

Pyrogel

HIGH-TEMPERATURE ULTRASONIC COUPLANT 高温超声耦合剂

Pyrogel® is a broad temperature range couplant for thickness gauging, flow metering, acoustic emissions testing and flaw detection/sizing. These products contain no polymers and resists drying, making them an excellent choice for long term flow metering applications.

Pyrogel® 是适用于广泛的温度范围的耦合剂, 用于测厚, 流量计量, 声发射检测, 以及缺陷检测/测量等。这一系列产品不含聚合物, 抗干燥能力强, 是长期计量流量时的绝佳选择。

Pyrogel comes in two different viscosities, Pyrogel 7 which is a very thin, flowable liquid and Pyrogel 100 which is a thick gel.

Pyrogel 有两种不同粘度产品可供选择, Pyrogel 7是非常稀的流动性液体, 而Pyrogel 100 非常稠呈凝胶状。



BENEFITS 优势

- Broadest temperature range 广泛的温度适用范围
- Non-drying for long-term coupling or extended inspection time
不干性适用于长期耦合或延长检测时间
- Good choice for long-term flow metering 是长期流量计量的绝佳选择
- Excellent long-term corrosion inhibition 优秀的长时间防腐性能
- Pyrogel 100 clings well to vertical and overhead surfaces
Pyrogel 100 对于垂直和顶部表面具有良好的粘附性

APPLICATIONS 应用

Defect location 缺陷位置: subsurface 表面

Ideal for 适用于

- Flaw detection 缺陷检测
- Thickness gauging 测厚
- Acoustic emission testing 声发射检测
- Corrosion testing 腐蚀检测
- Long-term flow metering 长期流量计量
- High temperature ultrasonic testing 高温超声检测
- Power generation boilers 发电锅炉
- Transmission pipes 传输管道
- Pressure vessels 压力容器
- Pipes, tubular goods, casing and connections
各种管道, 管道组件, 连接件
- Low temperature locations 低温区域
- Long-term coupling 长时间耦合

SPECIFICATION COMPLIANCE 符合规范

- API
- ASME
- AWS

USE RECOMMENDATIONS 使用推荐

NDT Method 无损检测方法	Ultrasonic Testing 超声检测
Required Equipment 设备要求	UT equipment, transducer 超声检测设备, 传感器
Usage Temperature 使用温度†	Pyrogel 7: -45 - 388°C Pyrogel 100: -45 - 429°C
Storage Temperature 储存温度	10 - 30°C
Compatibility 相容性	Most composites and metals† 与大多数复合材料以及金属相容

† Recommended temperature based on Flash Point and Auto-ignition Temperature. In areas where flame or other ignition source may be present, or in applications where vapors may be confined in an enclosed or semi-enclosed area, these products should not be used above the flash point temperature.

推荐温度是基于闪点和自然温度所得, 在有明火或点火源存在的区域或蒸汽限制在封闭或半封闭区域的情况, 这些产品不能被用在高于闪点温度的条件下。

PROPERTIES 属性

Appearance 外观	Pyrogel 7: Clear liquid 清澈液体 Pyrogel 100: Translucent gel 半透明凝胶
Color 颜色	Colorless 无色
Viscosity 粘度	Pyrogel 7: very thin, flowable liquid 非常稀的流动性液体 Pyrogel 100: thick gel 粘稠凝胶
Silicone 硅	Yes 含有
Glycerin 甘油	No 不含
Propylene Glycol 丙二醇	No 不含
Halogens 卤素	<50 ppm
Sulfur 硫	<50 ppm
Water Soluble 水溶性	No 不溶于水
Flash Point 闪点*	Pyrogel 7: 333°C Pyrogel 100: 293°C
Auto-ignition Temperature† 自燃温度†	Pyrogel 7: 439°C Pyrogel 100: 479°C

* Flash point temperature determined in accordance with ASTM Method D92 using the Cleveland Open Cup method. In areas where vapors may be confined in an enclosed or semi- enclosed area, the actual flash point of this product may be lower than recorded.

闪点温度根据ASTM方法D92使用克利夫兰开口杯闪点测试仪测量得到。在蒸汽可能限制在封闭或半封闭区域的情况，实际闪点可能会低于该记录值。

† Auto-ignition temperature determined in accordance with ASTM Method E659.
自燃温度根据ASTM方法E659测量得到。

INSTRUCTIONS FOR USE 使用指南

In most applications, the transducer is best coupled with the thinnest layer of couplant possible. Apply a small bead of couplant directly to the center of the transducer face and push the transducer down onto the test surface with a uniform force so the couplant spreads out evenly towards the edge of the transducer.

