



Jiangsu Yoke Technology



PhireGuard FC-63

Marketing Presentation

PhireGuard FC-63 Characteristics

- Chlorinated phosphate, Br-free FR for Flexible PU Foam
- Clear, low viscosity
- Compatible with slabstock and molded foams
- No impact on reaction profile and processability
- Miscible in polyol blends
- Enhanced fire properties over wide range of foam density
- Remarkable scorch performance

PhireGuard FC-63 Key Properties

- Appearance: Clear Liquid
- Viscosity: # 1300 mPa.s
- Phosphorus Content: 8.3 wt%
- Chlorine Content: 43 wt%
- Acidity: < 0.5 mgKOH/g
- Water Content: < 0.1 wt%
- Colour APHA: < 100
- OH value (Water and Acid excluded): 0 mgKOH/g
- Non Reactive

PhireGuard FC-63 's answers to Foamer Demands

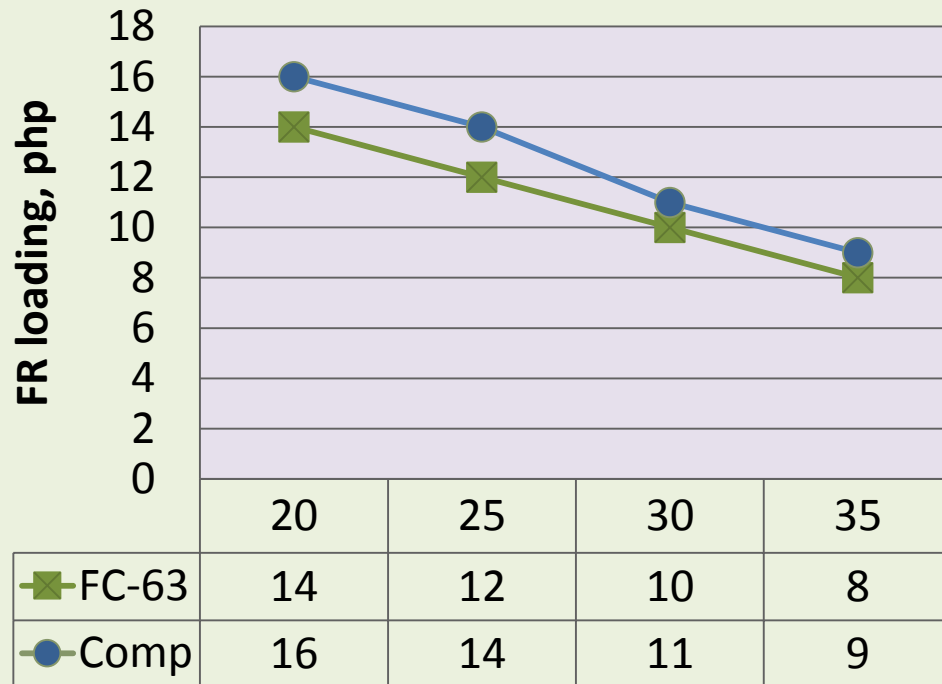
- Superior and broad FR performance
- Excellent Scorch Properties
- FC-63 has been designed to suit needs of foamers whose production addresses Asian, European or North America markets
- Allows to pass fire standards like CAL TB 117, BS 5852 Crib 5, UL94 HF1...
- In summary, a one “can do it all” FR

Typical formulations for Cal 117

Density kg/m ³	20	25	30
Polyol, 3000 g/mol, 56 OHv	100	100	100
Water, php	4.2	3.9	3.3
M.C., php	5	2	0
A33, php	0.20	0.09	0.11
T9, php	0.29	0.22	0.21
Silicone, php	1.20	1.0	0.80
TDI (Index, php)	105 / 52	105 / 48.7	105 / 43
PhireGuard FC- 63, php	14	12	10

FC-63 Results for Cal 117

**Cal 117 Results
(smoldering, Fire before and
after ageing)**



- Remarks: the loading of FR indicated may vary by +/- 1 php, depending on the other chemicals used, in particular the silicone and nature of polyol.
- The “opening” of the foam (i.e. the T9 level) can also influence the FR Performance of the foam.
- The difference in FR properties compared with competitive FR (i.e. TDCP) is particularly marked at low density.

