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SECT	ION 1: Identification of the	substance/mixture and of the c	ompany/undertaking		
1.1.	Product identifier				
Other m	neans of identification	: NYL-AB-1K			
1.2.	Relevant identified uses of the	substance or mixture and uses advised	l against		
Use of t	he substance/mixture	: MarkForged 3D Printing			
1.3.	Details of the supplier of the sa	afety data sheet			
Compa MarkFo 321A W	Company: MarkForged, Inc 321A Washington St				
Somerv	ille, MA 02143				
Telepho Website	one: 617-666-1935 e: www.markforged.com				
1.4.	Emergency telephone number				
Emerge	ency number	: +1-617-666-1935			
SECT	ION 2: Hazards identification	on			
2.1.	Classification of the substance	e or mixture			
GHS-U	S classification				
Not clas	ssified				
2.2.	Label elements				
Other hazards which do not result in the classification the ha		: This is a polymeric material con the polymer system and there handling. Processing molten ny caprolactam vapor.	taining caprolactam. The fore presents minimal like ylon may result in therma	caprolactam is encapsulated within lihood of exposure under normal al burns or potential exposure to	
2.4.	Unknown acute toxicity (GHS-U	US)			
Not app	licable				
SECT	ION 3: Composition/inform	nation on ingredients			
3.1.	Substances				
Not app	licable				
3.2.	Mixture				
Name		Product identifier	%	GHS-US classification	
Nylon			Proprietary	Not classified	
Caprol	actam	(CAS No) Proprietary	Proprietary	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT EF 2, H325	

SECTION 4: First aid measures		
: Unlikely route of exposure – solid monofilament product. If subsequent processing of this product generates excessive dust, then treat the dust as "nuisance dust" and minimize expsoure. If exposed to excessive levels of dust, remove to fresh air and get medical attention if cough or other symptoms develop. If exposed to vapors, remove individual to fresh air and get medical attention if cough or other symptoms develop.		
: If skin irritation occurs, then washed exposed skin with soap and plenty of water.		

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First-aid measures after eye contact	: Do not rub the eyes or the skin around the eye after direct contact with the product. If eye irritation results, then remove contact lenses and immediately flush eye(s) with plenty of water. Keep eye wide open while rinsing. Obtain medical attention if pain, blinking or redness persists.	
First-aid measures after ingestion	: Unlikely route of exposure. If swallowed, obtain emergency medical attention.	
4.2. Most important symptoms and effect	s, both acute and delayed	
Symptoms/injuries after inhalation	: Dusts are mechanical irritants. Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.	
Symptoms/injuries after skin contact	: Some individuals may experience skin irritation.	
Symptoms/injuries after eye contact	: Product may cause mechanical irritation to the eye.	
Symptoms/injuries after ingestion	Choking hazard or intestinal brockage can occur; gastrointestinal disturbance.	
4.3. Indication of any immediate medical	attention and special treatment needed	
No additional information available		
SECTION 5: Firefighting measures		
5.1 Extinguishing media		
Suitable extinguishing media	: Use fire-extinguishing media appropriate for surrounding materials. Foam, Dry powder, Carbon	
Cutable extinguishing modia	dioxide. Water spray. Sand.	
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.	
5.2. Special hazards arising from the sub	stance or mixture	
Explosion hazard	: No risk anticipated.	
5.3. Advice for firefighters		
Firefighting instructions	: Exercise caution when fighting any chemical fire.	
Protective equipment for firefighters	: Do not enter fire area without proper protective equipment, including respiratory protection. In the event of a fire, wear a self-contained breathing apparatus (SCBA).	
Other information	: Toxic and irritating gases are released following thermal decomposition or combustion. Molten material can form flaming droplets if ignited.	
SECTION 6: Accidental release meas	ures	
6.1 Personal precautions protective equ	inment and emergency procedures	
General measures	: Sweep up waste filament and place in trash for disposal as nonhazardous solid waste. Keep	
	away from sources of ignition. Spilled material may present a slipping hazard. Exposure to fire will release irritating toxic fumes and vapors.	
6.1.1. For non-emergency personnel		
Emergency procedures	: Evacuation is not anticipated as necessary in the event of a spill.	
6.1.2. For emergency responders		
Protective equipment	: Use proper shoes to avoid slipping.	
Emergency procedures	: None anticipated	
6.2. Environmental precautions		
Prevent entry to sewers and public waters.		
6.3. Methods and material for containmer	nt and cleaning up	
Methods for cleaning up	: On land, sweep or shovel into suitable containers for disposal. Ensure all national/local regulations are observed.	
6.4. Reference to other sections		
No additional information available		

