Product Data Sheet

Tricresyl Phosphate (TCP)

Description

Tricresyl phosphate (TCP) is an **organophosphate ester**, typically a mixture of **ortho-, meta-, and para-cresyl isomers**. It is a clear, colorless to pale yellow liquid, soluble in most organic solvents. TCP is widely used as a **plasticizer, flame retardant, and lubricant additive** in polymers, resins, and industrial fluids.

Typical Properties

Parameter	Specification
Chemical Formula	C21H21O4P (approx.)
Molecular Weight	368.35 g/mol
Appearance	Clear to pale yellow liquid
Specific gravity at 25 °C	1.165 – 1.175
Acidic Value, mg KOH/gm	0.5 Max
Refractive Index at 25 °C	1.540 – 1.560
Phosphorous Content %	8.4 – 8.5%
Flash Point	160 – 170 °C
CAS Number	1330-78-5
EC Number	215-687-4

Applications

- **Plasticizer:** Improves flexibility, workability, and impact resistance in PVC, rubbers, and synthetic resins.
- **Flame Retardant:** Used in cellulosic plastics, epoxy, polyurethane foams, and coatings for fire resistance.
- **Lubricant Additive:** Functions as anti-wear and extreme-pressure (EP) additive in hydraulic fluids, lubricating oils, and greases.
- **Hydraulic & Transformer Fluids:** Fire-resistant hydraulic fluids in aerospace, marine, and industrial applications; coolant and insulating fluid in electrical transformers.
- **Resin & Coating Applications:** Enhances flame resistance, plasticization, and processing in phenolic, epoxy, and urethane resin systems.
- **Chemical Intermediate:** Used in the synthesis of organophosphate derivatives and specialty chemicals.

Safety & Handling

- TCP, particularly **tri-ortho-cresyl phosphate (TOCP)**, can be **toxic**.
- Handle with **gloves, goggles, and protective clothing**.
- Avoid inhalation, ingestion, or prolonged skin contact.
- Store in **cool, dry, well-ventilated areas** away from heat and moisture.
- Refer to the **Safety Data Sheet (SDS)** for detailed guidance on handling, storage, and disposal.

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