

**Arichem HES2-FR** is a non-halogen **HIGH EFFICIENCY** mixed metal salt of aromatic sulfonates providing extremely effective flame retardant (FR) performance in transparent and opaque polycarbonate (PC). The product was developed using Arichem's high purity sulfonation technology.

Representative Chemical Formula:  $M_1 M_2 SO_3 - R_1 - R_4 - SO_2 - R_4 - SO_3$

## Product Application

**Arichem HES2-FR** is a high efficiency product used especially for flame retarding PC. The product is specifically designed to produce a high level of transparency in FR PC.

The active sulfonate content of Arichem HES2-FR is much more than that of Potassium Perfluoro-butyl sulfonate (KPBS) and other sulfonate FR products. FR effectiveness has been shown to be related to sulfonate content.

## Product Description and Use or Loading Levels

### *Non Halogen Polycarbonate formulation*

**Arichem HES2-FR** is used at fractional loading levels typically less than 0.15% for UL94 V0 flammability performance at 1.6mm thickness. Below is a starting formulation.

Formulation Component	Loading %
Polycarbonate (6 MFI)	97.88
<b>Arichem HES2-FR</b>	<b>0.12</b>
Siloxane Anti-drip	2.00 *

\*Various phenyl methyl siloxanes are referenced in patents and literature. Various trade name products are available: Shin Etsu KR2710, ShinEtsu KR 480, Dow Corning DC 8008, Momentive SR 476, Momentive SF 1550. The use of these products should be discussed with the silicone product supplier.

It has been noted in critical applications that Arichem HES2-FR loading levels of less than 0.12% provide high transparency. This effect depends largely on the PC resin and anti-drip products used.

### *Polycarbonate formulation with Halogen Anti-drip for Opaque FR PC formulations*

**Arichem HES2-FR** is used at fractional loading levels typically less than 0.1% for UL94 V0 flammability performance at 1.6mm thickness. Below is a starting formulation.

Formulation Component	Loading %
Polycarbonate (6 MFI)	99.70
<b>Arichem HES2-FR</b>	<b>0.10</b>
PTFE	0.20

Note that this formulation contains PTFE which contains Fluorine which is a halogen. This formulation produces a translucent or opaque FR PC formulation. The resultant halogen level of this formulation is 1520ppm which is 100% from the PTFE.

Other formulations should be discussed with Technical Inquiry contact listed below.

More information, samples, and specifications for **Arichem HES2-FR** are available upon request.

#### **For Sampling or Technical Inquiries:**

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