7.33 Rubber processing

7.33.1 Coverage

This sector concerns the production of tyres as well as the production of all other rubber goods. Adhesives used in the production of some rubber goods are considered in the section on adhesive coating. Reduction techniques are not the same as the one defined below.

7.33.2 Emission sources

Products made of rubber are produced using a large variety of materials. The main process steps are:

- Mixing;
- Extrusion;
- Calendering;
- Building;
- Curing (Vulcanisation).

Within the conversion of natural or synthetic rubber, organic solvents are mainly used for tackifying.

7.33.3 Available techniques, Associated Emissions Levels (AEL)

Reference documents on Best Available Techniques in the production of tyre and general rubber goods do not exist. The existing document addresses "Production of Polymers" which is not covered by the sector named "rubber processing" [4].

In this sector, VOC emissions will be reduced either by primary or secondary measures but generally, not by a combination of the 2 approaches. Most of the time, emissions will be reduced by switching solvent-based to low or non-solvent based products. When no technique is available, waste gas treatment might be used. Associated emission factors are based on the EGTEI document for the production of tyres [1] and on a study from 1999 for the production of rubber goods [2]. Considering the very large variety of installations and products manufactured and the fact that no BREF has been developed for this sector, achievable emission levels defined in table 1 are only **indicative** and have to be understood as average values.

Table 1: Emission sources and selected VOC control measures with associated emission levels for the production of natural or synthetic rubber goods

Emission source	Combination of control measures	VOC emission levels [Defined for the following averaging period: yearly for total AEL]
Rubber goods production		
Plant with a solvent consumption ≥ 15 tonnes /year	Partly switch from solvent-based to water-based agents and cleaning systems or waste gas treatment such as oxidation	1 kg/tonne rubber produced [2]
Tyre production		
All plants	**New processes** (example: adhesive rubber band use – New type of building machine associated with extruder – New technology extrusion). Use of 25 % solvent-based adhesives, coatings, inks and cleaning agents (90 wt.-% solvent content) or oxidation when reduction of solvent consumption is not suitable	2.5 kg/t of tyre [1](1)

(1) The VOC emission level of 2.5 kg VOC/t of tyre is derived from the EGTEI background document on tyre production [1]. This is the result of the application of a 75% reduction to the average non-abated situation (which includes also plants in which reduction measures had been already implemented)

7.33.4 Cost data for emission reduction techniques

Costs are defined in the EGTEI synopsis sheet concerning “tyre production“ [1].

For the production of tyres, abatement costs defined, for an average installation, vary between 0.14 and 1 k€/tonne of VOC abated according to the technique implemented (i.e. solvent consumption reduction or thermal oxidation). In most of the cases, secondary measures will be implemented only when primary measures are not technically applicable.

Caution: this document is susceptible to evolve if new updated data are available.

7.33.5 Emerging techniques

No data is available.

7.33.6 References used for chapter 7.33

[1] EGTEI synopsis sheet: Tyre production – 2005

[2] Task Force on the Assessment of Abatement Options/Techniques for VOC from Stationary Sources – 1999

[3] Comments from ETRMA – March/April 2009