TRICURE RESIN 11B611A GP WHITE

Product Name:	**TriCure Resin 11B611A GP White** **1165850 Rev. 1**
Revision Date:	04-Dec-2024 **According to Regulation (EC) No. 1907/2006**

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name: TriCure Resin 11B611A GP White

Pure Substance/Mixture: Mixture

1.2. Product relevant identified uses of the substance or mixture and uses advised against

Recommended use: Polyester pigment for composites. For industrial use only.

1.3. Details of the supplier of the safety data sheet

Tricel Composites (GB) Limited

Unit A, Foxway,
Off Atkinson Street,
Leeds, West Yorkshire,
LS10 1PS.
Tel: +44 (0)113 270 3133

Tricel Composites (NI) Limited

Unit 4, Milltown Ind. Estate, Greenan Road. Warrenpoint, Newry
Co. Down,
BT34 3FN.
Tel: +44 (0)284 175 3738

1.4. Emergency Telephone Number

Emergency medical information: 8am-10pm (seven days) contact National Poisons Information Centre, Beaumont Hospital, Dublin 9 DOV2NO, Ireland.
Telephone Number: +353 (0)1 809 2166

Leeds:	**Newry:**
Tel: +44 (0)113 270 3133	Tel: +44 (0)284 175 3738

1.4.1. Poison Information Centre Telephone Number

European emergency phone number: 112
UK: National Poisons Emergency Number : 0344 892 0111
Ireland: National Poisons Information Centre (NPIC)Telephone Healthcare Professionals : +353 (01) 809 2566. (24 hour service)Telephone Members of Public: +353 (01) 809 2166. (8.00 a.m. to 10.00 p.m. 7 days a week)

2. Hazards Identification

2.1. Classification of the substance or mixture

Classification of the substance or mixture - GHS/CLP (nº 1272/2008)

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

2.2. Label elements

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

2.2.1. Hazard Statements

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP].

EUH210 - Safety data sheet available on request.

EUH211 - Warning! Hazardous respirable droplets may be formed when sprayed. Do not breathe spray or mist.

2.3. Other Hazards

Other hazards	No information available.
PBT & vPvB	None known.
Endocrine Disruptor Information	This product does not contain any known or suspected endocrine disruptors.

3. Composition/Information on Ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Chemical name	CAS No.	Weight-%	REACH registration number	EC No (EU Index No)	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
TITANIUM DIOXIDE	13463-67-7	60-100%	01-2119489379-17-0000	236-675-5	No data available	-	-	-
Trimethylolpropane	77-99-6	<1%	01-2119486799-10-0000	201-074-9	Repr. 2 (H361fd)	-	-	-

Full text of H- and EUH-phrases: see section 16

3.2.1. Acute Toxicity Estimate

If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapor - mg/L	Inhalation LC50 - 4 hour - gas - ppm
TITANIUM DIOXIDE 13463-67-7	10000	No data available	5.09	No data available	No data available
Trimethylolpropane 77-99-6	14100	10000	No data available	No data available	No data available

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

Additional information

This mixture contains ≥ 1% Titanium Dioxide (CAS 13463-67-7) The Annex VI classification of Titanium Dioxide does not apply to this mixture according to its Note 10.

4. First Aid Measures

4.1. Description of First Aid Measures

Inhalation	**Remove to fresh air.**
Eye contact	**Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids.** **Consult a physician.**
Skin contact	**Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.**
Ingestion	**Rinse mouth.**

4.2. Most important symptoms and effects, both acute and delayed

Symptoms	**No information available.**
Effects of Exposure	**No information available.**

4.3. Indication of any immediate medical attention and special treatment

Notes to physician	Treat symptomatically.

5. Firefighting Measures

5.1. Extinguishing media

Suitable Extinguishing Media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media: Do not scatter spilled material with high pressure water streams.

5.2. Special Hazards arising from substance or mixture

Specific hazards arising from the chemical No information available.

5.3. Advice for Firefighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental Precautions

Environmental precautions	See Section 12 for additional Ecological Information.

6.3. Methods and Material for Containment and Cleaning Up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Take up mechanically, placing in appropriate containers for disposal.
Prevention of secondary hazards	Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections	See section 8 for more information. See section 13 for more information.

7. Handling and Storage

7.1. Precautions for safe handling

Advice on safe handling	Ensure adequate ventilation.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place.