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SECTION 7: Handling and storage		
7.1. Precautions for safe handling		
Additional hazards when processed	: The greatest potential for injury may occur when processing molten nylon, which may result in thermal burns or potential exposure to irritating toxic fumes and vapors.	
Precautions for safe handling	Keep away from open flames and sources of ignition.	
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practices.	
7.2. Conditions for safe storage, including	2. Conditions for safe storage, including any incompatibilities	
Technical measures	: No incompatible materials are anticipated. Product is primarily polyamide.	
Storage conditions	: Keep in clean containers to minimize pickup of dust and dirt.	
7.3. Specific end use(s)		
No additional information available		

SECTION 8: Exposure controls/personal protection				
3.1. Control parameters				
Product dust	ACGIH TWA (mg/m³)	10 mg/m ³ (Total dust)		
Product dust	OSHA TWA (mg/m³)	15 mg/m ³ (Total dust)		
Respirable dust	OSHA TWA (mg/m ³)	5 mg/m³ (8 Hr)		

.epsilonCaprolactam (105-60-2)		
ACGIH	ACGIH TWA (mg/m ³)	5 mg/m ³ (inhalable fraction and vapor)
NIOSH	NIOSH REL (TWA) (mg/m³)	1 mg/m³ (dust) 1 mg/m³ (vapor)
NIOSH	NIOSH REL (TWA) (ppm)	0.22 ppm (vapor)
NIOSH	NIOSH REL (STEL) (mg/m ³)	3 mg/m³ (dust) 3 mg/m³ (vapor)
NIOSH	NIOSH REL (STEL) (ppm)	0.66 ppm (vapor)

8.2. Ex	oposure controls		
Appropriate	engineering controls	:	Operators performing grinding and machining of product should be reviewed to ensure particulate levels are kept below recommended standards. Provide adequate ventilation to minimize dust concentrations. Provide adequate protection in areas where molten material is possible to emerge. Provide local exhaust or general room ventilation to minimize vapour concentrations.
Personal pro	otective equipment	:	Avoid all unnecessary exposure. Protective goggles and gloves are recommended around molten polymer. For certain operations, additional Personal Protection Equipment (PPE) may be required.
Hand protec	tion	:	Wear protective gloves when handling material at elevated temperatures.
Eye protection	on	:	Safety glasses with side shields. Wear goggles and face shield when handling material at elevated temperatures.
Skin and bo	dy protection	:	Personal protective clothing should be selected based on the task being performed and the risks involved.
Respiratory	protection	:	Appropriate dust or mist respirator should be used if airborne particles are generated when handling this material. If elevated airborne concentrations above applicable workplace exposure levels are anticipated, a NIOSH-approved organic vapor respirator equipped with a dust/mist prefilter should be used.
Thermal haz	rard protection	:	Wear protective clothing when handling material at elevated temperatures. Use suitable eye/skin protection.
Other inform	nation	:	Do not eat, drink or smoke during use.

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SECTION 9: Physical and chemical pr	operties
9.1. Information on basic physical and ch	emical properties
Physical state	: Solid filament
Appearance	: Cylindrical
Color	: Clear to white
Odor	: Slight organic odor
Odor threshold	: No data available
рН	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: 215 - 218 °C (419 – 425 °F)
Freezing point	: No data available
Boiling point	: Not applicable
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: Negligible.
Relative vapour density at 20 °C	: Not relevant
Relative density	: No data available
Density	: Approximately 1.08 Specific Gravity
Solubility	: Negligible in water
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available
0.2 Other information	

9.2. Other information

No additional information available

SECTION	ON 10: Stability and reactivity		
10.1.	Reactivity		
No additi	onal information available.		
10.2.	Chemical stability		
The prod	uct is stable at normal handling and storage conditions.		
10.3.	Possibility of hazardous reactions		
Hazardo	Hazardous polymerization will not occur.		
10.4.	Conditions to avoid		
Heat/sparks, open flames, excessively hot surfaces.			
10.5.	Incompatible materials		
No additional information available.			
10.6.	Hazardous decomposition products		

Thermal combustion may release carbon monoxide and dioxide, fumes, unburned hydrocarbons, ammonia, amines, ketone, hydrogen cyanide, amides, and nitriles. Toxic and irritating gases are released following thermal decomposition or combustion. May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

