

## PRODUCT DATA SHEET

### Digalactosyldiglyceride (hydrogenated) , plant

**Catalog No:** 1059

**Common Name:** DGDG (hydrogenated)

**Source:** natural, plant

**Solubility:** chloroform/methanol/DI water  
(4:1:0.1 by vol.)

**CAS No:** 92457-02-8

**Molecular Formula:** C<sub>51</sub>H<sub>96</sub>O<sub>15</sub>

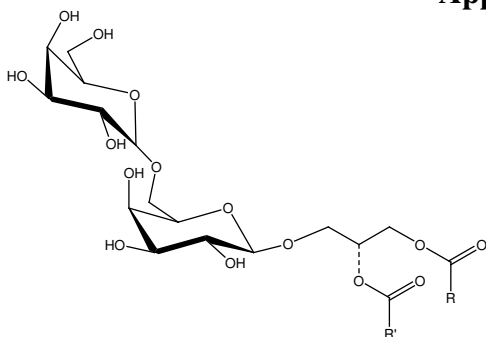
**Molecular Weight:** 949 (distearoyl)

**Storage:** -20°C

**Purity:** TLC > 98%; identity confirmed by MS

**TLC System:** chloroform/methanol/DI water  
(80:20:1 by vol.)

**Appearance:** solid



### **Application Notes:**

Digalactosyldiglyceride (DGDG) is one of the main lipids of the membranes of chloroplasts and it is one of the most abundant lipids in all photosynthetic tissues, including those of algae and some bacteria. In plants, it is much less prevalent in non-photosynthetic tissues. DGDG is formed by the de-phosphorylation of phosphatidic acid or phosphatidylcholine and the subsequent reaction with two 5-diphosphate(UDP)-galactoses. Digalactosyldiglycerides form a lipid bilayer in the lipid membrane whereas monogalactosyldiglycerides (MGDG) do not. A proper ratio of these two diglycerides is critical to membrane function. DGDG is important in photosynthesis although its role is not fully understood and is undergoing much active research. In cells undergoing photosynthesis, the photosystem I complex contains three moles of MGDG and one mole of phosphatidylglycerol while photosystem II contains four moles of DGDG. The proper ratio of lipids is needed for the effective crystallization of the light-harvesting complex II. However, an inability for plants to produce DGDG does not result in lethal phenotypes although a lack of phosphatidylglycerol does. It has been suggested that DGDG has a role in the activation of ATPase and it has an elevated expression in the peribacteroid membrane of nitrogen-fixing nodules of legumes.<sup>1</sup> DGDG functions in the formation of thylakoid membrane stacks, chloroplast membrane biogenesis and protein import into chloroplasts.<sup>2</sup> A recent report has suggested that DGDG may also have anti-cancer properties when administered orally.<sup>3</sup> This highly pure product from Matreya is ideal for the research of digalactosyldiglyceride functions and identification.

### **Selected References:**

1. Nicole Gaude, "The Galactolipid Digalactosyldiacylglycerol Accumulates in the Peribacteroid Membrane of Nitrogen-fixing Nodules of Soybean and Lotus" *Journal of Biological Chemistry*, Vol. 279:33 pp. 34624-34630, 2004
2. John E. Froehlich, Christoph Benning, and Peter Do'rmann "The Digalactosyldiacylglycerol (DGDG) Synthase DGD1 Is Inserted into the Outer Envelope Membrane of Chloroplasts in a Manner Independent of the General Import Pathway and Does Not Depend on Direct Interaction with Monogalactosyldiacylglycerol Synthase for DGDG Biosynthesis" *Journal of Biological Chemistry*, Vol. 276:34 pp. 31806-31812, 2001
3. Naoki Maeda "Anti-Tumor Effect of Orally Administered Spinach Glycolipid Fraction on Implanted Cancer Cells, Colon-26, in Mice" *Lipids*, Vol. 43 pp. 741-748, 2008

This product is to be used for research only. It is not intended for drug or diagnostic use, human consumption or to be used in food or food additives. Matreya assumes no liability for any use of this product by the end user. We believe the information, offered in good faith, is accurate.