Storage class (TRGS 510) Storage class 10.

7.3. Specific end use(s)

Risk Management Methods (RMM) No information available.

8. Exposure Controls/Personal Protection

8.1. Control Parameters

Exposure Limits

Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
TITANIUM DIOXIDE 13463-67-7	-	TWA: 5 mg/m^3 STEL 10 mg/m^3	TWA: 10 mg/m^3	TWA: 10.0 mg/m^3	TWA: 10 mg/m^3 TWA: 4 mg/m^3
SILICA (CRYSTALLINE) 14808-60-7	TWA: 0.1 mg/m^3	TWA: 0.05 mg/m^3	TWA: 0.1 mg/m^3	TWA: 0.1 mg/m^3	TWA: 0.1 mg/m^3
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
TITANIUM DIOXIDE 13463-67-7	-	-	TWA: 6 mg/m^3 STEL: 12 mg/m^3	TWA: 5 mg/m^3	-
SILICA (CRYSTALLINE) 14808-60-7	TWA: 0.1 mg/m^3	TWA: 0.1 mg/m^3	TWA: 0.3 mg/m^3 TWA: 0.1 mg/m^3 STEL: 0.6 mg/m^3 STEL: 0.2 mg/m^3	TWA: 0.1 mg/m^3	TWA: 0.05 mg/m^3
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
TITANIUM DIOXIDE 13463-67-7	TWA: 10 mg/m^3	TWA: 1.25 mg/m^3 TWA: 10 mg/m^3	TWA: 0.3 mg/m^3 Peak: 2.4 mg/m^3	TWA: 10 mg/m^3 TWA: 5 mg/m^3	-

SILICA (CRYSTALLINE) 14808-60-7	TWA: 0.1 mg/m^3	-	-	TWA: 0.1 mg/m^3	TWA: 0.1 mg/m^3
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
TITANIUM DIOXIDE	TWA: 10 mg/m^3	-	TWA: 10 mg/m^3	TWA: 10 mg/m^3	TWA: 5 mg/m^3
13463-67-7	TWA: 4 mg/m3 STEL: 30 mg/m3 STEL: 12 mg/m3				
Trimethylolpropane 77-99-6	-	-	-	-	Ceiling: 5 ppm
SILICA (CRYSTALLINE) 14808-60-7	TWA: 0.1 mg/m3 STEL: 0.3 mg/m3	TWA: 0.1 mg/m3	TWA: 0.025 mg/m3	TWA: 0.1 mg/m3	TWA: 0.1 ppm
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
TITANIUM DIOXIDE 13463-67-7	-	-	-	TWA: 5 mg/m3 STEL: 10 mg/m3	TWA: 10 mg/m3 STEL: 30 mg/m3
SILICA (CRYSTALLINE) 14808-60-7	-	-	TWA: 0.075 mg/m3	TWA: 0.05 mg/m3 TWA: 0.1 mg/m3 TWA: 0.3 mg/m3 STEL: 0.9 mg/m3 STEL: 0.15 mg/m3 STEL: 0.3 mg/m3	TWA: 0.1 mg/m3
Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
TITANIUM DIOXIDE 13463-67-7	TWA: 10 mg/m3	TWA: 10 mg/m3 STEL: 15 mg/m3	TWA: 5 mg/m3	-	TWA: 10 mg/m3
SILICA (CRYSTALLINE) 14808-60-7	TWA: 0.025 mg/m3	TWA: 0.1 mg/m3	TWA: 0.1 mg/m3 STEL: 0.5 mg/m3	TWA: 0.05 mg/m3	TWA: 0.05 mg/m3

Chemical name	Sweden	Switzerland	United Kingdom
TITANIUM DIOXIDE 13463-67-7	NGV: 5 mg/m^3	TWA: 3 mg/m^3 TWA: 10 mg/m^3	TWA: 10 mg/m^3 TWA: 4 mg/m^3 STEL: 30 mg/m^3 STEL: 12 mg/m^3
Trimethylolpropane 77-99-6	NGV: 5 mg/m^3	-	-
SILICA (CRYSTALLINE) 14808-60-7	NGV: 0.1 mg/m^3	TWA: 0.15 mg/m^3	TWA: 0.1 mg/m^3 STEL: 0.3 mg/m^3

Biological occupational exposure limits This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
Trimethylolpropane 77-99-6	-	0.94 mg/kg bw/day [4] [6]	3.3 mg/m^3 [4] [6]

Notes

[4] Systemic health effects.

