



**ADDITIVES &  
COLORS FOR THE  
PLASTICS INDUSTRY**

## FR FOR PIPE APPLICATION PRODUCT RANGE



## **TOSAF FR ADDITIVES**

As a leading producer of flame retardants for industrial applications for more than 30 years, we offer an extensive product portfolio of flame retardant masterbatches to meet market demand.

Using premium quality active ingredients and innovative formulations, we help our customers to achieve high-level product performance while helping reduce the harmful fire emission and fume effects.

Sharing with you our know-how and years of experience, we will advise on which FR masterbatches to use, how to use them and addition levels, to optimize them for both your production process and end-user applications.

Our flame retardant solutions have been specifically developed to meet both the performance and legal requirements of each and every sector where plastics are used. We offer both Halogen-based and halogen-free solutions, taking into consideration the specific mechanical properties and qualities that our customers require.

## WATER SUPPLY SYSTEM/ SEWAGE SYSTEM

RIGID PP PIPE



**FR7899PEG EU** is a gray flame retardant, ATO free, concentrate designed to provide self-extinguishing properties in extrusion and injection molding applications.

**The recommended addition level for achieving:**

- UL-94 V2 (3.2mm) standard in PP is 2.5-3.5%
- DIN 4102 B1 in PP sewage pipes is 2.5 – 3%

This product is heat stable and can be processed at temperatures up to 240°C.

## AUTOMOTIVE

PP PIPE



**FR7355PPK EU**

**Black FR MB for Automotive under the hood pipes**

Benefit of the FR MB:

**Special thermal stabilization:**

3000hr. - 40°C ↔ 135°C

1500hr. - 40°C ↔ 150°C

**FR standard:**

FMVSS 302, UL94 V2, DIN 75200UL

**LDR %:**

8%

## COMMUNICATION

HDPE CONDUITS FOR OPTICAL FIBERS



**FR7676HD Natural compound**

**standard:**

Flammability - IEC 61386.1

Flammability - UL94 V0 1.6mm

Halogen Free - IEC 60754-1

## ELECTRIC POWER

### PP CORRUGATED CONDUITS



**FR7744PP EU (New - Improved FR system) - Natural color, FR6688PEG EU Grey color and FR6878PEK EU Black color**

**standard:**

Low smoke zero halogen- IEC60754-1  
Low smoke-IEC 61034-2  
Flammability-IEC 61386.1

**LDR%:**

2.5-5%



HALOGEN  
FREE

**FR8719PP EU New innovation - Natural color**

**standard:**

Low smoke zero halogen - IEC60754-1  
Low smoke - IEC 61034-2  
  
Halogen free - DIN VDE V0604-2-100  
Flammability - IEC 61386.1

**LDR%:**

2-4%

### HDPE CORRUGATED CONDUITS



**FR0156PE EU Natural color**

**standard:**

Flammability - IEC 61386.1

**LDR%:**

3-8%

### PVC



HALOGEN  
FREE

FR for PVC  
**FR7673EV Natural MB- Cost effective solution**

**standard:**

Flammability - IEC 61386.1  
Flammability - UL94 V0 1.6mm

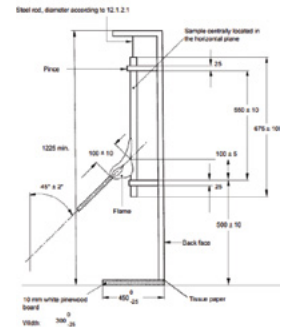
**LDR%:**

2-4%

## COMMON FR STANDARDS

### DIN EN61386-1

- Pass criteria
- Flame source time & Thickness pipe
- T fire after removal of flame source < 30 sec



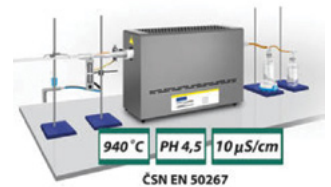
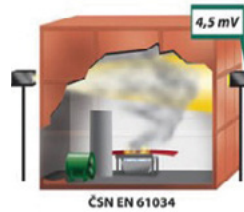
### DIN EN 61034-2

- Light transmission
- T > 60% (During 20 min)

### DIN EN 50267-2-2

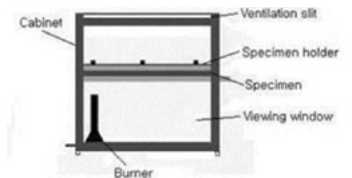
- Zero halogen
- PH > 4.3
- Conductivity < 10us/mm

Low Smoke Zero Halogen-LSOH



### FMVSS 302 (Automotive)- type B Federal Motor Vehicle Safety Standard

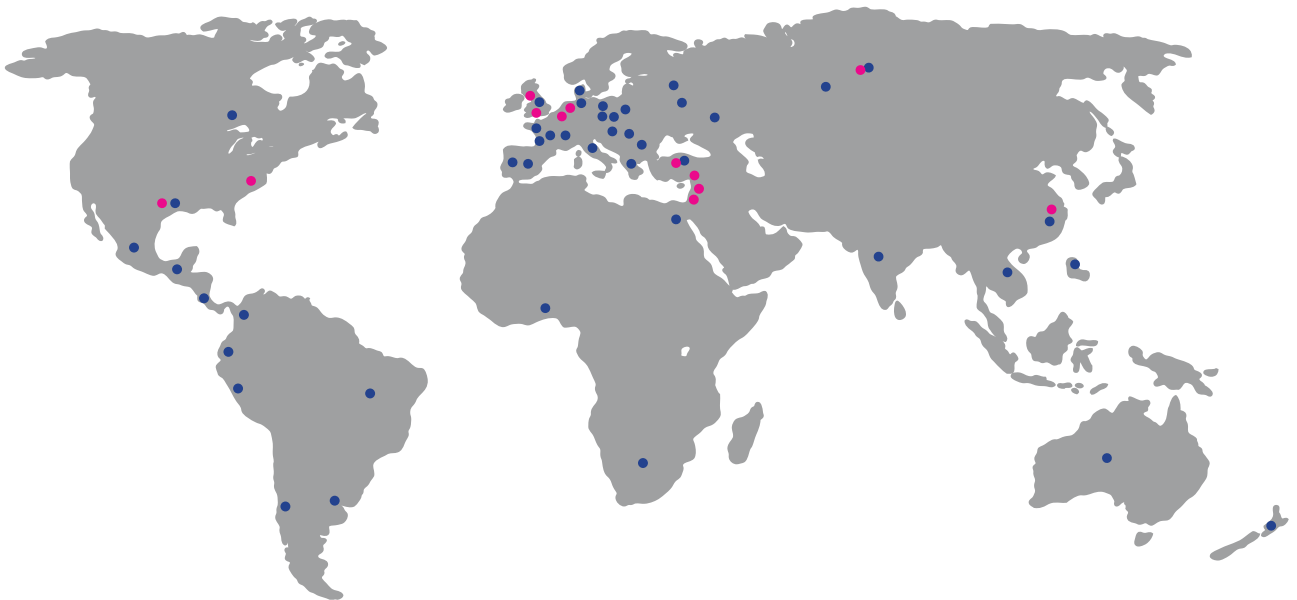
- Type B: The material burns, but the combustion stops before the flame front as reached the first reference mark



## TOSAF FR ADDITIVES

With warehouses and representative offices in multiple regions around the world, we are able to stay close to our customers, understand their needs and provide excellent service.

Wherever you are, we are there too. Expanding into new territories and reaching new markets is the only way to truly grow. As you take your business global, you can count on us to be close at hand, with the quality and breadth of products, service and support you need.



[www.tosaf.com](http://www.tosaf.com)