大多是应用中，传感器最好使用尽可能薄的耦合剂涂层，直接使用一小滴耦合剂在传感器中央并将传感器用力均匀的压在测试表面以便于耦合剂均匀分布。

In high-temperature applications it is recommended that extra care is taken to use just enough couplant to perform the test procedure as excess couplant may increase vapors which can pose a flash hazard.

高温条件下应用，建议额外小心操作使用适量的耦合剂以达到最佳性能，多余的耦合剂会增加蒸汽产生闪爆危害。

Extreme-Temperature Guidelines 极端温度-指南

Before use, make sure the surface temperature of the test piece does not exceed the maximum specified temperature for the application and environmental conditions.

使用前确认测试零件表面温度未超过最大规定温度并且确认环境条件。

At high temperatures, couplants evaporate relatively quickly; more couplant may be required near the upper end of the operating temperature range to compensate for evaporation. Care should be taken to avoid using excess couplant as this may lead to increased vapors which can pose a flash hazard.

在高温时，耦合剂蒸发相对较快，在接近可操作温度最高值时可能需要更多的耦合剂来补足蒸发的部分。操作时需要小心谨慎以避免多余的耦合剂蒸发可能导致闪爆危害。

The flash point of a material is the lowest temperature at which it can vaporize to form an ignitable mixture in air. At the flash point temperature, the material vapor will flash only if an ignition source is present and the vapor may cease to burn when the ignition source is removed. In areas where vapors may be confined in an enclosed or semi-enclosed area, the flash point of a material may be lower than the recorded value.

材料的闪点是蒸发后与空气混合形成可燃混合物的最低温度，达到闪点温度时，材料的蒸汽只会在有点火源出现时闪爆，当点火源移除，蒸汽可能会停止燃烧。在蒸汽可能限制在封闭或半封闭区域时，材料的闪点会低于测量记录值。

The auto-ignition temperature of a material is the lowest temperature at which it will spontaneously ignite in a normal atmosphere without an external source of ignition, such as a flame or spark. Environmental or atmospheric factors will affect auto-ignition temperature; therefore it is important to observe a suitable safety margin in conjunction with auto-ignition temperature.

材料的自燃温度是在正常环境无外部点火源例如火焰或者火花时自发燃烧的最低温度环境和空气因素会影响自燃温度，因此观察与自燃温度保持适当的安全余量是非常重要的。

Smoke develops as the couplant begins to decompose due to heat exposure. Smoke is not an indication the couplant is not working, but it does indicate the effective coupling time is limited. Smoke produces vapors which may lower the couplant flash point, particularly in enclosed or semi-enclosed areas.

当暴露在高温下耦合剂分解会产生烟雾。烟雾的产生不表示耦合剂失效，但确实表明耦合有效时间有限。烟雾产生蒸汽会降低耦合剂的闪点，尤其是在封闭或半封闭区域。

A couplant's upper temperature range for short duration thickness gauging is higher than when used for flaw detection.

耦合剂在短期测厚使用时最高使用温度要高于缺陷检测的最高温度。

REMOVAL 清除

Remove excess couplant from transducers and other surfaces by wiping with disposable rags or paper towels, being careful to protect skin from hot surfaces. Do not use solvent-based cleaners on hot surfaces.

使用一次性抹布或纸巾去除传感器和其他表面多余的耦合剂，注意保护皮肤避免接触高温表面。不要在高温表面使用溶剂型清洗剂。

STORAGE 储存

Store couplant in the original container. Do not freeze. Store out of direct sunlight. Keep container closed when not in use. Never put unused couplant back into the original storage container. Refer to Safety Data Sheet for additional storage instructions.

使用原包装储存耦合剂，切勿冷冻。避免阳光直射。不使用时保持容器封闭，不要将未使用耦合剂放回原包装。更多的储存说明请参考SDS（安全数据表）。

PACKAGING 包装形式**Pyrogel 7**

21-901 1 gal / 3.78 L cubitainer 软方桶

Pyrogel 100

24-6XT04 4 fl oz / 118 mL tube (case of 6)) 4盎司软管 (6支/箱)

24-901 1 gal / 3.78 L cubitainer 软方桶

HEALTH AND SAFETY 健康和安全

Extra care should be taken when operating with couplants in high-temperature applications; refer to Extreme-Temperature Guidelines for pertinent information regarding couplant behavior and properties at high-temperatures.

当在高温条件下使用耦合剂时要额外小心，请查阅极端温度指南中关于耦合剂在高温条件下的行为和特性的信息。

Review all relevant health and safety information before using this product. For complete health and safety information, refer to the product Safety Data Sheet, which is available at www.magnaflux.cn.

产品使用前请阅读相关的健康和安全信息。完整的健康和安全信息参考www.magnaflux.cn上的SDS（安全数据表）。