annex II A):

| Solvent Consumption       | Limit Value of Waste Gas Emissions (mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emissions (percentage of Solvent Entry) | Limit Values for Total Emission |
|---------------------------|-------------------------------------------------------------|------------------------------------------------------------------|---------------------------------|
| From 100 to 1,000 t/ year | 150                                                         | 5                                                                | 5 % of Solvent Entry            |

- Installations in which the activity of manufacturing coating preparations, varnishes, inks and adhesives which use **more than 1,000 tons** of organic solvents in one natural year. The following table indicates the emission limits (Epigraph 17, Annex II A):

| Solvent Consumption    | Limit Value of Waste Gas Emission (mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (percentage of Entry Solvents) | Limit Values for Total Emission |
|------------------------|------------------------------------------------------------|------------------------------------------------------------------|---------------------------------|
| More than 1,000 t/year | 150                                                        | 3                                                                | 3 % of Solvent Entry            |

In both situations, the limit values established for fugitive emissions do not include solvents sold as part of a coating preparation in a closed container (*Special Regulation, Epigraph 17, Annex II A*).

**7. Manufacturing of Pharmaceutical Products:** The chemical synthesis, fermentation, extraction, formulation and finishing of pharmaceutical products and intermediate products when carried out at the same site (*Category 7, Annex I*).

In this category it is advisable to clarify that the **manufacturing of intermediate products** for the pharmaceutical industry will only enter within the scope of the application of Royal Decree 117/2003 **when carried out at the same site as the rest of the sub-processes** of manufacturing pharmaceutical products (chemical synthesis, fermentation, extraction, formulation and finishing) and when it exceeds the established consumption threshold for solvents.

The rest of the sub-processes listed, enter within the scope of the application of the Royal Decree independent of if they are conducted at the same site or not.

All the sub-processes do not have to be in the same installation to be affected. If an installation only conducts chemical synthesis or fermentation or extraction or formulation or finishing, it would be obligated to meet the requirements of the Royal Decree if it exceeds the established consumption threshold.

Those installations which develop this type of activity (in accordance with the above-mentioned paragraphs) and use **more than 50 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Consumption Threshold, Epigraph 20, Annex II A*).

The emission limits established by said Royal Decree for these types of installations vary according to if it deals with a new or existing installation (*Epigraph 20, Annex II A*). The following table indicates the emission limits (*Epigraph 20, Annex II A*):

| Solvent Consumption   | Limit Value of Waste Gas Emission (mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (Percentage of Entry Solvents) | Limit Values for Total Emission |
|-----------------------|------------------------------------------------------------|------------------------------------------------------------------|---------------------------------|
| New Installation      | 20                                                         | 5                                                                | 5% of Solvent Entry             |
| Existing Installation | 20                                                         | 15                                                               | 15% of Solvent Entry            |

In addition, the established emission limits also differentiate those installations, included in this category, which use techniques that enable the reuse of recovered solvents, being the waste gas emission limits established for these installations that are superior to those established for others that do not have these techniques available. The following table indicates the emission limits (*Epigraph 20, Annex II A*):

| Type of Installation                                                                  | Limit Value of Waste Gas Emission (mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (Percentage of Solvent Entry) | Limit Values of Total Emission |
|---------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------|
| New installations that <b>DO</b> use recycling techniques for Recovered Solvents      | 150                                                        | 5                                                               | 5% of the Solvent Entry        |
| Existing installations that <b>DO</b> use recycling techniques for Recovered Solvents | 150                                                        | 15                                                              | 15% of the Solvent Entry       |

In all cases of the preceding table, the limit value of fugitive emission does not include solvents sold as a part of products or preparations in hermetic containers (*Special Regulation, Epigraph 20, Annex II A*)

**8. Printing:** Any activity of reproducing a text or images, in which by using an image carrier, transfers ink to any type of surface. The selected techniques of varnishing, coating and lamination remain included in this category (*Category 8, Annex I*).

Within the activities included in this category, the following are subjected to Royal Decree 117/2003:

**a) Flexography:** Printing activity that uses an image carrier of rubber or elastic photopolymers on which the printing areas are above the non-printing areas, using liquid inks that dry by evaporation (*Category 8.a, Annex 1*).

Those installations that development this type of activity and use more than **15 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold consumption, Epigraph 3, Annex II A*).

