



Dispensable Thermal Compound TC50

SDS No: PHC-302 EU

SDS Preparation Date (dd/mm/yyyy): 17/03/2017

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SAFETY DATA SHEET

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended.

SECTION 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1 Product identifier : Dispensable Thermal Compound TC50

Product Code(s) : 65-00-TC50-1110; 65-00-TC50-0030; 65-00-TC50-0180; 65-00-TC50-0300

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1.2 Relevant identified uses of the substance or mixture and uses advised against

: High performance, silicone based, thermal compound.

Use pattern: professional use

No restrictions on use known.

1.3 Details of the supplier of the safety data sheet:

Parker Hannifin France

SAS-Etablissement de Saint Ouen l'Aumône-PA du vert

Galant-6/8 avenue du Vert

Galant-95310 Saint Ouen l'Aumône-France

Chomerics Europe

Parker Hannifin Ltd., Seal Group

Unit 6 Century Point

Halifax Road, High Wycombe

Bucks, HP12 3SL

United Kingdom

E-Mail: parker.france@parker.com

Website: www.parkerfrance.fr

Telephone : +33 (01) 34 32 39 00 (France); +44 (0) 1494 455 400 (UK)

1.4 Emergency Telephone Number

: +1-352-323-3500 (INFOTRAC - U.S.A.);

+ 33 (01) 45 42 59 59 [ORFILA (INRS) - France]

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Paste - grey. No odour.

Most important hazards:

Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. See Section 12 for more environmental information.

The product is not classified as hazardous according to Regulation (EC) No. 1272/2008.

2.2 Label elements

Hazard pictogram(s)

None required according to Regulation (EC) No. 1272/2008.

Signal word:

None required according to Regulation (EC) No. 1272/2008.

Hazard statements:

None required according to Regulation (EC) No. 1272/2008.

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Precautionary statements:

None required according to Regulation (EC) No. 1272/2008.

Supplemental Hazard Statements:

None required according to Regulation (EC) No. 1272/2008.

2.3 Other hazards

Other hazards which do not result in classification:

Burning produces obnoxious and toxic fumes. When heated above 150°C in air, may release formaldehyde gas. Prolonged or repeated contact with skin may cause irritation in some cases. Prolonged exposure may cause eye irritation. Inhalation of fumes may result in metal fume fever, a flu-like illness. May cause gastrointestinal irritation.

PBT assessment:

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2 Mixtures

Chemical nature: Mixture - Metal compounds; Silicone gel.

The following substances shall be indicated according to legislation:

Chemical name	CAS #	EC No.	Concentration	CLP Classification
Aluminium oxide	1344-28-1	215-691-6	90.0 - 100.0	Not hazardous. Substances for which there are Member Country workplace exposure limits.
The following ingredient may be released from the product only when heated above 150°C:				
Formaldehyde	50-00-0	200-001-8	Not known.	Carc. 1B; H350 Muta. 2; H341 *Acute Tox. 3; H301 *Acute Tox. 3; H311 *Acute Tox. 3; H331 Skin Corr. 1B; H314 Skin Sens. 1; H317

*The above CLP Acute toxicity Classifications for the following chemicals are 'Minimum Classifications': formaldehyde.

For the full text of the H phrases not mentioned in this Section or in Section 2, see Section 16.

SECTION 4. FIRST-AID MEASURES

4.1 Description of first aid measures

- Ingestion* : Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt, seek medical advice.
- Inhalation* : If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. When symptoms persist or in all cases of doubt, seek medical advice.
- Skin contact* : For skin contact, wash with soap and water while removing contaminated clothing. When symptoms persist or in all cases of doubt, seek medical advice.
- Eye contact* : Rinse thoroughly with plenty of water, also under the eyelids. Remove contact lenses, if present and easy to do. When symptoms persist or in all cases of doubt, seek medical advice.

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4.2 Most important symptoms and effects, both acute and delayed

- : Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath. May cause mild respiratory irritation at higher temperatures. May cause coughing and breathing difficulties.
May be mildly irritating to eyes and skin. Exposure may cause temporary irritation, redness or discomfort.
If material is ingested, may cause irritation to mucous membranes. May cause nausea, stomach pain and vomiting.

4.3 Indication of any immediate medical attention and special treatment needed

- : Provide general supportive measures and treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

- : Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.

Unsuitable extinguishing media

- : None known.

5.2 Special hazards arising from the substance or mixture

- : Not classified as flammable. However, may burn if exposed to extreme heat and flame. Burning produces obnoxious and toxic fumes. The pressure in sealed containers can increase under the influence of heat. In the event of fire the following can be released: Carbon oxides; Metal oxides; formaldehyde; Silicon oxides; Silica.

