

conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

Product name:	PMMA filament				
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 1/11 -

1.1	Product identifier					
	Product name:	PMMA filament				
	Other means of identification:	not available				
	Registration number:	not required, the product is a mixture, not a compound				
.2	Relevant identified uses of	the substance or mixture and uses advised against				
	Identified uses:	material for 3D-printing				
	Uses advised against:	not set				
1.3	Details of the supplier of th	e safety data sheet				
	Distributor: (responsible for marketing)	Zemědělské družstvo Haňovice Haňovice 18 783 21 Chudobín Czech Republic tel.: +420 585 100 308 e-mail: <u>info@plastymladec.cz</u> web: <u>www.filament-pm.com</u>				
	Competent person responsible	le for the safety data sheet: PharmDr. Vladimír Végh, PHARMIS, info@pharmis.sk				
1.4	Emergency telephone num	ber				
		tre, Na Bojišti 1, Praha; 24-h non-stop: +420-224919293 / +420-224915402. isks: acute intoxications of people / animals.				
	TION 2: HAZARDS IDENT					
Gene The 1 No. 1 List (	eral classification of the mixtur mixture does not contain substa 1272/2008, with assigned a Con of Substances of very high Con pilation of the Safety Data She	e: the mixture is <b>not</b> classified as hazardous in compliance with Regulation (EC) 1272/2008 ances presenting a health or environmental hazard within the meaning of Regulation (EC) mmunity workplace exposure limit, classified as PBT/vPvB nor included in the Candidate				
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Gene The No. List o	eral classification of the mixtur mixture does not contain substa 1272/2008, with assigned a Con of Substances of very high Con pilation of the Safety Data She mation on safety at work, stora	e: the mixture is <b>not</b> classified as hazardous in compliance with Regulation (EC) 1272/2008 ances presenting a health or environmental hazard within the meaning of Regulation (EC) mmunity workplace exposure limit, classified as PBT/vPvB nor included in the Candidate acerns (SVHC). The et is not required for this mixture; however this Safety Data Sheet provides important age, transport and other manipulation. No adverse effects for human health are expected for the mixture under normal conditions of usage, the mixture is biologically inert. When melted, it can cause serious burns if contacted with skin and eyes. Ingestion of a small amount should not cause any troubles. Inhaling of loosen dust or potential decomposition products of melted/overheated mixture				
Gene The P No. 1 List of Com	eral classification of the mixtur mixture does not contain substa 1272/2008, with assigned a Con of Substances of very high Con pilation of the Safety Data She mation on safety at work, stora Important health effects: Important	e: the mixture is <b>not</b> classified as hazardous in compliance with Regulation (EC) 1272/2008 ances presenting a health or environmental hazard within the meaning of Regulation (EC) mmunity workplace exposure limit, classified as PBT/vPvB nor included in the Candidate hearns (SVHC). The set is not required for this mixture; however this Safety Data Sheet provides important age, transport and other manipulation. No adverse effects for human health are expected for the mixture under normal conditions of usage, the mixture is biologically inert. When melted, it can cause serious burns if contacted with skin and eyes. Ingestion of a small amount should not cause any troubles. Inhaling of loosen dust or potential decomposition products of melted/overheated mixture in high concentration can irritate moderately respiratory system and mucous membranes. No adverse effects in the environment are expected for the mixture; the mixture is almost biologically inert.				
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conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

Product name:		PMMA filament				
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 2/11 -	

	Hazard statements:	not required					
	Supplemental hazard information:	not required					
	Supplemental label elements for certain mixtures:	not required					
	Precautionary statements:	not required					
	Other required labeling:	not required					
.3 SEC	Other hazards Results of PBT and vPvB ass REACH, annex XIII; no sub Substances of very high cond	stances of the mixt cerns (SVHC).	ure in the a	amount of $\geq 0.1$ % a			
20	Product based on polymethy						
-	Substances						
.1	does not apply						
	does not apply Mixtures Substances presenting a heal	oosure limit, classif					ded
.2 ubs	does not apply <b>Mixtures</b> Substances presenting a heal a Community workplace exp tance	oosure limit, classif	fied as PBT	C/vPvB or included i EC Number CAS Number	n the Candidate Lis		ded Exposure
.2	does not apply <b>Mixtures</b> Substances presenting a heal a Community workplace exp tance	oosure limit, classif	ied as PBT ontent % w/w)	C/vPvB or included i EC Number CAS Number	n the Candidate Lis Classification 1272/2008/EC*	st: not inclu	ded Exposure limits -
.2	does not apply <b>Mixtures</b> Substances presenting a heal a Community workplace exp tance	bosure limit, classif	Tied as PBT ontent % w/w) ding of used of ironmental	C/vPvB or included i EC Number CAS Number Index Number - classification abbreviatio	n the Candidate Lis Classification 1272/2008/EC* - ns and Hazard Statemen meaning of Regulati	- uts (H-phrases	ded Exposure limits
.2 ubs EA	does not apply         Mixtures         Substances presenting a heal         a Community workplace exp         tance         CH Registration number         Other compounds         Other substances not present         1272/2008, without a Comm	bosure limit, classif Cd (%) - * For full wor ting a health or envolution unity workplace es	Tied as PBT ontent % w/w) ding of used of ironmental	C/vPvB or included i EC Number CAS Number Index Number - classification abbreviatio	n the Candidate Lis Classification 1272/2008/EC* - ns and Hazard Statemen meaning of Regulati	- uts (H-phrases	ded Exposure limits

#### 4.1 Description of first aid measures

Health hazard is no minimal, being neither irritating, corrosive, volatile, nor toxic. Effects of over exposure: There are no hazards under normal use conditions. Observe all user considerations and safety measures stated on the packaging. In case of any health problem or uncertainty seek medical attention and provide information from this Material Safety Data Sheet. Unconscious persons place in the stabilized position and observe the breathing. Never give any fluids to unconscious persons. Be careful when manipulating hot products - danger of skin burns.

conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

Product name:		PMMA 1	filament		Page:
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 3/11 -

	Inhalation: No adverse effects are expected under normal conditions of use. Direct inhalation expected. Dust or potential decomposition products of melted/overheated mixture in concentration can cause airway irritation. In this case remove the affected persons to For those providing assistance, avoid exposure to yourself or others. Use adequate r protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, se medical assistance. If breathing has stopped, assist ventilation with a mechanical de mouth-to-mouth resuscitation. Call immediately medical emergency.					
	Skin contact:	In case of a	effects are expected under normal conditions of use - no special requirements needed. skin contact with melted polymer do not remove it from the skin. Cool down the burnt stream of cold water and call the professional medical help.			
	Eye contact:	Dust or pote advice if the	effects are expected under normal conditions of use - no special requirements needed. ential decomposition products of melted polymer can cause eye irritation. Seek medical e eye irritation persists. Direct contact of eye with melted product can cause serious eye ek professional medical help immediately.			
	Ingestion:		effects are expected under normal conditions of use - no special requirements needed. Sexposure is not expected.			
4.2	<ul> <li>Most important symptoms and effects, both acute and delayed</li> <li>No adverse effects for human health are expected for the mixture under normal conditions of usage, the mixture is biologically inert. When melted, it can cause serious burns if contacted with skin and eyes. Ingestion of a small amount should not cause any troubles. Inhaling of loosen dust or potential decomposition products of melted/overheated mixtu in high concentration can irritate moderately respiratory system and mucous membranes.</li> </ul>					
4.3			edical attention and special treatment needed supportive and symptomatic treatment.			
SEC	TION 5: FIREFIG	HTING MEAS	URES			
5.1	Extinguishing m	edia				
	Suitable extinguis		water spray, alcohol resistant foam, dry-powder, carbon dioxide			
			direct water stream - could spread fire			
5.2	Flammable. Incor	nplete combusti carbon monoxid	<b>te substance or mixture</b> toon and thermolysis may produce toxic, irritating and flammable decomposition de, carbon dioxide, sooth, aldehydes and other products of organic compounds nokes.			
5.3	Advice for fire-fighters         Fire Fighting Procedures:       Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Fight fire from protected location or safe distance. Move container from fire area if this is possible without hazard. If possible, avoid leaked water to enter sewage system or environment.					
	protective firefigh	nting clothing (in refighting opera	<u>Firefighters:</u> Wear positive-pressure self-contained breathing apparatus (SCBA) and ncludes firefighting helmet, coat, trousers, boots, and gloves). Avoid contact with this tions. If contact is likely, change to full chemical resistant firefighting clothing with us. For protective equipment in post-fire or non-fire clean-up situations, refer to the			
SEC	self-contained bre	6 and 8.	· · · · ·			

should be restraint. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

6.2 Environmental precautions No special requirements are needed.

Filament 🕅	SAFETY DATA SHEET conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830
Product name:	PMMA filament

Product name:		PMMA 1	filament		Page:
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 4/11 -

Fi	lame	ent 🕅	SAFETY DATA SHEET conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830					)	
Produ	ict name:			Р	MMA	filament			Page:
Date	of compilation	n/revision	1.5.2018	Version: 1.	. 0	Replaces:	-		- 5/11 -
6.3 6.4	Collect mec recycle.	nd materials for hanically. All sto to other sections instructions in the	rage vessels hav	ve to be labeled.	Dispose	according to va	alid legislation (s	ee Sectio	on 13);
SEC		NDLING AND S							
SEC		NDLING AND 5	IURAGE						
7.1	Observe all requirement with adequa sources of is compounds	s for safe handlin user consideratio is for personal pro- te ventilation. Ob- gnition, smoking may be released. resents a potential punded.	ns, safety measure otective equipmon oserve all fire pr is prohibited). I Thus suction an	ent. Avoid breatl otection measure During the produ nd discharge of t	hing dec es (work ct's ther hese emi	omposition pro- with open flam mal treatment s issions must be	ducts or loosened ne is prohibited, r mall amounts of locally secured.	d dust. Us emove al volatile o Dust fror	se only ll possible organic m the
7.2	Observe all	for safe storage, fire protection mo prohibited). Keep	easures (work w	vith open flame i	s prohib		possible sources	s of igniti	on,
7.3	Specific end material for	<b>d uses</b> 3D-printing							
SEC	TION 8: EXF	POSURE CONT	ROLS/PERSO	ONAL PROTEC	CTION				
8.1	Control par	rameters							
	Indicative o 2017/164/E	ccupational exposed C): not set	sure limit ES (2	000/39/EC, Dire	ctive 20	06/15/EC, Dire	ctive 2009/161/E	EC and D	irective
	CAS	Substance nam	ne		Indicati	ve occupationa	l exposure limit		
	-	-			-				
	National wo	ork-place / occupa	tional exposure	limits (only sele	ected lan	ds are displayed	d):		
	CAS	Substance nan	ne		Оссира	tional exposure	e limits		
	9011-14-7	polymethylme as: polyacryla			Czech r PELc (Govern	•	5.0 1 5.0 non no. 361/2007	mg.m <sup>-3</sup> Coll.)	
		hysical status, this typ		t expected, however	mechanica	l grinding/ cutting	can release the dust		
		iological limits: r							
	Other recon	nmended values:	not set						
	CAS	Substance nam	ne		OEL - e	equivalents			
	-	-			-				
		available for the							
	PNEC: not a	available for the r	nixture.						