The emission limits established by said Royal Decree for this type of installation vary according to the quantity of organic solvents used thereby establishing two different groups:

- Installations that develop the activity of flexography, which use between 15 and 25 tons of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Subcategory          | Limit Value of Waste Gas Emission (mg C/ Nm <sup>3</sup> ) | Limit Values of the Fugitive Emission (% of the Solvent Entry) |
|----------------------|------------------------------------------------------------|----------------------------------------------------------------|
| From 15 to 25 t/year | 100                                                        | 25                                                             |

- Installations that develop the activity of flexography which use more than 25 tons of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Subcategory         | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of the Fugitive<br>Emission<br>(% of the Solvent Entry) |
|---------------------|---------------------------------------------------------------|----------------------------------------------------------------------|
| More than 25 t/year | 100                                                           | 20                                                                   |

**b) Heatset Web Offset:** A web-fed printing activity using an image carrier in which the printing and non-printing area are in the same plane, where web-fed means that the material to be printed is fed to the machine from a reel and not from separate sheets. The non-printing area is treated to attract water and thus reject ink. The printing area is treated to receive and transmit ink to the surface to be printed. Evaporation takes place in an oven where hot air is used to heat the printed material (*Category 8.b, Annex I*)

Those installations that development this type of activity and use more than **15 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold consumption, Epigraph 1, Annex II A*).

The emission limits established by said Royal Decree for this type of installation vary according to the quantity of organic solvents used thereby establishing two different groups:

- Installations that develop the activity of heatset web Offset, which uses between 15 and 25 tons of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 1, Annex II A*):

| Solvent Usage        | Limit Value of Waste Gas<br>Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive<br>Emission (Percentage of<br>Solvent Entry) | Special Regulations                                                            |
|----------------------|------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------|
| From 15 to 25 t/year | 100                                                              | 30                                                                    | The waste solvent in the final product is not considered part of the emissions |

- Installations that develop the activity of heatset web Offset, which uses between 15 and 25 tons of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 1, Annex II A*):

| Solvent Usage       | Limit Value of Waste Gas<br>Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive<br>Emission (Percentage of<br>Solvent Entry) | Special Regulation                                                             |
|---------------------|------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------|
| More than 25 t/year | 20                                                               | 30                                                                    | The waste solvent in the final product is not considered part of the emissions |

**c) Lamination (associated with a printing process):** The adhering together of two or more flexible materials to produce laminates (*Category 8.c, Annex I*).

Those installations that develop lamination associated with a printing process and use more than **15 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 3, Annex II A*).

The emission limits established by said Royal Decree for this type of installation vary according to the quantity of organic solvents used thereby establishing two different groups:

- Installations that develop lamination, which use between 15 and 25 tons of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage        | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|----------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| From 15 to 25 t/year | 100                                                           | 25                                                                 |

- Installations that develop the activity of lamination, which use more than 15 and 25 tons of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage       | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|---------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| More than 25 t/year | 100                                                           | 20                                                                 |

**d) Publication Rotogravure:** Rotogravure uses printing paper designated for magazines, brochures, catalogues or similar products using toluene-based inks (*Category 8.d, Annex I*).

Those installations that develop this type of activity and use more than **25 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 2, Annex II A*).

The emission limits established by said Royal Decree for these types of installations vary according to if it deals with a new or existing installation. The following table indicates the established emission limits for each one (*Epigraph 2, Annex II A*):

| Type of Installation  | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|-----------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| New Installation      | 75                                                            | 10                                                                 |
| Existing Installation | 75                                                            | 15                                                                 |

**e) Rotogravure (except publication rotogravure included in the preceding category):** A printing activity using a cylindrical image carrier in which the printing area is below the non-printing area using liquid inks that dry through evaporation. The recesses are filled with ink and the surplus is cleaned off the non-printing area before the surface to be printed is in contact with the cylinder and lifts the ink from the recesses (*Category 8.e, Annex I*).

Those installations that develop this type of activity and use more than **15 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 3, Annex II A*).

The emission limits established by said Royal Decree for this type of installation vary according to the quantity of organic solvents used thereby establishing two different groups:

- Installations that develop the activity of rotogravure, which use **between 15 and 25 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage        | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|----------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| From 15 to 25 t/year | 100                                                           | 25                                                                 |

- Installations that develop the activity of rotogravure which uses **more than 25 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage       | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|---------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| More than 25 t/year | 100                                                           | 20                                                                 |

**f) Rotary Screen Printing:** A web-fed activity in which the ink is passed onto the surface to be printed forcing it through a porous image carrier in which the printing area is open and the non-printing area is sealed off using liquid inks which dry only through evaporation. “Web-fed” means that the material to be printed is fed to the machine from a reel and not from separate sheets (*Category 8.f, Annex I*).

