

# Polihim Research and Production Enterprise (OOO)

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## POLITREN E-42 COOLING LUBRICANT

### DESCRIPTION

Politren E-42 is a concentrate of microemulsion water-miscible universal cooling lubricant based on mineral oil, emulsifiers, anti-wear; anti-corrosion and other additives; it does not contain harmful nitrites, glycols, boric acid or phenol derivatives, secondary amines and amides, nitrates and nitrites, organic chlorine compounds.

### PHYSICAL AND CHEMICAL PROPERTIES

Parameter	Politren E-42
Appearance, color	homogeneous liquid, brown
Kinematic viscosity @40°C, cSt, not less than	100
Density @20°C, g/cm <sup>3</sup> , not less than	0.82
Emulsion stability, %, not less than	90
Mass fraction of non-volatile residue, %, not less than	92
4% water emulsion pH	7.5÷10
Foam formation	None
Anti-corrosion properties relative to cast iron, steel, aluminum and copper alloys	+
Anti-wear properties	high anti-wear properties
Sensitivity to water hardness	None
Resistance to bactericide damage	Yes
Warranted storage life	1 year

### PERFORMANCE CHARACTERISTICS

#### High anti-friction properties

- high class of surface cleanliness of machined parts;
- high dimensional accuracy of machined parts;
- low wear of tools

#### Versatility

- possibility to process almost all metals and alloys: cast iron, carbon, low alloy and stainless steel, titanium, aluminum and copper alloys;
- used in milling, turning, drilling, sawing of cast iron, steel and aluminum alloys;
- possibility to use at normal and high cutting speeds on individual machines and in central systems;
- possibility to use for rolling;
- can be used in high-speed and conventional cooling systems.

## High anti-corrosion properties

for most metals and alloys to be machined:

- cast iron;
- carbon and low-alloy steel;
- aluminum and copper alloys.

## High usage properties

- does not require additional mixing during operation due to almost 100% emulsion stability;
- excellent wetting and penetrating properties;
- does not require frequent change of cooling lubricant in circulating systems;
- no formation of foam;
- frost-resistant – all the properties are preserved during freezing;
- biostatic product - highly resistant to microorganisms and fungi.

## • does not decay;

- does not produce a strong, unpleasant odor;
- in the form of concentrate and emulsion, it does not penetrate intact skin, does not possess a sensitizing effect, does not irritate the skin, or the mucous membranes of the eyes or upper respiratory tract;
- does not cause hand irritation;
- contains no harmful nitrites, boric acid, ethylene glycol, phenol derivatives;
- it is not an intensive source of air pollution in the working area;
- in terms of toxicological properties, is classified as a low-hazard substance (lowest Class IV hazard as per GOST 12.1.007-76).

## Highly cost-effective

- low consumption;
- low concentration (the concentrate is repeatedly diluted with water by 10÷30 times);
- almost 100% absence of sensitivity to water hardness;
- no special water treatment process is required for dilution of the coolant lubricant;
- high service life in circulating systems – up to 1 quarter and more without replacement.
- waste cooling lubricant is easily decomposed under a conventional process.

## USE

Politren E-42 is supplied as a concentrate and must be diluted with water before use. Diluting process can be periodic and continuous. When diluted in a periodic manner, it is enough to use a conventional stirrer to stir the product for 10÷30 minutes, then allow some time for the product to settle and stir it completely. In a continuous process, a high-speed ejector or other mixers are used. The emulsion concentration shall be selected empirically, taking into account the type and speed of the machining operation, grade of metal being machined, and other operating conditions.

Recommended emulsion concentration for grinding operations is 3÷4%.

Average concentration for blade processing operations is 4÷5%, in heavy and super-heavy modes, the concentration is increased to 6-10%, and the concentration when rolling is 3÷8%.

Before adding Politren E-42 cooling lubricant the machinery and cooling lubricant supply lines must be washed and disinfected from the previously used coolant. It is best to do this with the special detergent-disinfectant Politren MD.

## SAFETY REQUIREMENTS, TOXICOLOGICAL PROPERTIES AND ENVIRONMENTAL PROTECTION

Politren E-42 concentrated product is a flammable liquid with a flash point of not less than 180°C in an open cup.

In terms of toxicological properties, Politren E-42 is classified as a low-hazard substance (lowest Class IV hazard as per GOST 12.1.007-76).

Politren E-42 concentrate and/or emulsion does not penetrate intact skin, does not possess a sensitizing effect, does not irritate the skin or the mucous membranes of the eyes or upper respiratory tract; and it is not an intense source of air pollution of the working area.

When using Politren E-42 the main component polluting the air of the working area is mineral oil aerosol (MPC is 5 mg/m<sup>3</sup>). The premises where Politren E-42 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-42 cooling lubricant shall wear protective clothing and use personal protective equipment in accordance with standard industry norms.

When manufacturing and/or using Politren E-42 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 clean soft cloth to remove Politren E-42 from hands or face; rinse the remaining product with plenty of water or wash with warm water. On contact of the coolant with the mucous membrane of eyes, rinse the eye thoroughly with warm water and apply sulfacetamide drops (sulfatsil-sodium).

In case of ingress of the coolant 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 with water. For the disposal of waste cooling lubricant, the maximum permissible norms for the most toxic component should be referred to. The Politren E-42 maximum allowable concentration in water bodies (MAC<sub>w</sub>), determined for the most toxic water-insoluble component - oil- is 0.4 mg/l; for the most toxic water-soluble component - triethanolamine - is 1.4 mg/l; Politren E-42 maximum concentration determined for triethanolamine supplied for bio-treatment (MCB) is 5 mg/l.