Substance Identity Card for TOPP	
The SIEF[1] of Turpentine Oil from Pulping Processes was a split from the pre-SIEF for Turpentine oil (CAS number 8006-64-2, EC number 232-350-7).	
Substance name	**Turpentine oil from pulping processes**
Synonyms	Crude sulfate turpentine (CST); Wood Turpentine (WT); Rohsulfat-Terpentin; Rohsulfatterpentinöl; Tärpätti, PTA; Essence de térébenthine; Essence résiduaire de térbenthine; Terpentin; Turpentine; Terebentina; Terebintina; Rå sulfatterpentin; Råterpentin; Sulphate turpentine; Crude Turpentine; Ejector oil; Turpentine oil from pulping processes (TOPP)
EC substance name	Turpentine oil from pulping processes
EC number	232-350-7
CAS name	Turpentine, oil
CAS number	8006-64-2
Index number	650-002-00-6
REACH substance name[2]	Turpentine Oil from Pulping Processes (TOPP) is a volatile oil extracted from various tree species. It consists of terpenes, mainly bicyclic monoterpenes such as alpha- and beta-pinene and delta-3-carene, and lower concentrations of monocyclic monoterpenes.
Brief REACH description[3]	TOPP is extracted from various wood chips by steam distillation. TOPP's main constituents are; α-pinen 10-85 %, β-pinene 0-40 %, δ-3-carene 0-40 %, dipentene 0-20 %.
Type of substance[4]	UVCB; organic
Boundary composition: General process[5]	**- Identity of starting materials/source (and ratio):** The source material is chips of hardwood and softwood. Volatile constituents are recovered from the pulping of wood. **- Reaction steps/mechanisms:** TOPP is produced as a by-product in the pulping industry based on softwood and hardwood. The substance originates from volatile organic compounds in pulp wood. In the pulping processes, the wood chips are heated and the terpenes are volatilised. TOPP is recovered from the terpene rich vapour through various streams of wood pulping process. These streams include the alkaline black liquor, vent gases, crude tall oil, and foul condensate streams. The detailed configuration of turpentine oil recovery varies: • In continuous cooking of Kraft pulp the wood chips and the cooking liquor is heated in a continuous digester and the terpenes are recovered from steam leaving the chip steaming vessel and/or the black liquor flash tanks. • In batch cooking the terpenes are recovered from the digester degassing and from the blow steam condensers. In modern energy efficient batch cooking systems such as RDH or Super batch turpentine is recovered from the digester degassing and the vent gases from the hot black liquor accumulators. • Turpentine oil is also recovered from the foul condensate stream in a continuous process and from the crude tall oil stream. **- Relevant operating parameters (e.g. temperature and pressure):** Atmospheric pressure and steam. Vacuum distillation could also be used. **- Solvents/reagents used:** None **- Details on any extraction/isolation steps as appropriate:** The terpenes fraction is vapourised by steam or vacuum distillation before being condensed.

[1] Substance Information Exchange Forum according to regulation 1907/2006/EC named REACH
[2] IUCLID6 Section 1.1 Reference substance / IUPAC name
[3] IUCLID6 Section 1.1 Reference substance / Description
[4] IUCLID6 Section 1.1 Type of substance
[5] IUCLID6 Section 1.2 Description

	- Details on any clean-up/purification steps as appropriate: Steam distillation and subsequent enrichment and extraction by controlled condensation of the terpene rich vapour streams. The condensation is accomplished by a system of surface condensers. Turpentine oil is lighter than water and is separated from the condensates by means of a decanter. The condensation and decantation systems are principally the same regardless of pulping process. The important process parameters are the condensation temperatures in the primary and the secondary condensers. The non-condensable gases (NCG) from the condenser system contain high concentrations of malodorous gases and are drawn off and incinerated in the mills NCG-system. **- Physical-chemical parameters (e.g. boiling point):** The boiling point range is typically 150 – 175°C and the density 0.855 – 0.870 g/cm³ at 20°C.

Boundary composition ranges of TOPP

Constituents	CAS number	EC number	Concentrations [w/w %]	
			Min.	Max.
α-pinen	80-56-8	201-291-9	10	85
β-pinene	127-91-3	204-872-5	0	40
δ-3-carene	13466-78-9	236-719-3	0	40
Dipentene	7705-14-8	231-732-0	0	20
Dimethyl sulfide	75-18-3	200-846-2	0	10
Dimethyl disulfide[6]	624-92-0	210-871-0	0	7.5
Total elemental sulphur content	multiple	multiple	0	6

[6] Turpentine oil from pulping processes has two different classifications depending on its concentration of the dimethyl disulfide impurity; no STOT SE classification if < 1.0 %, STOT SE 2 if 1.0-7.5 %.