Fire Fighting and Fire Protection with Superabsorbent Gel Technology
Home owners are continually moving into rural settings
Homeowner fights an uphill battle attempting to provide exposure protection
What is Thermo-Gel® 200L?

Thermo-Gel®

is a

fire extinguishing additive for Class A fires which converts

water into a gel
Fire Chemicals

For use by USDA Forest Service
(Qualified or Approved and commercially available)

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Mix Ratio</th>
<th>Qualified/Approved Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phos-Chek AquatGel-K²</td>
<td>0.4-1.2%</td>
<td>*</td>
</tr>
<tr>
<td>Thermo-Gel 200L³</td>
<td>2%</td>
<td>*</td>
</tr>
<tr>
<td>Flame Guard Gel</td>
<td>0.6 lb/gal</td>
<td>*</td>
</tr>
<tr>
<td>Wildfire AFG Firewall ⁴</td>
<td>3.0%</td>
<td>*</td>
</tr>
</tbody>
</table>

**FIRE SUPPRESSANT WATER ENHANCERS** (Approved under Administrative Work Plan – qualification of these product types will be covered by Forest Service Specification 5100-306a as soon as it is implemented).

Please review the Notes for Selection and Use (www.fs.fed.us/rm/fire retardants/current/ gen/documents/waternh.htm)

1. * Fully Qualified
2. This product was evaluated and approved under the name Chemical Aqua Shield.
3. This product was evaluated and approved under the name Stockhausen Cinder FP-47.
4. This product was evaluated and approved under the name NoChar E112.
The Thermo-Gel® 200L concentrate consists of:

- 28% polymer
- 43% water
- 23% mineral oil
- 6% surfactants

Thus, 100 lbs of Gel (at 1.5% Thermo-Gel® 200L) contain:

- 0.42 lbs polymer
- 0.34 lbs mineral oil
- 0.09 lbs surfactants
- 99.15 lbs water
Three pre-requisites of fire

FIRE

- Oxygen
- Ignition energy (heat)
- Combustible
The role of Thermo-Gel® 200L

combustible
Cooling + Suffocation with Thermo-Gel® 200L

- Combustible
- Exclusion of oxygen
- Thermo-Gel® layer
- Fire
Cooling / Protection

Combustible

Evaporation zone

Cooling zone

Thermo-Gel® 200L layer

Fire
Clinging to overhanging surfaces
Adheres to glass and metal surfaces
Covers flammable roof surfaces
Structure protection with Thermogel® 200L

A comparative trial of Thermogel® 200L vs. Class A Foam

Application of Thermogel® 200L
Structure protection with Thermo-Gel® 200L (Test)

Protection with Class A foam at 1%

Protection with Thermo-Gel® 200L at 2%

Fire taking impact on structure
(Fuel 2.5 gal Chevron Training Fuel III, time on fire 10 min.)
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Side A (Foam)</th>
<th>Side B (Thermo-Gel® 2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>After 2 min</strong></td>
<td>Shows signs of pre-heating</td>
<td>Full protection</td>
</tr>
<tr>
<td><strong>Within 3 min</strong></td>
<td>Eaves ignite and begin burning</td>
<td>Full protection</td>
</tr>
<tr>
<td><strong>4 min</strong></td>
<td>Glass window pane cracks</td>
<td>Window pane stayed intact over duration of test</td>
</tr>
<tr>
<td><strong>3 to 7 min</strong></td>
<td>Water needs to be applied repeatedly to prevent house from burning too rapidly</td>
<td>No action needed No signs of charring</td>
</tr>
<tr>
<td><strong>After 10 min</strong></td>
<td>Fire inside the wall</td>
<td>No hot spots No signs of impingement</td>
</tr>
<tr>
<td><strong>End of test</strong></td>
<td>Structure lost</td>
<td><strong>Structure saved and fully intact</strong></td>
</tr>
</tbody>
</table>
Test material: 660 lbs (300 kg) car tires

Burning time: 8 minutes

Extinguishing additives:

Foam as wetting agent: 1.0 %
Thermo-Gel® 200L: 1.0 %

![Bar chart showing time and amount of water for water + 1% foam and water + 1% Thermo-Gel 200L.]
Cleans up with water
Forest fire

Creation of fire breaks without removal of vegetation

Object protection

Two gallons of Thermo-Gel® 200L can save a home

Structure protection

Industrial fire

Tire fire

Most effective prevention of rekindling

35,000,000 lbs sugar beets in silo extinguished with Thermo-Gel® 200L
Fire Suppression

- Gel adheres to the burning material
- Increases the water’s effectiveness
- Reduces extinguishment time
- Cools the material
- Excludes oxygen
- Suffocates the fire
- Prevents rekindle
Industrial Fires

- Grain Silos
- Sawdust Bins or Piles
- Log Landings
- Warehouse
- Container Storage
- Palletized Products
Structure Fires
Wildland Fires
Tire Fires
Prescribed Burning
Protection

- Clings to glass, metal, siding, vegetation
- Provides thermal barrier
- Prevents radiant heat ignition
- Blocks direct flame impingement
- Easily removed when threat passes
Structures and Vehicles
Fuel and Propane Tanks
Exposures

Vegetation

Log Deck
Application Systems

1-Gallon Garden Hose Eductor Nozzle

5-Gallon Fire Hose Eductor Nozzle
5-Gallon
1-Gallon
Advisements - Thermo-Gel®

Non-Aggressive: Thermo-Gel® can be applied to
- Paint
- Wood
- Glass
- Stone
- Stucco
- Concrete
- Rubber
- Vegetation

Environmentally Safe and Bio-degradable
- Breaks down by ultra-violet sunlight
- Can be washed off with water and into drainage systems
- Thermo-Gel® is Non-Toxic
Clean-up – After threat passes

- Rinse surfaces thoroughly with water from top down
- Windows can be cleaned with window cleaner
- It is Not necessary to rinse from vegetation
- Thoroughly rinse gel from sidewalks, driveways or walkways – gel is very slippery
- Milky-white color is normal and will NOT harm the environment

SAFETY

- Thermo-Gel® is slippery and extreme caution must be taken while walking, standing, or working in treated areas. Wear non-slip footwear while applying or rinsing gel from surfaces. Never attempt to climb or stand on a treated roof. Falls and serious injury can result.
The Solution for Fire Professionals.

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www.thermo-gel.com

24 hour Emergency/EERA/BPA
866-255-8137

U.S. Patents 5,989,446; 6,245,252 Addl Patents Pending

U.S. Forest Service Approved!
Meets NFPA 1150 Standard!