Rotary screen printing is differentiated in this category when it is performed on textile or on cardboard/cards. Therefore, the consumption thresholds and the emission limits are different for these specific types of printing.

In this manner, those installations that develop **rotary screen printing on different textile surfaces or on cardboard/card surfaces** and use **more than 15 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 3, Annex II A*).

The emission limits established by said Royal Decree for this type of installation vary according to the quantity of organic solvents used thereby establishing two different groups:

- Installations that develop the activity of rotary screen printing on different textile surfaces or on cardboard/card surfaces, which use **between 15 and 25 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage        | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|----------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| From 15 to 25 t/year | 100                                                           | 25                                                                 |

- Installations that develop the activity of rotary screen printing on different textile surfaces or on cardboard/card surfaces, which use **between 15 and 25 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage       | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|---------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| More than 25 t/year | 100                                                           | 20                                                                 |

In addition, those installations that develop **rotary screen printing on different textile surfaces or on cardboard/card surfaces** and use **more than 30 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 3, Annex II A*). The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage       | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|---------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| More than 30 t/year | 100                                                           | 20                                                                 |

**g) Varnishing:** A process in which a varnish or an adhesive coating for the purpose of later sealing the packaging material is applied to a flexible material (*Category 8.g, Annex I*).

Those installations that develop the varnishing process and use more than **15 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 3, Annex II A*).

The emission limits established by said Royal Decree for this type of installation vary according to the quantity of organic solvents used thereby establishing two different subcategories:

- Installations that develop the activity of varnishing, which use **between 15 and 25 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage        | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|----------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| From 15 to 25 t/year | 100                                                           | 25                                                                 |

- Installations that develop the activity of varnishing which use **more than 25 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 3, Annex II A*):

| Solvent Usage       | Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|---------------------|---------------------------------------------------------------|--------------------------------------------------------------------|
| More than 25 t/year | 100                                                           | 20                                                                 |

**9. Natural or Synthetic Rubber Conversion:** Any activity of mixing, milling, blending, pressing, extrusion and vulcanisation of natural or synthetic rubber and any ancillary operations to convert natural or synthetic rubber into a finished product (*Category 9, Annex I*).

Those installations that develop the activity of natural or synthetic rubber conversion and use more than **15 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 18, Annex II A*).

The established emission limits for these types of installations vary for those installations that use techniques which enable the reuse of recovered solvents, being the waste gas emission limits established for these installations that are superior to those established for installations that do not have these techniques available (*Epigraph 18 Special Regulation, Annex II A*).

The following table indicates the emission limits for each one of them (*Epigraph 18, Annex II A*):

| Type of Installation                                                      | Limit Value of Waste Gas Emission (mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (Percentage of Solvent Entry) | Limit Values of The Total Emission |
|---------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------|
| Installations that DO NOT use recycling techniques for Recovered Solvents | 20                                                         | 25                                                              | 25% of the Solvent Entry           |
| Installations that DO use recycling techniques for Recovered Solvents     | 150                                                        | 25                                                              | 25% of the Solvent Entry           |

In both cases, the limit value of fugitive emission does not include solvents sold as a part of products or preparations in hermetic containers (*Epigraph 18 Special Regulation, Annex II A*).

**10. Surface Cleaning:** Any activity, except dry cleaning, using organic solvents to remove contamination from the surface of materials including degreasing. A cleaning activity that consists of more than one step before or after any other treatment step shall be considered as only a surface cleaning activity. This activity refers to surface cleaning of the product and not cleaning equipment (*Category 19, Annex I*).

In addition, those installations that develop this type of activity will remain included within the scope of the application of this Royal Decree if they can be found in any of the following cases:

- Installations that develop surface cleaning using **more than 1 ton of substances or preparations, which due to its content of volatile organic compounds classified as carcinogenic, mutagenic or toxic for reproduction, have assigned risk phrases R45, R46, R49, R60 or R61 or halogenated organic compounds that have assigned risk phrase R40** (in accordance with that which is established in Royal Decree 363/1995 dated 10 March, which sanctions the Regulation on Notification of New Substances and Classification, Packaging and Labelling of Dangerous Substances) (*Consumption Threshold, Epigraph 4, Annex II A*).
- Installations that develop surface cleaning utilizing **more than 2 tons of organic solvents in a natural year** (that do not have the characteristics cited in the subsection a) (*Consumption Threshold, Epigraph 5, Annex II A*).

For each case, Royal Decree 117/2002 establishes different groups and assigns emission limits to each one of them.

