Supreme 10HT Master Bond Polymer System

One component, toughened epoxy system

Key Features

- ✓ No mix, single component system
- ✓ Serviceability from 4K to +400°F
- ✓ Unlimited working life at room temperature
- ✓ Resistance to mechanical and thermal shocks
- ✓ NASA low outgassing approved
- ✓ Withstands 1,000 hours 85°C/85% RH

Product Description

Master Bond Supreme 10HT features a unique blend of performance properties including both high shear and peel strengths along with convenient handling. Tensile shear strengths in excess of 3,600 psi and T-peel strengths up to 30 pli are readily obtained. This one component system is formulated to cure at elevated temperatures, e.g. 60-75 minutes at 250°F. Supreme 10HT has a number of outstanding processing advantages; no mixing is necessary prior to use, the viscosity remains constant with time (i.e. it will not thicken over time), the working life is unlimited at room temperature and it is room temperature storable. This epoxy is cryogenically serviceable and has a wide temperature range of 4K to +400°F.

Master Bond Supreme 10HT readily withstands severe thermal cycling along with mechanical shock and vibration. It is very resistant to many chemicals including water, oils, fuels, solvents, acids and bases. It has excellent adhesion to metals, glass, ceramics and many plastics. The cured epoxy is a superior electrical insulator. Its natural color is gray, but other colors are available. Its viscosity is very high, although it has a small amount of flow when initially cured. A non-flow version called Supreme 10HTND-2 is also available. Supreme 10HT's high performance properties coupled with its convenient handling make it widely used in a variety of applications in the aerospace, electronic, electrical, computer, metalworking, appliance, automotive and chemical industries. Most importantly, Supreme 10HT has been tested for, and meets NASA low outgassing specifications.

Product Advantages

- High shear and peel strengths to a wide variety of similar and dissimilar substrates
- Cryogenically serviceable
- Superior thermal cycling ability
- Unlimited working life at room temperature
- Versatile cure schedules: 60-75 minutes at 250°F; 35-40 minutes at 300°F
- 100% reactive; contains no solvents or diluents
- Outstanding durability and toughness

Typical Properties

Tensile lap shear strength, aluminum to aluminum, 75°F	3,600-3,800 psi
Tensile strength, 75°F	8,000-9,000 psi
Tensile modulus, 75°F	450,000-500,000 psi
Compressive strength, 75°F	14,000-16,000 psi
T-peel strength, 75°F	25-30 pli
Elongation, 75°F	5-10%
Hardness, 75°F	70-80 Shore D
Hardness after 1,000 hours 85°C/85% RH	80 Shore D
Volume resistivity, 75°F	$>10^{12}$ ohm-cm
Service temperature range	4K to +400°F [4K to +204°C]

Mixing and Curing

Shelf life at 75°F, in original unopened containers	3 months minimum, 6 months maximum
Viscosity, 75°F	>500,000 cps
Cure schedule options	
250°F	60-75 minutes
300°F	35-40 minutes

Preparation of Adhesive

Master Bond Polymer System Supreme 10HT does not require any mixing prior to use. Some simple stirring is recommended if the adhesive has been stored for a prolonged period of time without use (this could be facilitated by heating the product from 90-110°F). Such stirring should be done slowly to avoid entrapping air. Using the adhesive is easy. Simply apply the measured adhesive on the surface to be bonded evenly and uniformly.

Preparation of Bonding Surfaces

All bonding surfaces should be carefully cleaned, degreased and dried for obtaining the maximum bond strengths. Also when bonding to metal surfaces, chemical etching should be employed so that the bonds exhibit optimum environmental durability. Non-porous surfaces should be roughened with sandpaper or emery paper.

Adhesive Application

Supreme 10HT can be conveniently applied with a spatula, knife or trowel. Enough adhesive should be applied to obtain an adhesive bond line thickness of 3-6 mils. Porous surfaces may require somewhat more adhesive to fill the voids than non-porous ones. Thicker glue lines do not increase the strength of a joint but do not necessarily give lower results as the Supreme 10HT system does not contain any volatiles. The parts to be bonded should then be clamped together with just enough pressure to obtain and maintain intimate contact during cure. Care should be taken not to squeeze out the adhesive when fixturing. Since the system is 100% reactive and does not contain any solvents or diluents shrinkage on cure is minimal.

