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POLITREN E

COOLING LUBRICANT

DESCRIPTION

The E Politrens (Politren E-21, Politren E-22 and E-28) are concentrated water-soluble cooling lubricants, based on oil, emulsifiers, anticorrosive additives and a solid filler.

The Politren E product family is a water emulsion used as a cooling lubricant for press tools used in hot metal forming, in particular in molds for pressurized casting of aluminum alloys. The Politren E-based emulsions have an increased service life, high emulsion stability, low foaming, and increased antiwear and anti-corrosion properties.

PHYSICAL AND CHEMICAL PROPERTIES

Parameter	POLITREN E
Appearance	dark gray or black thickened liquid
Mass fraction of ash, %, not more than	0.1-0.2
Mass fraction of nonvolatile residue, %	15.0÷20.5
Emulsion stability, %, not less than	75
Effective viscosity at 20°C, not less than	0.05-0.08 Pa•s
pH	7.5÷10.5
Anticorrosion properties in relation to steel, aluminum and copper alloys	+

PERFORMANCE CHARACTERISTICS

Politren E-28 is used in the manufacture of parts with a surface practically free of graphite. Politren E-22 is used in the manufacture of particularly intricate and large parts. Anti-wear properties improve from Politren E-28 to Politren E-21 and then to Politren E-22. At the same time, contamination of the part surfaces by graphite increases in the same sequence. Politren E is supplied as a concentrate and must be diluted with water before use. When diluting, it is sufficient to use a conventional stirrer and stir the product for 10÷30 minutes. The dilution ratio shall be obtained experimentally directly in the place of work.

Indicative data for dilution:

- complex castings – 5-10 parts of water per 1 part of cooling lubricant;
- castings of medium complexity – 10-20 parts of water per 1 part of cooling lubricant;
- simple castings – 20-50 parts of water per 1 part of cooling lubricant.

The cooling lubricant shall be sprayed onto the mold surface. Operating air pressure of the spray system is 4÷5 atm.

ADVANTAGES

- when applied by spray, it forms a uniform lubricant layer on the mold surface;
- reduces friction, resulting in reduced casting extraction force;
- separates the casting and mold surfaces from each other and ensures trouble-free removal of castings;
- prevents the occurrence of defects in the casting, improves quality of casting surface, promotes good filling of molds;
- reduces defective castings rate;
- improves durability of molds;
- reduces overheating of individual parts of molds;
- does not contain substances that cause metal corrosion;
- does not corrode tools or machine parts;
- does not produce smoke or toxic fumes;
- easy to wash off from equipment surface;
- does not cause harmful health effects.

SAFETY REQUIREMENTS, TOXICOLOGICAL PROPERTIES AND ENVIRONMENTAL PROTECTION

Politren E concentrate is a nonflammable liquid which following evaporation of water turns into a flammable liquid with a flash point of not lower than 140⁰C in an open cup.

In terms of toxicological properties, Politren E is classified as a low-hazard substance (lowest Class IV hazard as per GOST 12.1.007-76).

When using Politren E the main components which pollute the air in the working area are: mineral oil aerosol (maximum permissible concentration (MPC) is 5 mg/m³), triethanolamine aerosol (MPC is 5 mg/m³), graphite aerosol (MPC – 4 mg/m³) and ammonia impurities (MPC – 20 mg/m³).

The premises where Politren E is used shall be equipped with continuously operating supply and exhaust mechanical ventilation.

Within the production facilities the air shall be monitored subject to the shop-floor air monitoring schedule agreed with the local public health authorities.

The personnel involved in handling Politren E cooling lubricant shall wear protective clothing and use personal protective equipment in accordance with standard industry norms.

When making and/or using Politren E cooling lubricant emulsions the requirements of "Sanitary rules for working with cooling lubricants and tool lubrication", No. 3935-85 dated 09.29.1985, shall be complied with.

Use a clean soft cloth to remove Politren E from hands or face; rinse the remaining product away with plenty of water or wash away with warm water.

In case of ingress of the cooling lubricant onto working parts of the machinery, the floor of the machinery area shall be cleaned with rags, and the remaining product shall be washed away with water.

For the disposal of waste cooling lubricant, maximum permissible norms for the most toxic component should be referred to. The Politren E maximum allowable concentration in water bodies (MACw), determined for the most toxic water-insoluble component - oil - is 0.4 mg/l,

determined by the most toxic water-soluble component - triethanolamine - is 1.4 mg/l; Politren E maximum concentration determined for triethanolamine supplied for bio-treatment (MCB) is 5 mg/l.