For Type A Installations (Installations that develop surface cleaning using **more than 1 ton** of substances or preparations, which due to its content of volatile organic compounds classified as carcinogenic, mutagenic or toxic for reproduction, have assigned risk phrases R45, R46, R49, R60 or R61 or halogenated organic compounds that have assigned risk phrase R40) the emission limits established by said Royal Decree vary according to the quantity of substances or preparations using the above-mentioned characteristics and establishing two different groups (*Epigraph 4, Annex II A*).

- Installations that develop the activity of surface cleaning using substances or preparations, which due to its content of volatile organic compounds classified as carcinogenic, mutagenic or toxic for reproduction that have assigned risk phrases R45, R46, R49, R60 or R61 or halogenated organic compounds that have assigned risk phrase R40, which use **between 1 and 5 tons** of said substances or preparations in a natural year. The following table indicates the emission limits (*Epigraph 4, Annex II A*):

| Consumption of said Substances or Preparations | Limit Value of Waste Gas Emissions (mg of compound/Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (Percentage of Solvent Entry) |
|------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------|
| From 1 to 5 t/year                             | 20                                                                   | 15                                                              |

- Installations that develop the activity of surface cleaning using substances or preparations, which due to its content of volatile organic compounds classified as carcinogenic, mutagenic or toxic for reproduction, have assigned risk phrases R45, R46, R49, R60 or R61 or halogenated organic compounds that have assigned risk phrase R40, which use **more than 5 tons** of said substances or preparations in a natural year. The following table indicates the emission limits (*Epigraph 4, Annex II A*):

| Consumption of said Substances or Preparations | Limit Value of Waste Gas Emission (mg of compound/Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (Percentage of Solvent Entry) |
|------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------|
| More than 5 t/year                             | 20                                                                  | 10                                                              |

For Type B Installations (Installations that develop surface cleaning utilizing more than 2 tons of organic solvents in a natural year, the emission limits established by said Royal Decree vary according to the quantity of organic solvents used establishing two different subcategories (*Epigraph 5, Annex II A*):

- Installations that develop the activity of surface cleaning, which use **between 2 and 10 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 5, Annex II A*):

| Solvent Consumption | Limit Value of Waste Gas Emission (mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (Percentage of Solvent Entry) |
|---------------------|------------------------------------------------------------|-----------------------------------------------------------------|
| From 2 to 10 t/year | 75                                                         | 20                                                              |

- Installations that develop the activity of surface cleaning, which use **more than 10 tons** of organic solvents in a natural year. The following table indicates the emission limits (*Epigraph 5, Annex II A*):

| Solvent Consumption | Limit Value of Waste Gas Emissions<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) |
|---------------------|----------------------------------------------------------------|--------------------------------------------------------------------|
| More than 10 t/year | 75                                                             | 15                                                                 |

Those installations that are found in this category (Type-B surface cleaning) and that demonstrate to the competent authority that the mean content of organic solvents of all the cleaning material do not exceed 30 % of the weight, will be exempt from the application of the emission limits (*Epigraph 5 Special Regulation, Annex II A*).

**11. Vegetable oil extraction and vegetable oil and animal fat refining activities:** Any activity to extract vegetable oil and other vegetable matter, the processing of dry residues to produce animal feed, the purification of animal fats and vegetable oils derived from seeds, vegetable or animal matter (*Category 11, Annex I*).

Those installations that development activities of vegetable oil extraction and vegetable oil and animal fat refining and use **more than 10 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 19, Annex II A*).

The total emission limit values established for these types of activities may vary according to the entry matter of each installation thereby establishing the following limits:

| Entry Raw Material        | Limit Values of The Total Emission<br>kg of Solvent/ t of product |
|---------------------------|-------------------------------------------------------------------|
| Animal Fat                | 1.5 kg/t                                                          |
| Castor-Oil Plant          | 3.0 kg/t                                                          |
| Rapeseed Oil              | 1.0 kg/t                                                          |
| Sunflower Oil             | 1.0 kg/t                                                          |
| Soya Oil (normal pressed) | 0.8 kg/t                                                          |
| Soya Oil (white sheets)   | 1.2 kg/t                                                          |

For those installations of this type that use **other seeds and other different vegetable matter as entry raw material** included in the above-mentioned table, it establishes a **total emission limit of 3 kg/t**, being the value of this **variable** limit and **established by the competent authorities** based on individual cases and applying the best available techniques when dealing with special series for seeds and other vegetable matter (*Epigraph 19 First Special Regulation, Annex II A*).

In those cases in which the installations included in this category develop all **fractionation processes excluding degumming** (the elimination of gum oil), the **total emission limit is 1.5 kg/t** (*Epigraph 19 Second Special Regulation, Annex II A*).

