Substance Identity Card for TOPP	
The SIEF[1] of Turpentine Oil from Pulping Processes (TOPP) 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); Turpentine oil from wood processes; Aceite de Trementina; Crude sulphate turpentine; Crude Turpentine; Ejector oil; Ejektoriöljy; Epäpuhdas tärpätti; Esencia de Trementina; Essence de térébenthine; Essence papetière de térébenthine; Essence résiduaire de térbenthine; Raaka tärpätti; Roh-Sulfat-Terpentin; Rohsulfat-Terpentin; Rohsulfatterpentinöl; Rohterpentin; Rå sulfatterpentin; Rå träterpentin; Råterpentin; Sulfatterpentin; Sulphate turpentine; Surowa terpentyna siarczanowa; Terebenthine; Terebentina; Terebintina; Terpentin; Terpentin från massatillverkning; Terpentinolja från massaprocess; Terpentyna; Terpentyna siarczanowa; Терпентин; Térébenthine; Trementina; Träterpentin; Turpentine; Turpentine from kraft pulping processes; Tärpätti; Tärpätti, PTA; Tärpättiöljy massan valmistusprosessista
EC substance name	Turpentine, oil
EC number	232-350-7
CAS name	Turpentine oil
CAS number	8006-64-2
Type of substance[2]	UVCB; organic
REACH substance name[3]	Turpentine Oil from Pulping Processes
REACH brief description[4]	Turpentine Oil from Pulping Processes (TOPP) is a UVCB substance (Substance of Unknown or Variable composition, Complex reaction products or Biological materials) comprised of naturally-occurring compounds that are extracted from tree species during wood industrial processes. TOPP is a volatile oil extracted from various tree species by steam distillation or specific heating conditions and subsequent enrichment and extraction by controlled condensation of the terpene rich vapor steams. The substance consists of 70-100 % of terpenes, mainly bicyclicmonoterpenes such as alpha- and beta-pinene, delta-3-carene and dipentene (limonene), and lower concentrations of monocyclic monoterpenes. • α-pinene and β-pinene are structural isomers that interconvert at about 60°C; combined they are typically 57 % with a range of 38-86% w/w. • α-pinene is typically about 49% w/w with a range of 10-85% w/w. • β-pinene is typically about 7% with a range of 0-50% w/w. • δ-3-carene is typically about 22% w/w with a range of 0-40% w/w. Total organic sulfur content is about 1.6% with a range of 0-12% w/w (or expressed in terms of elemental sulfur, typically 0-6% w/w). Dimethyl sulfide (DMS) is typically 1% w/w with a range of 0-10% and dimethyl disulfide (DMDS) is typically 0.1% w/w with a range of 0-2% w/w. The term “turpentine” is a collective name that refers to several oleoresinous products which are obtained from conifers. Turpentine referred originally to the whole oleoresinous fraction that contains both volatile compounds (primarily monoterpenes) and a non-volatile portion of rosin acids. The term TOPP is used to differentiate it from gum turpentine oil (EC No. 932-349-8) which is subject to a separate registration in 2010

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

	due to a SIEF split under REACH. TOPP keeps the EINECS Number 232-350-7 and the official name turpentine oil.
General process[5]	**- Identity of starting materials/source (and ratio):** The source material for turpentine oil (TOPP) is hardwood and softwood. In the wood industrial processes the wood is heated and terpenes are volatilized. The terpene rich vapours are collected. **- Reaction steps/mechanisms:** TOPP is derived from the volatile organic compounds in softwoods and hardwoods as a by-product in wood industrial processes. The wood is heated, and the terpenes are volatilised. TOPP is recovered from the terpene rich vapour through various streams by a system of surface condensers. These streams can 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 are 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 or heating before being condensed. **- 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 industrial 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.

[5] IUCLID6 Section 1.2 Description

Boundary composition of TOPP				
Constituents	CAS number	EC number	Concentrations [w/w %]	
			Min.	Max.
α-pinene	80-56-8	201-291-9	10	85
β-pinene	127-91-3	204-872-5	0	50
δ-3-carene	13466-78-9	236-719-3	0	40
Dipentene	7705-14-8	231-732-0	0	30
Dimethyl sulfide	75-18-3	200-846-2	0	10
Dimethyl disulfide[6]	624-92-0	210-871-0	0	5
Total elemental sulphur content	multiple	multiple	0	6

[6] Turpentine oil (TOPP) 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 %. The substance is also either Flammable Liquid Category 2 or Category 3 depending on company specific flash-point value.