Typical formulations for BS 5852

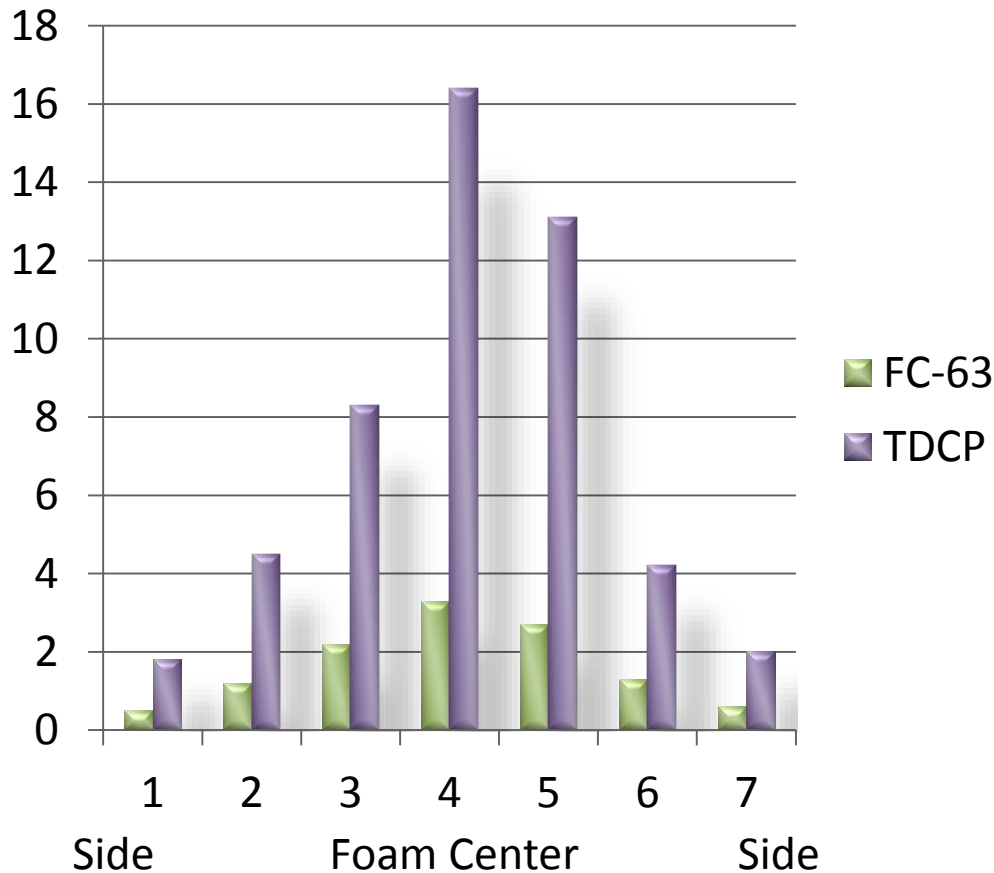
Density kg/m ³	25	30	35
Polyol, 3000 g/mol, 56 OH v	100	100	100
Water, php	4.7	3.9	3.3
M.C., php	4	0	0
A33, php	0.15	0.16	0.16
T9, php	0.30	0.28	0.25
Silicone, php	1.20	0.90	0.80
TDI (Index, php)	112 / 60.6	110 / 51.1	110 / 44.7
Melamine, php	25	24	20
PhireGuard FC-63, php	15	12	10

In most cases, the optimal Melamine / FR ratio is 2. In some cases (for hardness or cost reason), this ratio can be changed. We would be pleased to design the optimal formulation for you.