Fil	ament	

8.2

Odour threshold:

Flash point:

Melting point/freezing point:

Initial boiling point and boiling range:

pH:

## SAFETY DATA SHEET

conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

Product name:		PMMA filament				
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 6/11 -	

Exposure controls					
Appropriate engineering controls:					
good personal hygiene measures, such as v smoking. Routinely wash work clothing an clothing and footwear that cannot be cleane conditions such as applications, handling p	id contact with skin, eyes and mucous membranes. Avoid prolonged or repeated contact with skin. Always observe d personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or king. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated hing and footwear that cannot be cleaned. Personal protective equipment selections vary based on potential exposure ditions such as applications, handling practices, concentration and ventilation. Information on the selection of ective equipment for use with this material, as provided below, is based upon intended, normal usage.				
Individual protection measures, such as per	rsonal protective equipment:				
<ul> <li>a) Eye / face protection</li> <li>No special requirements are needed under normal conditions of usage. Avoid contact with eyes. If risk of eye contact exists, use safety glasses with side shields (EN 166).</li> </ul>					
use heat isolating gloves made of para-a	ler normal conditions of usage. When ma aramid/carbon with thermal isolation up t , Karbo TECT with leather forearm cuffs	to 270°C and forearm protection.			
NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should a take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be hand physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier. Immediately change damage gloves					
workplace. Do not inhale decomposition operations. If engineering controls do n to protect worker health, an approved re- be in accordance with regulatory requir- include: half-face particle filter respirate	ler normal use conditions. Ensure approp n products from overheated product or du ot maintain airborne contaminant concen espirator may be appropriate. Respirator ements, if applicable. Types of respirator or, type P1 or FFP1filter (European Com e respirator masks and EN 149 and 143 (F	ust produced by mechanical trations at a level which is adequate selection, use, and maintenance must is to be considered for this material mittee for Standardization (CEN)			
<ul> <li>d) Thermal hazards: No such risk when normally used.</li> </ul>					
by applying appropriate control measur	regulations limiting discharge to air, wat es to prevent or limit emissions. All stora akage. See information in sections 6 and	age and manipulation are have to be			
ION 9: PHYSICAL AND CHEMICAL P	ROPERTIES				
Information on basic physical and chem	ical properties				
Properties	value	method / condition			
Appearance:	solid wire	20°C			
Colour:	colourless / clear	-			
Odour:	no odour	-			

information not available

information not available

information not available

information not available

215 - 235°C

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conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

D 1					
Product name:	PMMA filament				Page:
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 7/11 -

Evaporation rate:	information not available	-
Flammability (solid, gas)	information not available	-
Upper/lower flammability or explosive limits:	information not available	-
Vapour pressure:	information not available	-
Vapour density:	information not available	-
Relative density:	1,17 g/cm <sup>3</sup>	ISO 1183/B
Solubility/ies:	insoluble in water soluble in chlorinated solvents, aromatic solvents, esters	water, 20°C
Partition coefficient: n-octanol/water:	information not available	-
Auto-ignition temperature:	information not available	-
Decomposition temperature:	information not available	-
Viscosity:	information not available	-
Explosive properties:	no explosive properties	-
Oxidising properties:	no oxidative properties	-
Other information		
vicat softening temperature:	108°C	ISO 306
heat deflection temperature:	100°C	ISO 75
light transmittance:	92 %	ASTM D-1003
refractive index B:	1,49	ISO R-489

#### SECTION 10: STABILITY AND REACTIVITY

10.1	<b>Reactivity</b> Not reactive under normal conditions of storage and manipulation.
10.2	<b>Chemical stability</b> Mixture is chemically stable under normal conditions of storage and manipulation. Overheating may cause thermal decomposition.
10.3	Possibility of hazardous reactions Not known.
10.4	Conditions to avoid Not known.
10.5	Incompatible materials Not known.
10.6	Hazardous decomposition products Material does not decompose at ambient temperatures. Incomplete combustion and thermolysis may produce toxic, irritating and flammable decomposition products (such as carbon monoxide, carbon dioxide, sooth, aldehydes and other products of hydrocarbons decomposition).
SECT	TION 11: TOXICOLOGICAL INFORMATION
11.1	<b>Information on toxicological effects</b> No adverse effects for human health are expected for the mixture under normal conditions of usage, the mixture is biologically inert.