[6] Long term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
Trimethylolpropane 77-99-6	0.34 mg/kg bw/day [4] [6]	-	0.58 mg/m^3 [4] [6]

Notes

[4] Systemic health effects.

[6] Long term.

Predicted No Effect Concentration (PNEC) No information available

8.2. Exposure Controls

Engineering controls No information available.

Personal protective equipment

Eye/face protection	Appropriate eye/face protection should be selected and used according to the chemical nature, hazards and use of this product and safety requirements of the local jurisdiction.
Hand protection	Wear chemically resistant gloves (tested in accordance to EN 374-1 Type C or greater to be assessed by local risk assessment and physical activity) in combination with employee training. Glove material : Neoprene , Nitriles. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin and body protection	Appropriate skin and body protection should be selected and used according to the chemical nature, hazards and use of this product and safety requirements of the local jurisdiction.
Respiratory protection	Appropriate respiratory protection should be selected and used according to the chemical nature, hazards and use of this product and safety requirements of the local jurisdiction. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
Environmental exposure controls	No information available.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Coloured paste
Physical state	Liquid
Color	white
Odor	Aromatic
Odor threshold	No information available

Property	Values	Remark
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	> 65 °C	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Water solubility	No data available	None known
	Insoluble in water	
Solubility(ies)	Organic solvents	None known
Partition coefficient	No data available	None known
Vapor pressure	No data available	None known
Relative density		
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		
Particle Size	No information available	

Particle Size Distribution	No information available

9.2. Other Information

9.2.1. Information with regards to physical hazard classes

No information available

9.2.2. Other safety characteristics

No information available

10. Stability and Reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoid None known based on information supplied.

10.5. Incompatible materials

Incompatible materials None known based on information supplied.

10.6. Hazardous decomposition Products

Hazardous decomposition products None known based on information supplied.

11. Toxicological Information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

11.1.1. Information on likely routes of exposure

Inhalation	Specific test data for the substance or mixture is not available.
Eye contact	Specific test data for the substance or mixture is not available.
Skin contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

11.1.2. **Symptoms related to the physical, chemical and toxicological characteristics**

Symptoms No information available.

11.1.3. **Delayed and immediate effects as well as chronic effects from short and long-term exposure**

Acute toxicity Based on available data, the classification criteria are not met.

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document:

ATEmix (oral) 99,999.00 mg/kg

ATEmix (dermal) 99,999.00 mg/kg ATEmix (inhalation-gas) 99,999.00 ppm ATEmix (inhalation-vapor) 99,999.00 mg/l

ATEmix (inhalation-dust/mist) 99,999.00 mg/l

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
TITANIUM DIOXIDE	> 10000 mg/kg (Rat)	-	= 5.09 mg/L (Rat) 4 h
Trimethylolpropane	= 14100 mg/kg (Rat)	> 10000 mg/kg (Rabbit)	> 0.85 mg/L (Rat) 4 h

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitization Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
STOT - single exposure	Based on available data, the classification criteria are not met.
STOT - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

11.2. Information on Other Hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties	Based on available data, the classification criteria are not met.

11.2.2. Other information

Other adverse effects	No information available.

12. Ecological Information

12.1. Toxicity

Ecotoxicity

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Trimethylolpropane	-	-	-	EC50: =13000mg/L (48h, Daphnia species) EC50: 10330 - 16360mg/L (48h, Daphnia magna)

12.2. Persistence and degradability

Persistence and degradability No information available.

12.3. Bioaccumulative potential

Bioaccumulation

Component Information

Chemical name	Partition coefficient
Trimethylolpropane	-0.47

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB above the threshold of declaration.

Chemical name	PBT and vPvB assessment
TITANIUM DIOXIDE	The substance is not PBT / vPvB
Trimethylolpropane	The substance is not PBT / vPvB

12.6. Endocrine disrupting properties

Endocrine disrupting properties No information available

12.7. Other Adverse Effects

No information available.