PhireGuard FC-63 Scorch Performance

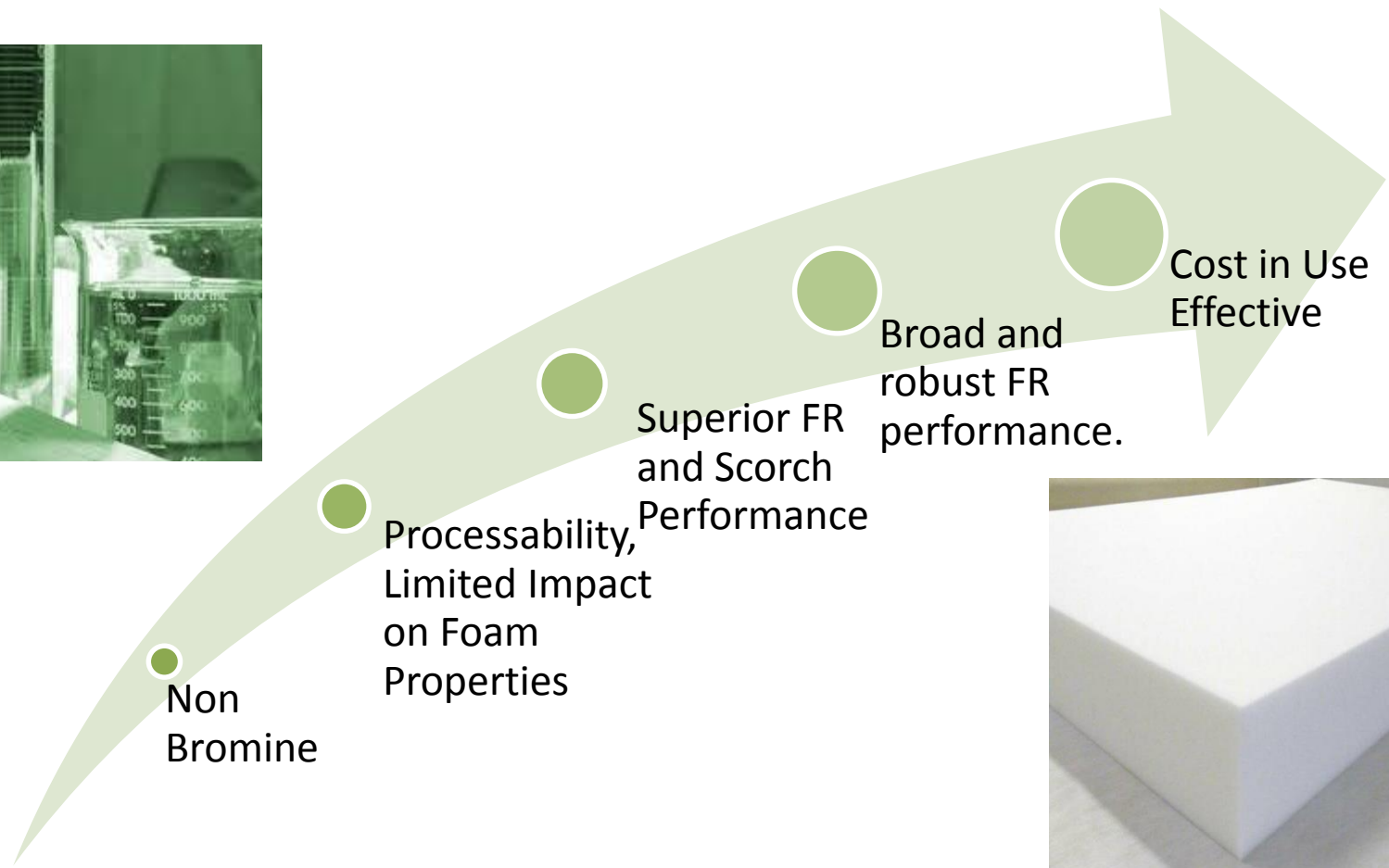
Yellow Index



“hot” Formulation based on:

- . 6.5 php Water
- . 15 php FR
- . Foam placed for 2 hours
- . At 145 deg C
- . Foam cut in center and YI measured across the foam.

PhireGuard FC-63 Summary



Non Bromine

Processability,
Limited Impact
on Foam
Properties

Superior FR
and Scorch
Performance

Broad and
robust FR
performance.

Cost in Use
Effective



One more thing...

- PhireGuard FC-63 is one of the new Flame Retardants that the Jiangsu Yoke Technology Corporation has recently launched on the market.
- The PhireGuard tradename is associated with Innovation, Quality Consistency and Cost in Use Efficiency