<i>a</i> )	Acute toxicity
	Based on available data, the classification criteria are not met. Based on composition, the mixture has low acute toxicity

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conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

Product name:	PMMA filament				
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 8/11 -

<u>Filament</u> 🕅

	and no adverse effects for human health are expected under applicable conditions of exposure.
<b>b</b> )	Skin corrosion/irritation
D)	Based on available data, the classification criteria are not met. The mixture has no direct corrosive / irritating properties. Melted product may cause serious burns following the contact with the skin.
c)	<i>Serious eye damage/irritation</i> Based on available data, the classification criteria are not met. The mixture has no direct corrosive / irritating properties. Melted product may cause serious burns following the contact with the eyes.
d)	Respiratory or skin sensitisation Based on available data, the classification criteria are not met.
e)	<i>Germ cell mutagenicity</i> Based on available data, the classification criteria are not met.
<i>f</i> )	<i>Carcinogenicity</i> Based on available data, the classification criteria are not met.
<i>g</i> )	<i>Reproductive toxicity</i> Based on available data, the classification criteria are not met.
h)	<i>STOT-single exposure</i> Based on available data, the classification criteria are not met. Inhalation of dust loosened dust during manipulation can mechanically irritate airways. However, these effects do not require classification.
i)	STOT-repeated exposure Based on available data, the classification criteria are not met.
j)	Aspiration hazard Based on available data, the classification criteria are not met.
SECT	ION 12: ECOLOGICAL INFORMATION
	No adverse effects in the environment are expected for the mixture; the mixture is biologically almost inert.
12.1	<b>Toxicity</b> No data measured for the mixture. No adverse effects in the environment are expected for the mixture; the mixture is almost biologically inert.
12.2	<b>Persistence and degradability</b> Within the environment, it is almost inert material with a very slow decomposition.
12.3	Bioaccumulative potential The mixture has no bioaccumulative potential.
12.4	Mobility in soil No data for the mixture. Insoluble in water, mobility in soil is not expected.
12.5	<b>Results of PBT and vPvB assessment</b> Results of PBT and vPvB assessment: The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII; no substances of the mixture in the amount of $\geq 0.1$ % are included in the Candidate List of Substances of very high concerns (SVHC).
12.6	Other adverse effects not known
SECT	ION 13: DISPOSAL CONSIDERATIONS
13.1	Waste treatment methods It is recommended to dispose all rests in authorized dangerous waste facility. Disposal has to comply all local legal requirements on wastes.
	Substance or mixture disposal methods: Dispose in accordance with the valid waste legislation. Do not dispose as a common household waste. Dispose in a certified waste facility / recycle. According to the European Waste Catalogue waste codes are not specific for product,

<u>Filament</u>		confor	rms to Regulation EC No. 19	<b>FY DATA SI</b> 007/2006 (REACH), Reg ission Regulation EU No	gulation EC No. 1272/2008 (CLP)	
Produ	ct name:		PMM	A filament		Page:
Date of	of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 9/11 -
	but for its use. Therefore, appendix for its use. Therefore, appendix for the value of the value	n, based on the m emical Processes J of plastics, synt ttic 3 n, based on the m ents, wiping cloth separately collect card board packa y package: 15 01	nost common use: thetic rubber and mar nost common use: hs, filter materials and red municipal packagi aging / plastic packagi	1-made fibres	- 	
SECT	ION 14: TRANSPORT INF	ORMATION				
The su	ubstance <b>is not</b> classified as da	angerous for tran	sport according to AI	DR/RID/IMDG/IC	AO/IATA.	

14.1 UN Number: -

14.2	UN proper shipping name							
	Road transport ADR	Rail transport RID	Int. maritime trans. IMDG	Air transport ICAO/IATA				
	-	-	-	-				
14.3	Transport hazard class(	es)		1				
	Road transport ADR	Rail transport RID	Int. maritime trans. IMDG	Air transport ICAO/IATA				
	-	-	-	-				
	Classification code			1				
	-	-	-	-				
	Hazard identification number (Kemler)							
	-	-	-	-				
	Labels							
	-	-	-	-				
	Other remarks							
	-	-	-	-				
14.4	Packing group							
	Road transport ADR	Rail transport RID	Int. maritime trans. IMDG	Air transport ICAO/IATA				
	-	-	-	-				
14.5	Environmental hazards:	no		1				
14.6	Special precautions for u	ser: not required						
14.7	Transport in bulk accor	ding to Annex II of MARPO	L and the IBC Code: not transpor	ted				