5.3 Advice for firefighters

Protective equipment for fire-fighters

- : Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

Special fire-fighting procedures

- : Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

- : Keep people away from and upwind of spill/leak. Wear appropriate protective equipment.

6.2 Environmental precautions

- : Prevent product from entering drains, sewers, waterways and soil.

6.3 Methods and material for containment and cleaning up

- : Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. Use inert, non-combustible absorbents to assist the pick up of material. Pick up and transfer to properly labeled containers. Contact the proper local authorities.

6.4 Reference to other sections

- : Refer to protective measures listed in sections 7 and 8. Refer to Section 13 for disposal of contaminated material.

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SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

- : Use with adequate ventilation. Wear suitable protective equipment during handling. Avoid breathing dust, fume or vapors. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and direct flame. Keep away from incompatibles. Keep containers closed when not in use. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

- : Store in cool/well-ventilated place. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Do not store near any incompatible materials (see Section 10).

7.3 Specific end use(s)

- : High performance, thermal compound.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

<u>Exposure Limits:</u>			
<u>Chemical Name</u>	<u>Exposure Limits</u>	<u>Type</u>	<u>Notes</u>
Aluminium oxide	10 mg/m ³ (TWA)	France (OEL)	None.
	6 mg/m ³ (respirable dust) (TWA)	Hungary (OEL)	None.
	2.5 mg/m ³ (inhalable); 1.2 mg/m ³ (respirable dust) (TWA)	Poland (OEL)	None.
	10 mg/m ³ (TWA)	Spain (OEL)	None.
	10 mg/m ³ (inhalable); 4 mg/m ³ (respirable dust) (TWA)	The United Kingdom (WELs)	None.
Formaldehyde	0.3 ppm (0.37 mg/m ³) (TWA) 1 ppm (1.2 mg/m ³) (STEL)	Finland (OEL)	None.
	0.5 ppm (TWA) 1 ppm (STEL)	France (OEL)	None.
	0.3 ppm (0.37 mg/m ³) (TWA)	Germany (OEL)	(exposure factor 2)
	0.6 mg/m ³ (TWA) 0.6 mg/m ³ (STEL)	Hungary (OEL)	Potential for cutaneous absorption
	0.5 mg/m ³ (TWA) 1 mg/m ³ (STEL)	Poland (OEL)	Skin notation
	0.3 ppm (0.37 mg/m ³) (STEL)	Spain (OEL)	None.
	2 ppm (2.5 mg/m ³) (TWA) 2 ppm (2.5 mg/m ³) (STEL)	The United Kingdom (WELs)	None.

Biological Exposure Indices:

No biological exposure limits noted for the ingredient(s).

Derived No Effect Level (DNEL):

No information available.

Predicted No Effect Concentration (PNEC):

No information available.

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8.2 Exposure controls

Ventilation and engineering measures

- : Ensure adequate ventilation, especially in confined areas. Apply technical measures to comply with the occupational exposure limits. Good ventilation (typically 10 air changes per hour) should be sufficient to control airborne levels. In case of insufficient ventilation wear suitable respiratory equipment.

Respiratory protection

- : In case of insufficient ventilation wear suitable respiratory equipment. The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used. Seek advice from respiratory protection specialists.

Skin protection

- : For prolonged or repeated contact use protective gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it. Wear sufficient clothing to prevent skin contact.

Eye / face protection

- : If product is processed in a manner that generates dusts or fumes, wear as appropriate: Tightly fitting safety goggles; Safety glasses with side shields See also EN 166. .

Other protective equipment

- : Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

General hygiene considerations

- : Avoid breathing dust, fume or vapors. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|---|-----------------------------|
| Appearance | : paste - grey |
| Odour | : No odour. |
| Odour threshold | : No information available. |
| pH | : No information available. |
| Flash point | : > 93.3°C |
| Flashpoint (Method) | : No information available. |
| Lower flammable limit (% by vol.) | : No information available. |
| Upper flammable limit (% by vol.) | : No information available. |
| Flammability (solid, gas) | : Not applicable. |
| Auto-ignition temperature | : No information available. |
| Decomposition temperature | : No information available. |
| Oxidizing properties | : None known. |
| Explosive properties | : Not explosive |
| Initial boiling point and boiling range | : No information available. |
| Melting/Freezing point | : No information available. |
| Relative density | : 3.25 |
| Solubility in water | : Insoluble. |

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Other solubility(ies) : No information available.
Vapour pressure : No information available.
Vapour density : No information available.
Partition coefficient: n-octanol/water
: No information available.
Viscosity : No information available.
Evaporation rate (BuAe = 1)
: No information available.