Cure

Supreme 10HT requires an elevated temperature cure. The minimum curing condition is 60-75 minutes at 250°F. Remove excess adhesive promptly before it hardens with a spatula. Then wipe with a rag and solvent, such as acetone, toluene or MEK. It is important to note that Supreme 10HT is exothermic and when curing the epoxy—particularly at 300°F, sections should not exceed 10-15 mils.

Packaging

Packaging available in:

- 1/2 Pint
- Pint
- Quart
- Gallon
- 5 Gallon

Available in specialty packaging including cartridges and syringes.

Handling and Storage

All epoxy resins should be used with good ventilation and skin contact should be avoided. For safe handling details, please consult the product SDS. Optimum storage is at or below 75°F in closed containers. No special storage conditions are necessary. Containers should, however, be kept closed when not in use to avoid contamination. Cleanup of spills and equipment is readily achieved with aromatic or ketone solvents employing proper precautions of ventilation and flammability.

Certifications

NASA Low Outgassing

RoHS COMPLIANT

Not to Be Used for Specification Purposes

The values contained herein are considered typical properties only and are not intended to be used as specification limits. For assistance in preparing specifications, please contact Master Bond technical support for further details.

Notice

Master Bond believes the information on the data sheets is reliable and accurate as is technical advice provided by the company. Master Bond makes no warranties, expressed or implied, regarding the accuracy of the information, and assumes no liability regarding the handling and use of this product.

F23C16

Safety Data Sheet
acc. to OSHA HCS

Printing date 06/24/2015 Reviewed on 06/24/2015

1 Identification

· **Product identifier**

· **Trade name: Supreme 10HT**

· **Article number:** Epoxy adhesive

· **Relevant identified uses of the substance or mixture and uses advised against**
Recommended use - Adhesives, Sealants, Coatings

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**
Master Bond Inc.
154 Hobart Street
USA-Hackensack, NJ 07601
Phone: 201-343-8983

· **Information department:**
Product safety department

Emergency phone number : (CHEMTREC)
(North America) : 800-424-9300
(International) : 703-527-3887

2 Hazard(s) identification

· **Classification of the substance or mixture**

Acute Tox. 4	H302 Harmful if swallowed.
Skin Irrit. 2	H315 Causes skin irritation.
Eye Irrit. 2A	H319 Causes serious eye irritation.
Skin Sens. 1	H317 May cause an allergic skin reaction.
Carc. 2	H351 Suspected of causing cancer.
STOT RE 2	H373 May cause damage to organs through prolonged or repeated exposure.
Aquatic Chronic 2	H411 Toxic to aquatic life with long lasting effects.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**

GHS07 GHS08 GHS09

· **Signal word** Warning

· **Hazard statements**
Harmful if swallowed.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of causing cancer.
May cause damage to organs through prolonged or repeated exposure.
Toxic to aquatic life with long lasting effects.

· **Precautionary statements**
In case of inadequate ventilation wear respiratory protection.
Avoid breathing mist/vapours/spray.
Wear protective gloves / eye protection / face protection.
Use personal protective equipment as required.

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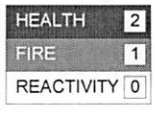
Avoid release to the environment.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If swallowed: Call a poison center/doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
If on skin: Wash with plenty of soap and water.
Take off contaminated clothing and wash it before reuse.
Store locked up.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 2
Fire = 1
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 2
Fire = 1
Reactivity = 0

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** *Mixture of the substances listed below with nonhazardous additions.*

· **Hazardous components:**	
Epoxy phenol novolac (CAS no. 28064-14-4)	*25-50%*
Aluminum powder (CAS no. 7429-90-5)	*10-25%*
Flexibilizer epoxy resin (CAS no. Trade secret, 68610-41-3)	*10-25%*
Curing agent (CAS no. 461-58-5, 7631-86-9)	*1-5%*
Curing agent (CAS no. 330-54-1)	*< 2.5%*