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SAFETY DATA SHEET conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

Product name:	PMMA filament				
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 10/11 -

SECT	SECTION 15: REGULATORY INFORMATION						
15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture						
	Relevant legislation of European Union:						
	- Regulation (EC) No 19 Chemicals (REACH)	Regulation (EC) No 1907/2006 of the European Parliament and of the , concerning the Registration, Evaluation, Authorization and Restriction of					
		Regulation EC No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006					
	<ul> <li>Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)</li> </ul>						
	<ul> <li>Commission Directive 2000/39/EC of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work</li> </ul>						
		<ul> <li>Commission Directive 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC</li> </ul>					
	<ul> <li>Commission Directive 2009/161/EU of 17 December 2009 establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC</li> </ul>						
		<ul> <li>Commission Directive (EU) 2017/164 of 31 January 2017 establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC</li> </ul>					
	Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles: none						
	Designation of the st of the mixture	ubstance, of the group of substances or	Conditions of restriction				
	-		-				
15.2	Chemical safety ass Chemical safety asse	essment essment not carried yet					
SECT	ION 16: OTHER IN	IFORMATION					
<i>a</i> )		Changes made to the previous version of the safety data sheet Not applicable, first edition - version 1.0					
	<i>Yey or legend to abbreviations and acronyms used in the safety data sheet</i>						
	Exp. lim.	p. lim. Exposure limit					
	NPEL						
	PEL The highest permissible exposure limit (Czech Republic)						
	OEL PBT						
	vPvB Substances very persistent and very bioacumulative						
	VOC Volatile organic compound						
	DNEL	Derived No Effect Level					
	PNEC	Predicted No Effect Concentration					
	BW	Body weight					
	LD50	Median lethal Dose					
	LC50	Median lethal concentration					
	EC50	Half maximal effective concentration					
	IC50	Half maximal inhibitory concentration	tomational Comisso of Dangerous Coode by Dood				
	ADR RID	European Agreement concerning the In International Rule for Transport of Dan	ternational Carriage of Dangerous Goods by Road				
	IMDG	International Maritime Dangerous Good					
	ICAO	International Civil Aviation Organizatio					
	IATA	International Air Transport Association					
<i>c)</i>	Key literature refere	nces and sources for data					

conforms to Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830

Product name:	PMMA filament				Page:
Date of compilation/revision	1. 5. 2018	Version: 1.0	Replaces:	-	- 11/11 -

	No information		
d)	) <i>Methods of evaluating information used for the purpose of classification</i> The substance was classified by expert judgment and conventional calculations methods in accordance with the Regulation EC No. 1272/2008 (CLP).		
e)	<i>Full wording of used Hazard Statements (H-phrases)</i> not used		
<i>f</i> )	Advice on any training appropriate for workers Before handling, storing or using the present substance for the first time, employees must be informed - common training for handling chemicals, occupational safety training.		
<i>g)</i>	<i>Other information</i> Safety Data Sheet (SDS) is compiled in accordance with the Regulation EC No. 1907/2006 (REACH), Regulation EC No. 1272/2008 (CLP) and Commission Regulation EU No. 2015/830; and contains information on safety use, occupational health protection, and environmental protection. The information contained herein is given in good faith and is accurate to the best of knowledge at the date indicated above. This particular information applies on the product as supplied and may not be valid in mixtures with other substances. If used for other purposes as identified in this SDS, the distributor is not liable for any damage.		
	The information given herein in no way dispenses the user from knowing and applying all provisions regulating his activity. The user bears sole liability for the precautions required when using the product. The regulatory texts indicated herein are intended to aid the user to fulfill his obligations. This list is not to be considered complete and exhaustive. It is the user's responsibility to ensure that he is subject to no other obligations than those mentioned.		

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<u>Filament</u>