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Acute toxicity	: Not classified (Based on available data, the classification criteria are not met)
Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met) pH: Not applicable
Serious eye damage/irritation	 Not classified (Based on available data, the classification criteria are not met) pH: Not applicable
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
Specific target organ toxicity (single exposure)	: Not classified (Based on available data, the classification criteria are not met)
Specific target organ toxicity (repeated exposure)	: Not classified (Based on available data, the classification criteria are not met)
Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)
Symptoms/injuries after inhalation	: Dusts are mechanical irritants. Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.
Symptoms/injuries after skin contact	: Dust may cause mechanical irritation. Risk of thermal burns on contact with molten product.
Symptoms/injuries after eye contact	: Product fines may cause mechanical irritation. Vapors from molten nylon may cause irritation and tearing.
Symptoms/injuries after ingestion	: Choking hazard. Gastrointestinal disturbance can occur.
SECTION 12: Ecological information	
12.1. Toxicity	

12.1.	Toxicity	
Ecology - general		: Material insoluble in water. Material in fiber form may mechanically cause adverse effects if ingested by waterfowl or aquatic life.
		No ecotoxicological information is available for this product. These products are not considered degradable or toxic in terms of their physical impact. Material is expected to have low aquatic toxicity because of its insolubility in water.

12.2.	Persistence and degradability		
Mono	Monofilaments for 3D Printing		
Persis	tence and degradability	Not established.	
12.3.	Bioaccumulative potential		
Mono	Monofilaments for 3D Printing		
Bioaccumulative potential		Not established.	
12.4.	12.4. Mobility in soil		
No addi	No additional information available		
12.5.	Other adverse effects		
Effect on ozone layer : N		No additional information available	

Effect on the global warming	: No additional information available
Other information	: Avoid release to the environment.

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SECTION 13: Disposal consideration	IS
13.1. Waste treatment methods	
Waste disposal recommendations	: Recycle product or dispose safely. Can be incinerated according to local regulations. Incineration with energy recovery and landfill. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with applicable local, national and international regulations.
Ecology - waste materials	: Avoid release to the environment.
SECTION 14: Transport information	
In accordance with DOT	
Not regulated for transport	
Additional information	

Other information

: No supplementary information available.

ADR

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Monofilaments for 3D Printing	
WHMIS Classification	Not classified

EU-Regulations

This product does not contain as intentionally added additives or ingredients any Substances of Very High Concern (SVHC) banned by Directive 1907/2006 as of the list dated June 15, 2015.

Even though this nylon polymer is not considered electrical or electronic equipment (EEE) as defined by Directive 2011/65/EU, the same product do not contain as intentionally added additives or ingredients any of the restricted substances listed ANNEX II of Directive 2011/65/EU.

Lead, mercury, cadmium, and hexavalent chromium have not been intentionally added to the polymer and thus it is suitable for use in vehicles that need to be compliant with EU Directive 2000/53/EC (End of Life – Vehicles).

Azo dyes and other substances banned by EU Directive 2002/61/EC have not been intentionally added to this product.

The substances regulated by European Directive 1895/2005/EC have not ben intentionally added to this product.

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Regarding carcinogenic, mutagenic, and reproduction toxic substances (CMRs), the product portfolio listed on page 1 does not contain any banned or restricted substances in Categories 1, 2 and 3.

Classification according to Directive 67/548/EEC or 1999/45/EC

No additional information available

15.2.2. National regulations

This product in compliance with the U.S. Toxic Substance Control Act.

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The minerals regulated by the Dodd-Frank Wall Street Reform and Consumer Protection Act are not intentionally added to this product. These regulated minerals are not necessary to the functionality of or the manufacturing of this polymer.

15.3. US State regulations

This product does not contain any chemicals known in the state of California to cause cancer, as of the Proposition 65 List dated June 6, 2014.

SECTION 16: Other information	
Other information	: None.
NFPA health hazard	: 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.
NFPA fire hazard	: 1 - Must be preheated before ignition can occur.
NFPA reactivity	: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
HMIS III Rating	
Health	: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability	: 1 Slight Hazard
Physical	: 0 Minimal Hazard

SDS US (GHS HazCom 2012)

This product is NOT intended for use in medical implants.

The information contained herein is presented in good faith and is accurate to the best of our knowledge. MarkForged can not guarantee that any hazards listed herein are the only ones which may exist. MarkForged makes no warranty of any kind, expressed or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the material for their use. User must meet all applicable safety and health standards.