13. Disposal Considerations

13.1. Waste Treatment Methods

Waste from Residues/Unused Products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

14. Transport Information

IATA		
14.1	UN number or ID number	Not regulated
14.2	UN proper shipping name	Not regulated
14.3	Transport hazard class(es)	Not regulated
14.4	Packing group	Not regulated
14.5	Environmental hazards	Not applicable
14.6	Special precautions for user	
	Special Provisions	None
IMDG		
14.1	UN number or ID number	Not regulated
14.2	UN proper shipping name	Not regulated
14.3	Transport hazard class(es)	Not regulated
14.4	Packing group	Not regulated
14.5	Environmental hazards	Not applicable
14.6	Special precautions for user	
	Special Provisions	None
14.7	Maritime transport in bulk according to IMO instruments	No information available
RID		
14.1	UN number or ID number	Not regulated
14.2	UN proper shipping name	Not regulated
14.3	Transport hazard class(es)	Not regulated
14.4	Packing group	Not regulated
14.5	Environmental hazards	Not applicable
14.6	Special precautions for user	
	Special Provisions	None

ADR

14.1	UN number or ID number	Not regulated
14.2	UN proper shipping name	Not regulated
14.3	Transport hazard class(es)	Not regulated
14.4	Packing group	Not regulated
14.5	Environmental hazards	Not applicable
14.6	Special precautions for user	
	Special Provisions	None

ADN

14.1	UN number or ID number	Not regulated
14.2	UN proper shipping name	Not regulated
14.3	Transport hazard class(es)	Not regulated
14.4	Packing group	Not regulated
14.5	Environmental hazard	Not applicable
14.6	Special precautions for user	
	Special Provisions	None

15. Regulatory Information

15.1. Safety, Health And Environmental Regulations / Legislation Specific For The Substance Or Mixture

Chemical Prohibition Ordinance (ChemVerbotsV)	Not applicable
TRGS 905	Not applicable

Switzerland

Ordinance on the Incentive Tax on Volatile Organic Compounds (OVOC) SR 814.018	Not applicable
Storage of Hazardous Materia	SC Non-hazardous material

WPO (GSchV) SR 814.201; WPA (GSchG) SR 814.20	Not applicable
Major Accidents Ordinance SR 814.012	Not applicable

European Union

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

Authorizations and/or restrictions on use:

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorization per REACH Annex XIV
TITANIUM DIOXIDE - 13463-67-7	Use restricted. See entry 75.	-

Persistent Organic Pollutants Not applicable

Ozone-depleting substances (ODS)

Regulation (EU) 2024/590 Not applicable.

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDSL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECL	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status
TCSI	Contact supplier for inventory compliance status

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing Chemicals Inventory

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals NZIoC - New Zealand Inventory of Chemicals TCSI - Taiwan Chemical Substance Inventory

15.2. Chemical Safety Assessment

Chemical Safety Report	No information available

16. Other Information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of any hazard and/or precautionary statements referred to under Sections 2-15

H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child

Legend

SVHC: Substances of Very High Concern for Authorization:

Legend	**Section 8: Exposure controls/personal protection**		
TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	Sk*	Skin designation
+	Sensitizers		

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapor	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitization	Calculation method
Skin sensitization	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Chronic aquatic toxicity	Calculation method
Acute aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

- **Agency for Toxic Substances and Disease Registry (ATSDR)**
- **U.S. Environmental Protection Agency ChemView Database European Food Safety Authority (EFSA)**
- **European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC) European Chemicals Agency (ECHA) (ECHA_API)**
- **Environmental Protection Agency**
- **Acute Exposure Guideline Level(s) (AEGL(s))**

- **U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act**
- **U.S. Environmental Protection Agency High Production Volume Chemicals**
- **Food Research Journal Hazardous Substance Database**
- **International Uniform Chemical Information Database (IUCLID) National Institute of Technology and Evaluation (NITE)**
- **Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS) NIOSH (National Institute for Occupational Safety and Health)**
- **National Library of Medicine's ChemID Plus (NLM CIP)**
- **National Library of Medicine's PubMed database (NLM PUBMED)**
- **U.S. National Toxicology Program (NTP)**
- **New Zealand's Chemical Classification and Information Database (CCID)**
- **Organization for Economic Co-operation and Development Environment, Health, and Safety Publications Organization for Economic Co-operation and Development High Production Volume Chemicals Program Organization for Economic Co-operation and Development Screening Information Data Set**
- **World Health Organization**

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet