

FOR TENDER SUBMISSION



GEMTEX

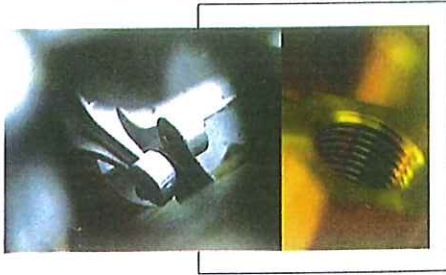
Clean Agents Fire Suppression Systems

Protect what Matters most



FE-13™





FE-13™ Trifluorometh

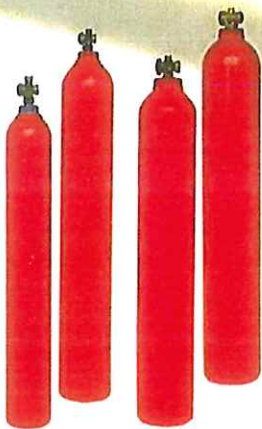
| FE-13™ CYLINDERS | | | |
|--------------------------|--|---------|---------|
| SPECIFICATIONS | | | |
| Descriptions | CYLINDER SIZE | | |
| | 24L | 50L | 80L |
| Max. FE-13™ Filled | 20Kg | 42Kg | 68Kg |
| Weight of empty cylinder | 33-34Kg | 68-69Kg | 90-92Kg |
| Height | 1085mm | 1555mm | 1690mm |
| Outer diameter | 178mm | 232mm | 297mm |
| Material | 4130 X (30CrMo) | | |
| Type of gas | HFC 23 (FE-13™) | | |
| Cylinder colour | Red (RAL-3000) | | |
| Manufacturing Process | Pipe spun type | | |
| Wall thickness | Nom. 7mm | | |
| Working pressure (20°C) | 46 Bar | | |
| Test pressure | 250 Bar | | |
| Pressure resistant test | 24.52 Mpa (Approved for high pressure gas) | | |
| Manufacturing standard | DOT 3AA | | |



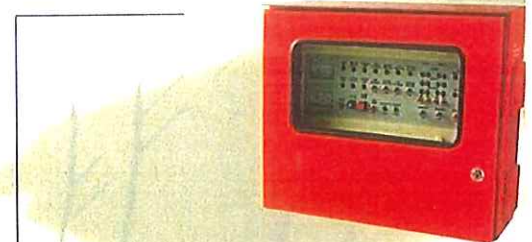
CYLINDER SAFETY BRACKET

SPECIFICATIONS

| | |
|--------------|------------|
| Manufacturer | Gemtex |
| Material | Mild steel |
| Thickness | 2.8mm |



| VALVE ASSEMBLY | |
|---------------------|--------------------|
| SPECIFICATIONS | |
| Manufacturer | Gemtex |
| Material | Brass |
| Size available | 25mm, 32mm |
| Outlet size | 1" BSP, 1 1/4" BSP |
| Body proof pressure | 300 Bar |
| Safety disc | 220 Bar |



2 ZONE SUPPRESSION PANEL

SPECIFICATIONS

| | |
|--------------------|--------------------------|
| Power supply input | 240 volts A/C 50HZ |
| Operating voltage | 24 volts D/C |
| Charger | Automatic charger |
| Charging rate | 200MA |
| Quiescent current | 5MA per zone |
| Alarm current | 20MA per zone |
| End of line | 10K OHM |
| Bell output | 24 volts, 1AMP (max.) |
| Auxillary contact | N/O contact (Alarm mode) |



HOUSING CABINET

SPECIFICATIONS

| | |
|-----------|--|
| Material | 1.8mm x cold rolled steel sheet |
| Finishing | Colour (Beige) - Code 9430 Epoxy Powder Coated |
| Dimension | 450mm (L) x 450(W) x 2019mm (H) |

ne: a clean **fire suppression** agent



VALVE OUTLET ADAPTOR

SPECIFICATIONS

| | |
|---------------------|-------------|
| Manufacturer | Gemtex |
| Material | Brass |
| Orifice size | 25mm, 32mm |
| Pneumatic Connector | 8mmø (1/4") |



FE-13™ DISCHARGE NOZZLE

SPECIFICATIONS

| | |
|----------------|---|
| Manufacturer | Gemtex |
| Material | Chrome Brass |
| Type | 180°, 360° |
| Size | 25mmø, 32mmø |
| Nozzle Orifice | To be machine according to software calculation |



PNEUMATIC HYDRAULIC HOSE

SPECIFICATIONS

| | |
|-----------------------|------------------------|
| Outer sheath | Over Wire Braided |
| Max. working pressure | 225 Bar |
| Burst pressure | 900 Bar |
| Min. bend radius | 100mm |
| Connections | 1/4" BSP Swivel Female |
| Length | 700mm, 1700mm |



ELECTRIC ACTUATOR

SPECIFICATIONS

| | |
|-------------------|-----------------|
| Manufacturer | ICI Explosives |
| Body material | Brass |
| Piston material | Stainless Steel |
| Type / Model | DR 2006 / C1 |
| Country of origin | Scotland, U.K. |
| Life Span | 10 years |



PRE - ENGINEERED PIPING LAYOUT

SPECIFICATIONS

| | |
|-------------------|-----------------------------|
| Piping material | Seamless carbon steel |
| Grade | Api SCH 80, B / ASTM A106 |
| Working pressure | 250 Bar |
| Fittings material | Carbon Steel |
| Grade | B / ASTM A106 |
| Working pressure | 69 Bar |
| Total Length | 1254mm, 784mm, 716mm, 616mm |

PNEUMATIC ACTUATOR

SPECIFICATIONS

| | |
|-------------------|-----------------|
| Manufacturer | Gemtex |
| Body material | Brass |
| Plunger | Stainless Steel |
| Plunger dimension | 6.9mmø x 31.3mm |



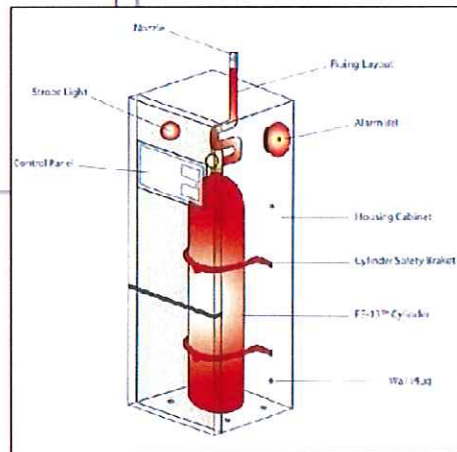
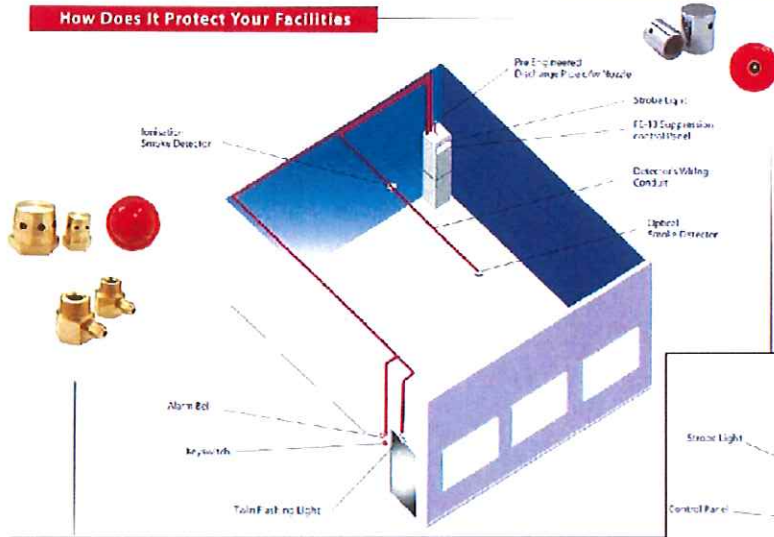
FE-13™ Physical Properties

| PHYSICAL PROPERTIES | UNITS | FE-13 |
|--|----------|-----------------------------|
| Chemical Formula | | CHF3 |
| Chemical Name | | Trifluoromethane |
| Molecular Weight | g/mol | 70.02 |
| Fusion Temperature | °C | -155 |
| Boiling Point at 1,013 millibar | °C | -82.0 |
| Liquid Density at 25°C | kg/dm³ | 0.67 |
| Saturated Vapor Density at Boiling Point | kg/dm³ | 4.67 |
| Vapor Tension 25°C | bar | 47.29 |
| Critical Temperature | °C | 25.9 |
| Critical Absolute Pressure | bar | 48.3 |
| Critical Volume | cm³/mol | 133 |
| Critical Density | kg/dm³ | 0.525 |
| Specific Heat, liquid at 25°C | KJ/kg.°C | 18.83 |
| Specific Heat, vapor at 1.013 millibar / 25°C | KJ/kg.°C | 0.737 |
| Relative Non conductive Resistance at 1 atm - mmHg at 25°C. (N₂=1.0) | | 1.04 |
| Ozone Depletion Potential | | 0 |
| NOAEL-No observed adverse effect level - | % | 30 |
| LOAEL-Lowest observed adverse effect level - | % | >30 |
| LC 50 - Lethal concentration - | PPM | 650,000 |
| "Cup burner" extinguishing concentration | | 12.9% |
| Design concentration (% by volume) | | Refer to table |
| Discharge time (Max) | | ≤10s |
| Certificates, Approvals, Homologations | | EPA – NFPA – TESI – UL – FM |
| O₂ residual concentration after discharge | | 17% |

* 20% added to achieve design concentration within 10 seconds of liquid discharge.
 * FE-13™ is a product of DuPont Fluoroproduct U.S.A

| Hazard | FE-13™ minimum design concentration (%) |
|--|---|
| Claas A | 19 |
| Class B (Commercial heptane fuel) | 20.5 |
| Class C | 21.3 |

How Does It Protect Your Facilities



GEMTEX SDN BHD (405472-T)
 NO 2 & 4 JALAN JENARIS 2B, DESA SRI JENARIS, 43000 KAJANG
 SELANGOR DARUL EHSAN
 Tel : 03-8739 9043 (Hunting Line) Fax : 03-8739 8043
 Email : fe13@gemtex.com.my Http : //www.gemtex.com.my