9.2 Other Information

Volatiles (% by weight) : No information available.
Volatile organic Compounds (VOC's)
: No information available.
Other physical/chemical comments
: No additional information.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity : Not normally reactive.
10.2 Chemical stability : Stable under normal conditions. When heated above 150°C in air, may release formaldehyde gas.
10.3 Possibility of hazardous reactions
: Hazardous polymerization does not occur. No dangerous reaction known under conditions of normal use.
10.4 Conditions to avoid : Direct sources of heat. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials.
10.5 Incompatible materials
: Strong oxidizing agents; Strong acids
10.6 Hazardous decomposition products
: None known.
Burning produces obnoxious and toxic fumes. In the event of fire the following can be released: Carbon oxides; Metal oxides; formaldehyde; Silicon oxides; Silica

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological effects:

Acute toxicity : According to the classification criteria of the European Union, this product is not considered as being an acutely toxic chemical.
Skin corrosion/Irritation : According to the classification criteria of the European Union, this product is not considered as being a skin corrosive or irritant.
Serious eye damage/irritation
: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.
Respiratory or skin sensitisation
: Not expected to be a skin or respiratory sensitizer.
Avoid heating, which will result in the liberation of formaldehyde gas. Formaldehyde may cause sensitisation by skin contact.

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- Germ cell mutagenicity** : Contains no ingredient listed as a mutagen.
Avoid heating, which will result in the liberation of formaldehyde gas. Formaldehyde may cause mutations to non-reproductive (somatic) cells, based on animal data.
- Carcinogenicity** : Contains no ingredient listed as a carcinogen.
Avoid heating, which will result in the liberation of formaldehyde gas. Formaldehyde is classified as carcinogenic.
- Reproductive toxicity** : Contains no ingredient listed as toxic to reproduction.
- STOT-single exposure** : According to the classification criteria of the European Union, this product is not expected to cause target organ toxicity through a single exposure.
- STOT-repeated exposure** : According to the classification criteria of the European Union, this product is not expected to cause target organ toxicity through repeated exposures.
- Aspiration hazard** : According to the classification criteria of the European Union, this product is not considered as being an aspiration hazard to humans.
- Toxicological data** : There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

<u>Chemical name</u>	<u>LC₅₀ (4hr)</u> <u>inh, rat</u>	<u>LD₅₀</u>	
		<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Aluminium oxide	> 2.3 mg/L (dust) (no deaths)	> 2000 mg/kg (No mortality)	No information available.
The following ingredient may be released from the product only when heated above 150°C:			
Formaldehyde	287 ppm	800 mg/kg (rat) The estimated human lethal dose is: 317 - 475 mg/kg	300 mg/kg

- Routes of exposure** : Eye contact; Skin contact; Inhalation; Ingestion
- Effects of acute exposure** : *Inhalation*: May cause mild respiratory irritation at higher temperatures. May cause coughing and breathing difficulties. Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath.
- Skin contact*: Direct skin contact may result in little or no irritation. Exposure may cause temporary irritation, redness or discomfort.
- Eye contact*: Causes little or no irritation. Exposure may cause temporary irritation, redness or discomfort.
- Ingestion*: If material is ingested, may cause irritation to mucous membranes. May cause nausea, stomach pain and vomiting.
- Potential Chronic Health Effects** : If dusts are formed, inhalation may cause adverse lung effects. Repeated or prolonged inhalation of fine dusts may cause an increase in mucous production.
- Other important hazards** : Avoid heating, which will result in the liberation of formaldehyde gas. Formaldehyde is an eye and throat irritant and acute toxicant. Formaldehyde causes severe respiratory irritation, lung inflammation and pulmonary edema.

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SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity : Not expected to be harmful to aquatic organisms. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. No data is available on the product itself. Should not be released into the environment.

See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

<u>Ingredients</u>	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Aluminium oxide	1344-28-1	> 100 mg/L (Brown trout)	No information available.	None.
Formaldehyde	50-00-0	6.7 mg/L (Striped bass)	≥ 48 mg/L/28-day (Japanese ricefish)	None.

<u>Ingredients</u>	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Aluminium oxide	1344-28-1	> 100 mg/L (Daphnia magna)	No information available.	None.
Formaldehyde	50-00-0	5.8 mg/L (Daphnia magna)	No information available.	None.

