



## Product Data

# Castrol Braycote® 601 EF

Grease, Rust Preventive, Rocket Propellant Compatible  
Low Temperature

## Description

Castrol Braycote 601 EF is a smooth, buttery, translucent, off-white, NLGI #2 grease. Its base oil (Castrol Brayco® 815Z) is a perfluorinated polyether, with exceptional chemical resistance, extremely low volatility, and a wide temperature service range. The grease is non-toxic, nonflammable, and does not use any chlorofluorocarbons (CFC's) during product manufacture. This product exhibits unusually high load-carrying capabilities as measured by the Four-Ball EP Test, and contains a rust and corrosion inhibitor for extra component protection. Castrol Fluoroclean™ X100 or Castrol Fluoroclean™ HE can be used to remove this lubricant. Refer to the data sheets for these products for information regarding these products. Braycote 601 EF with molybdenum disulfide is also available for applications requiring both corrosion and extreme pressure additives.

## Application

Braycote 601 EF is designed to operate in the presence of rocket fuels and oxidizers and high vacuum. It is frequently used in space applications including the Space Shuttle and satellites. It should also be considered in any application where a hostile chemical or extreme environmental conditions would preclude the use of an ordinary grease. Typical applications include ball and roller bearings, gears, and as an assembly lubricant for O-rings and elastomers. Perfluorinated greases, such as this product, exhibit excellent shelf life due to their intrinsic inertness.

## Characteristics

| TEST METHOD                 | DESCRIPTION  | RESULT  |
|-----------------------------|--|---|
| D 1403                      | Penetration @ 25°C (77°F), mm <sup>-1</sup><br>Unworked<br>Worked, 60 strokes  | 288<br>290  |
| FTM 321                     | Oil Separation, 30 hrs, 204°C (400°F), % wt<br>Evaporation Loss, % wt  | 10.53<br>0.54   |
| D 1743                      | Rust Prevention  | 1,1,1,Pass  |
| FTM 5309                    | Copper Strip Corrosion, 24 hrs, 100°C (212°F)  | 1b  |
| D 2265                      | Dropping Point, °F (°C)  | 208 (407)   |
| D 2596                      | Four-Ball Extreme-Pressure Weld, kgf   | 800+  |
| E 595<br>NASA<br>SP-R-0022A | Vacuum Stability Test<br>24 hrs, 125°C (257°F), 10-6, torr<br>Total Weight Loss (TWL), % wt<br>Volatile Condensable Material (VCM), % wt   | <br><br>0.39<br>0.03                                      |
| D 1478                      | Low-Temperature Torque, g.cm<br>@ -62°C (-80°F)<br>Starting<br>Running, 1 hr<br>@ -73°C (-100°F)<br>Starting<br>Running, 1 hr<br>Low-Temperature Torque, N-m<br>@ -73°C (-100°F)<br>Starting<br>Running, 1 hr. | <br><br>585<br>228<br><br>1430<br>637<br><br>0.05<br>0.02 |
| D 2512<br>(MSFC 106)        | LOX Impact Sensitivity<br>100 mm, 20 drops   | Pass  |
| D 2595                      | Evaporation Loss, % wt, 22 hrs, 204°C (400°F)  | 0.87  |
| 1420                        | Pounds per gallon @ 16°C (60°F)<br>Grams per milliliter @ 16°C (60°F)  | 16.17<br>1.94   |

| <b>Base Oil Characteristics</b> |   |   |
|---------------------------------|---|---|
| D 287                           | Specific Gravity @ 16/16°C (60/60°F)<br>Pounds per Gallon @ 16°C (60°F)         | 1.8531<br>15.430  |
| D 445                           | Kinematic Viscosity, cSt<br>@ 99°C (210°F)<br>@ 38°C (100°F)<br>@ -54°C (-65°F) | 45<br>148<br>10,855   |
| D 2270                          | Viscosity Index   | 350   |
| D 97                            | Pour Point, °C (°F)   | -72 (-100)  |
| Knudsen                         | Vapor Pressure, torr<br>@ 20°C (68°F)<br>@ 100°C (212°F)<br>@ 200°C (392°F)     | $4 \times 10^{-13}$<br>$2 \times 10^{-9}$<br>$2 \times 10^{-6}$ |

Health, safety and environmental information are provided for this product in the Materials Safety Data Sheet. This gives details of potential hazards, precautions and First Aid measures, together with environmental effects and disposal of used products. Castrol will not accept liability if the product is used other than in the manner or with the precautions or for the purpose(s) specified. Before using the product other than directed, please contact Castrol for consultation.

## **Additional Information**

### **Temperature Range**

-80°C to 204°C (-112°F to 400°F)

### **Limitations**

Braycote 601 EF is compatible with most commonly utilized materials, plastics, and elastomers. It may be adversely affected by Lewis Acid Catalysts such as aluminum chloride, at elevated temperatures. Newly exposed rubbing surfaces of aluminum, magnesium and titanium alloys may react with this product under certain conditions. Such systems should be thoroughly evaluated. Surfaces must be well cleaned of organic rust inhibitors prior to grease application to insure proper lubrication. This product is not recommended for use in applications under high vacuum with loads exceeding 100,000 psi for extended periods of time.

### **Packaging**

Braycote 601 EF is available in 2 oz and 4 oz (AVDP) disposable polypropylene syringes, 1 lb jars, and 1.75 lb cartridges. A specially prepared "micronic", ultra clean version is available upon request.

Castrol Braycote 601 EF  
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All reasonable care has been taken to ensure that the information contained in this publication is accurate as of the date of printing. However, such information may, nevertheless, be affected by changes in the blend formulation occurring subsequent to the date of printing. Material Safety Data Sheets are available for all Castrol Ltd products. The MSDS must be consulted for appropriate information regarding storage, safe handling and disposal of a product.

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