· **Main Components:**	
Epoxy phenol novolac (CAS no. 28064-14-4)	*25-50%*
Aluminum powder (CAS no. 7429-90-5)	*10-25%*
Flexibilizer epoxy resin (CAS no. Trade secret, 68610-41-3)	*10-25%*
Curing agent (CAS no. 461-58-5, 7631-86-9)	*1-5%*
Siloxane treated silicon dioxide (CAS no. 67762-90-7)	*1-5%*
Silicon dioxide, chemically prepared (CAS no. 112945-52-5)	*< 2.5%*
Curing agent (CAS no. 330-54-1)	*< 2.5%*

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4 First-aid measures

· **Description of first aid measures**
· **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek medical treatment.
· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
Seek medical treatment.
· **After eye contact:**
Rinse opened eye for several minutes under running water. Then consult a doctor.
Seek medical treatment.
· **After swallowing:**
If material has been swallowed and the exposed person is conscious, give small quantites of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs.
Seek medical treatment.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
CO2, sand, extinguishing powder. Do not use water.
Use fire fighting measures that suit the environment.
· **For safety reasons unsuitable extinguishing agents:** Water
· **Advice for firefighters**
· **Protective equipment:** Wear personal protective equipments.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Wear protective equipment.
· **Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:** Protect against electrostatic charges.

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· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No information available.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
· **Breathing equipment:** Use suitable respiratory protective device in case of insufficient ventilation.
· **Protection of hands:**

Protective gloves

· **Material of gloves** Chemical resistant gloves.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**

Safety glasses recommended.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

Form:	Highly viscous
Color:	Grey
· **Odor:**	Mild

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· **Odour threshold:**	Not available
· **pH-value:**	Not available
· **Change in condition**	
Melting point/Melting range:	Not available
Boiling point/Boiling range:	Not available
· **Flash point:**	Not available
· **Flammability (solid, gaseous):**	Not available
· **Ignition temperature:**	
Decomposition temperature:	Not available
· **Auto igniting:**	Not available
· **Danger of explosion:**	Not available
· **Explosion limits:**	
Lower:	Not available
Upper:	Not available
· **Vapor pressure:**	Not available
· **Density:**	
Relative density at 20 °C (68 °F)	1.37 g/cm3
Vapour density	Not determined.
Evaporation rate	Not available
· **Solubility in / Miscibility with**	
Water:	Not miscible or difficult to mix.
· **Partition coefficient (n-octanol/water):**	Not available
· **Viscosity:**	
Dynamic:	Not available
Kinematic:	Not available

10 Stability and reactivity

· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** Carbon monoxide

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
330-54-1 diuron (ISO)		
Oral	LD50	4150 mg/kg (rat)
Dermal	LD50	>5000 mg/kg (rat)

· **Primary irritant effect:**
· **on the skin:** May cause skin irritation.
· **on the eye:** Can cause eye irritation.

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· **Sensitization:** May cause allergic skin reaction.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
Substance is not listed

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**
· **DOT** : Not regulated
· **ADR, IMDG, IATA** : 3082

· **UN proper shipping name**
· **DOT** : Not regulated
· **ADR, IMDG, IATA** : Environmentally hazardous substance, liquid, n.o.s. (Epoxy resin)

· **Transport hazard class(es)**

· **DOT** : Not regulated

· **ADR, IMDG, IATA**

· **Class** 9 Miscellaneous dangerous substances and articles
· **Label** 9

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· **Packing group**
· **DOT** : Not regulated
· **ADR, IMDG, IATA** : III

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
Technical name of curing agent (CAS no. 330-54-1) is Diuron.

330-54-1	diuron (ISO)

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

330-54-1	diuron (ISO)

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07 GHS08 GHS09

· **Signal word** Warning

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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· **Department issuing SDS:** Product safety department
· **Contact:** Master Bond Inc.
· **Date of preparation / last revision** 06/24/2015 / -
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organisation
ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 2: Carcinogenicity, Hazard Category 2
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2