<u>Ingredients</u>	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Aluminium oxide	1344-28-1	> 100 mg/L/72hr (Green algae)	No information available.	None.
Formaldehyde	50-00-0	14.7 mg/L/24hr (Green algae)	No information available.	None.

12.2 Persistence and degradability

: No data is available on the product itself.
Contains the following chemicals which are not readily biodegradable: Aluminium oxide.

12.3 Bioaccumulation potential

: The product itself has not been tested. See the following data for ingredient information.

<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
Formaldehyde (CAS 50-00-0)	0.35	3.0

12.4 Mobility in soil : The product itself has not been tested.

12.5 Results of PBT and vPvB assessment

: This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

12.6 Other Adverse Environmental effects

: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

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SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:

- Handling for Disposal** : Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8. This material and its container must be disposed of in a safe way.
- Methods of Disposal** : Empty containers retain residue (liquid and/or vapour) and can be dangerous. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
- Dispose of in accordance with the European Directives on waste and hazardous waste. Waste must be classified and labelled prior to recycling or disposal. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	14.1 UN Number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing Group	Label
ADR/RID	None.	Not regulated	Not regulated	None	
EU ADR/RID Classification Code	Not applicable.				
EU ADR / RID Hazard Identification Number	Not applicable.				
ADR/RID Additional information	Not classified as dangerous for conveyance in the meaning of the regulations for the transport of dangerous goods by road and rail.				
ICAO/IATA	None.	Not regulated.	Not regulated	None	
ICAO/IATA Additional information	None.				
IMDG	None.	Not regulated.	Not regulated	None	
IMDG Additional information	None.				

14.5 Environmental hazards : This product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code. See Section 12 for more environmental information.

14.6 Special precautions for user

- : Appropriate advice on safety must accompany the package.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- : Not applicable.

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SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

- : Classification according to Regulation (EC) No. 1272/2008 on the classification of hazardous mixtures.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended:

None of the components are specifically listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use, as amended

None of the components are specifically listed.

Directive 2012/18/EU (Seveso III) on the control of major-accident hazards involving dangerous substances:

None of the components are specifically listed.

Directive 98/24/EC on the protection of the health and safety of workers from risks related to chemical agents at work:

None of the components are specifically listed.

Directive 94/33/EC on the protection of young people at work:

None of the components are specifically listed.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended [including Regulation (EU) 2015/830].

Follow national regulation for work with chemical agents.

German legislation on water endangering substances VwVwS: Water contaminating class (Germany): not water endangering (self classified)

15.2 Chemical safety assessment

- : A chemical safety assessment has not been carried out by the Manufacturer of this product.



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SECTION 16. OTHER INFORMATION

Legend

: ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS: Chemical Abstract Services
CLP: Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
EC: European Community
EC50: Effective Concentration 50%
ECHA: European Chemicals Agency
EEC: European Economic Community
EN: European Standard
EU: European Union
HSDB: Hazardous Substances Data Bank
IATA: International Air Transport Association
IBC: Intermediate Bulk Container
IMDG: International Maritime Dangerous Goods
LC: Lethal Concentration
LD: Lethal Dose
NOEC: No observable effect concentration
OECD: Organisation for Economic Co-operation and Development
OEL: National occupational exposure limits
PEL: Permissible exposure limit
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
RTECS: Registry of Toxic Effects of Chemical Substances
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TWA: Time Weighted Average
WEL: Workplace Exposure Limit

Information Source

- : 1. Material Safety Data Sheet from manufacturer.
2. Canadian Centre for Occupational Health and Safety, CCIInfoWeb Databases, 2017 (Chempendium, RTECs, HSDB, INCHEM).
3. European Chemicals Agency, Classification Legislation, 2017.
4. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2017.

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H-Phrases (Full text)

- : H301 - Toxic if swallowed.
H311 - Toxic in contact with skin.
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H331 - Toxic if inhaled.
H341 - Suspected of causing genetic defects <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
H350 - May cause cancer <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.

Other special considerations for handling

- : Provide adequate information, instruction and training for operators.



Parker Hannifin France
SAS Etablissement de Saint Ouen l'Aumône-PA du vert
Galant-6/8 avenue du Vert
Galant-95310 Saint Ouen l'Aumône-France
Telephone: +33 (01) 34 32 39 00

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<p><u>Prepared for:</u> Parker Hannifin Corp. 77 Dragon Court Woburn, MA, USA 01888 Telephone: 001-781-935-4850 http://www.parker.com Direct all enquiries to Parker Hannifin.</p>	
<p><u>Prepared by:</u> ICC The Compliance Center Inc. http://www.thecompliancecenter.com</p>	

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