In those cases in which the installations included in this category develop **degumming processes** (the elimination of gum oil), the **total emission limit is 4 kg/t** (*Epigraph 19 Third Special Regulation, Annex II A*).

**12. Vehicle Refinishing:** Any industrial or commercial coating activity and associated degreasing activities performing:

- a) The original coating of road vehicles or part of them with refinishing type materials when carried out outside of the original manufacturing line or
- b) The coating of trailers (including semi-trailers) (Category O)

*(Category 12, Annex 1, amended by the Final First Regulation of Royal Decree 227/2006).*

In this category, the amendment set forth for the Final First Regulation of Royal Decree 227/2006 has already been included. With this amendment, bodywork and paint repair shops remain **excluded** from the scope of the application of Royal Decree 117/2003. The emissions of said activities remain regulated through the application of Royal Decree 227/2006 (Annex IB).

In installations that develop the activity of vehicle refinishing in accordance with what was disposed after the amendment set forth by Royal Decree 227/2006 that uses more than 0.5 tons of organic solvents in a natural year, the emission limits established by Royal Decree 117/2003 is shown in the following table (*Epigraph 6, Annex II A*).

| Limit Value of Waste Gas Emission (mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission (Percentage of Solvent Entry) |
|------------------------------------------------------------|-----------------------------------------------------------------|
| 50                                                         | 25                                                              |

In this case, the waste gas emission value (mg C/Nm<sup>3</sup>) must be based on continuous measuring averaging every 15 minutes. If the following **two** conditions are met, the waste gas emission limit value will be considered fulfilled:

- None of the measurements obtained under normal conditions for 24 hours of normal operation exceed the emission limit value.
- None of the hourly measurements exceed a factor superior to 1.5.

It must be **demonstrated** that the waste gas emission value meets both conditions.

**13. Winding Wire Coating:** Any activity that encompasses all coating of metallic conductors used for winding the coils in transformers, motors, etc. (*Category 13, Annex I*).

Those installations that develop this type of activity and use more than **5 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 9, Annex II A*).

The emission limits established by said Royal Decree for these types of installations vary according to the mean diameter of the wiring on which the coating is performed, thereby establishing two different groups:

- Installations that develop the activity of winding wire coating in which the mean diameter of said wiring being **0.1 mm or less**. The following table indicates the emission limits (*Epigraph 9, Annex II A*):

| Type of Installation                                                                         | Limit Values of the Total Emission |
|----------------------------------------------------------------------------------------------|------------------------------------|
| Winding wire coating in which the mean diameter of said wiring being <b>0.1 mm or less</b> . | 5                                  |

- Installations that develop the activity of winding wire coating in which the mean diameter of said wiring being **superior to 0.1 mm**. The following table indicates the emission limits (*Epigraph 9, Annex II A*):

| Type of Installation                                                                             | Limit Values of the Total Emission |
|--------------------------------------------------------------------------------------------------|------------------------------------|
| Winding wire coating in which the mean diameter of said wiring being superior to <b>0.1 mm</b> . | 10                                 |

**14. Wood Fibre Impregnation:** All activity that suggests impregnating wood with preservatives (*Category 14, Annex I*).

Those installations that develop the activity of wood fibre impregnation and use more than **25 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 12, Annex II A*).

The following table indicates the emission limits for this category (*Epigraph 12, Annex II A*):

| Limit Value of Waste Gas Emission<br>(mg C/ Nm <sup>3</sup> ) | Limit Values of Fugitive Emission<br>(Percentage of Solvent Entry) | Limit Values of the Total Emission |
|---------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------|
| 100                                                           | 45                                                                 | 11 kg/m <sup>3</sup>               |

For those installations in which impregnation develops with creosote, the waste gas emission value will not be applied (*Epigraph 12 Special Regulation, Annex II A*).

**15. Wood and Plastic Lamination:** All activity that adheres together wood and/or plastic to produce laminated products (*Category 15, Annex I*).

Those installations that develops the activity of wood and plastic lamination that use more than **5 tons of organic solvents in a natural year** remain included within the scope of the application of Royal Decree 117/2003 (*Threshold Consumption, Epigraph 15, Annex II A*).

The emission limit value established by said Royal Decree for these types of installations refer to the total emissions of the installation, being that of 30 g of solvent/m<sup>2</sup> of laminated product (*Epigraph 15, Annex II A*, corrected by *Correction of Misprints and Errors in Royal Decree 117/2003 dated 31 January, on the limitation of volatile organic compounds due to the use of solvents in specific activities, BOE Number 79, 2 April 2003*).