



Thermolastic Exhaust Insulation Systems

Thermal Insulation of wide bore diesel exhausts

World-wide, legislators are setting clear targets for the reduction of pollutant gases and particulate matter from diesel engine exhaust emissions. Despite significant advances in engine design, developments in catalytic converter and particulate filter systems appear to provide the most promising solution in meeting the tighter requirements.

Currently, most of the available systems are temperature dependant and research shows that heat loss from wide bore exhaust pipes can reduce the efficiency of the equipment used in exhaust gas conversion and particulate removal. Insulation is already used around converters and filter traps to enhance performance though the exhaust pipe from the engine manifold to the catalyst can is largely ignored. The new regulations also apply to existing vehicles and will necessitate a programme of retrofits, where the diversity of vehicle operating conditions will have to be taken into account, often when the vehicle is situated on another continent. Retrofits will require an easy to fit, insulation kit. Variable engine load and frequent stops and starts, typically found on city buses, adversely effect the gas temperature cycles hence the catalyst equipment can become inefficient. Choosing a proven insulation system will reduce heat loss and optimise performance. In retrofit applications exhaust pipe configurations vary from vehicle to vehicle and it is unlikely that drawings will always be available, therefore on these occasions, bespoke insulation jacketing will not be an option.

The "fit all" **Saveguard Thermolastic System** can be the solution.



Thermolastic tapes



Simple to fit



Self bonding protective layer



No special tools required

There are no special tools required for installation only a tape measure a straight edge or ruler, a pair of scissors .

Advantages:

- ✓ Can often be installed on the vehicle without removing exhaust
- ✓ Efficient, high density insulation acts as heat store, reduces temperature fluctuation and heat loss
- ✓ Fits any bore size
- ✓ Long life, cost effective
- ✓ Will not slip, bonds together on initial heating
- ✓ Oil and water resistant coating
- ✓ Each layer individually protected from water ingress
- ✓ No special tools required
- ✓ Insulation thickness can easily be varied along the pipe
- ✓ Stays permanently flexible, can accommodate expansion joints.
- ✓ Tough outer layer resists frost, stone chips etc.
- ✓ Outer layer can be easily repaired or replaced in the event of physical damage
- ✓ Clean to work with using only non toxic materials

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Thermolastic Exhaust Insulation System

Saveguard Thermolastic Tape Wrap

The **Thermolastic Wrap** system comprises of two main components, an insulating layer tape and an outer protective layer tape. The inner layer consists of high temperature insulation material bonded to a reflective film, in a unique format that allows the tape to stretch, thereby accommodating bends and avoiding slippage when wrapped.

The outer layer consists of a self bonding, high temperature resistant elastomer that provides extra protection to the insulation layers. Flame Retardant to UL 94 V-0 . See *table below for product selection*

Thermolastic Insulation wrap is applied in layers according to the temperatures involved in the application, normally 3 layers. Fully illustrated fitting instructions available with each pack.

For higher temperatures it is recommended that at least one plain insulation layer is applied against the hot face with the reflective layers applied later see *fitting instructions*

Style	Product	Description	Duty
TILP-01	Thermolastic Insulation Tape:	Plain Insulation layer (without reflective foil)	Suitable for continuous operating temperatures of -25C to +550C excursions to 600C
TILR-01	Thermolastic Insulation Tape:	Reflective Insulation layer	Suitable for continuous operating temperatures of -25C to +550C excursions to 600C
TPLG-01	Thermolastic Protective Tape:	Protective Outer Layer Grey	Suitable for continuous operating temperatures of -25C to +200C excursions to 250C
TPLR-01	Thermolastic Protective Tape:	Protective Outer Layer Red	Suitable for continuous operating temperatures of -25C to +260C excursions to 300C
TAGT-01	Thermolastic Self Adhesive Glass Tape	High Temperature Adhesive Tape for fixing etc.	Suitable for continuous operating temperatures of -25C to +200C
TRTV-01	Thermolastic HT Adhesive	High Temperature Adhesive for use with Grey Outer layer	Suitable for continuous operating temperatures of -25C to +200C excursions to 250C
TRTV-02	Thermolastic HT Adhesive	High Temperature Adhesive for use with Red Outer layer	Suitable for continuous operating temperatures of -25C to +260C excursions to 300C
Higher temperature Insulation layers can be manufactured as specials		<i>See fitting instructions sheet for application guidelines</i>	

Availability

Product Style	Pack Size	Width	Coverage*	Weight per metre	Thickness
TILP-01	Rolls of approx 5.5 m	100 mm	11.5 m	240g approx	5 mm
TILR-01	Rolls of approx 5.5 m	50 mm	19 m	115g approx	5 mm
TPLG-01	Rolls of 5.0 m	75 mm	7 m	117g	1 mm
TPLR-01	Rolls of 5.0 m	75 mm	7 m	117g	1 mm

*Typical usage of Thermolastic components based on a 3 insulation layer configuration covering a 1m length of 100 mm diameter exhaust

Tests have been conducted on a 100 mm bore exhaust system to establish outside skin temperatures using three insulation layers. The exhaust included right angle bends known to create hot spots and was conducted at 450C average gas temperature (at peaks 512C). Max temperature on the surface of the Thermolastic protective layer was 157C on the hotspot at steady state. *Full test data is available on request.* The higher temperature style protective layer should be considered where the exhaust is in close proximity to radiant heat from turbochargers etc.

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