
Technical Information

RENITE PG-14

PHOSPHATE BASED FORGING LUBE CONCENTRATES

Renite PG-14 is a graphite-free blend of polymeric phosphates in a water vehicle, applied to hot tools and dies and dies in hot-forming metals. In many, though not all applications, Renite PG-14 may be used instead of graphite and water or graphite and oil lubricants. The proprietary additives provide even greater lubricity, and reduced friction, at temperatures exceeding about 250°C (485°F).

Composition: Polymeric phosphates in water with biodegradable binders.
Appearance: Whitish-yellow to light grey, translucent liquid. Slightly thixotropic.
Specific Gravity: circa 1.2 (g/mL)
Flash Point: Not Flammable
pH (Typical): ca. 5

USES:

Renite PG-14 is used in high temperature applications, such as die lubrication in forging and extrusion. The phosphates provide improved extreme pressure (EP) and high temperature performance. Compared to our Renite S-26, Renite PG-14 has some improvement under EP conditions. Renite PG-14 is of particular advantage in situations where conventional graphited lubricants cause graphite staining problems. When sprayed onto hot tools and dies, the water is driven off, leaving behind a solid film lubricating coating. At high temperatures and pressures, the phosphates flow much like an oil, reducing friction, providing release, and easing metal movement. Although not as strongly acidic as commercial rust removers, Renite PG-14 does have a mild rust removing action, and will form a protective phosphate coating on either bare or slightly rusty iron or steel surface. Renite PG-14 may be added to Renite S-24, our graphite and water lehr mat coating concentrate, for the glass industry, to improve heat resistance for the lehr mat. Best results are obtained with one part Renite PG-14 to two parts of Renite S-24.

APPLICATION:

Renite PG-14 is spray applied onto hot tools and dies. Renite manufactures hand and automatic spray equipment which are ideal for these applications. Dilution ratios, as a starting point should be about 5:1 to 10:1 (water : concentrate), diluting with ordinary tap water. For Renite PG-14, if a graphite and water lubricant has been in use, start with a concentration about half again as much as for graphite and water (i.e. if the dilution ratio of the graphite and water was 6:1, start with 4:1). Mix thoroughly before use. Mixing will go faster if the Renite PG-14 is added to the water. However, if more convenient, water may be added to the Renite PG-14. After dilution, no agitation is needed.

Die temperature for application of Renite PG-14 should be in the 300°-800°F range (150°-425°C), with 500°F (260°C) generally being ideal. Near the lower end of the range, use a richer mixture and a shorter spray duration to counter the tendency to run off without drying and coating. Near the upper end, use a richer mixture and a longer spray duration to counter the tendency to bounce off without drying and coating. A Renite PG-14 coating softens at about 500°F (260°C) and begins to liquify at 550°F (290°C). Since the phosphates must liquify for best lubrication, billet temperature should be at least a little above 550°F.

Large steel forgings, such as oil well drilling bits, have been successfully made with Renite PG-14. For making small aluminum forging jobs where the shape is not complex, Renite PG-14 may be successful as well.

Renite supplies samples of Renite PG-13 and PG-14, and other products, on a no-charge basis.