


Product				
Mfr Item Number	Mfr Item Name	Version	Mfr Site	Date
STM32F446ZCT6	P21A*421XXA	A	9998	2019-06-08
	Amount	UoM	Unit type	ST ECOPACK Grade
	1315.00	mg	Each	ECOPACK® 2
	Comment	ECOPACK® 2 is STMicroelectronics trade name for ROHS compliant device without Brominated and Chlorinated compound (900ppm) and without Antimony oxide flame retardant (in each organic material)		

Manufacturing information				
J-STD-020 MSL Rating	Classification Temp	Nbr of Reflow Cycles		 life.augmented
3	260	3		
bulk Solder Termination	Terminal Plating	Terminal Base Alloy	Comment	
Not Applicable; if coating is used or other bulk termination	Nickel/Palladium/Gold (Ni/Pd/Au)	Copper Alloy		

Package Designator	Size	Nbr of instances	Shape	
QFP	20x20x1.4	144	L Bend	
Comment	Package : 1A LQFP 144 20X20X1.4 2 0099183			

QueryList : RoHS Directive 2011/65/EU-July 2011 – Annex II amended by Directive 2015/863-April 2015	
Query	Response
1 - Product(s) meets EU RoHS requirement without any exemptions	TRUE
2 - Product(s) meets EU RoHS requirements except lead in solder and this usage may qualify under the lead in solder '7b' exemption (other selected exemptions may apply)	FALSE
3 - Product(s) meets EU RoHS requirements by application of the selected exemption(s)	FALSE
4 - Product(s) does not meet EU RoHS requirements and is not under exemptions	FALSE
Exemption Id.	Description

QueryList : REACH-15th January 2019				
Query				Response
1 - Product(s) does not contain REACH Substances Of Very High Concern above the limits per the definition within REACH				TRUE
CategoryLevel_Name	CategoryLevel_Threshold	amount in product (mg)	Application	ppm in product

Material Composition Declaration : note : Substance present with less 0.001mg will not be declared in this document						Mfr Item Name	P21A*421XXA				6999999.0	992249.0
Homogeneous Material	Material Group	Mass	UoM	Level	Substance Category	Substance	CAS	Exempt	Mass	UoM	Concentration in homogeneous material (ppm)	Concentration in product (ppm)
Die or dies	M-011 Other inorganic materials	13.206	mg	supplier	die	Silicon (Si)	7440-21-3		12.541	mg	949644	9537
				supplier	metallization	Aluminium (Al)	7429-90-5		0.047	mg	3559	36
				supplier	metallization	Copper (Cu)	7440-50-8		0.302	mg	22868	230
				supplier	metallization	Cobalt (Co)	7440-48-4		0.001	mg	76	1
				supplier	metallization	Tantalum (Ta)	7440-25-7		0.042	mg	3180	32
				supplier	metallization	Tungsten (W)	7440-33-7		0.136	mg	10298	103
				supplier	Passivation	Silicon Nitride	12033-89-5		0.035	mg	2650	27
				supplier	Passivation	Silicon Oxide	7631-86-9		0.102	mg	7724	78
LEADFRAME (MHT- C194)	M-011 Other inorganic materials	240.008	mg	supplier	ALLOY	Copper (Cu)	7440-50-8		234.008	mg	1000000	177953
				supplier	ALLOY	Iron (Fe)	7439-89-6		5.640	mg	940000	4289
				supplier	ALLOY	Zinc (Zn)	7440-66-6		0.288	mg	48000	219
				supplier	ALLOY	Metallic Phosphorus (P)	7723-14-0		0.072	mg	12000	55
LEADFRAME (MHT - PPF Plating)	M-011 Other inorganic materials	10.503	mg	supplier	COATING	Nickel (Ni)	7440-02-0		10.188	mg	970000	7748
				supplier	COATING	Palladium (Pd)	7440-05-3		0.158	mg	15000	120
				supplier	COATING	Gold (Au)	7440-57-5		0.158	mg	15000	120
DIE ATTACH (Sumitomo - CRM-1076Y)	M-011 Other inorganic materials	2.900	mg	supplier	GLUE	Silver(Ag)	7440-22-4		2.030	mg	700000	1544
				supplier	GLUE	Epoxy Resin A	9003-36-5		0.145	mg	50000	110
				supplier	GLUE	Silica fused (SiO2)	7631-86-9		0.290	mg	100000	221
				supplier	GLUE	Dicyandiamide	461-58-5		0.015	mg	5000	11
				supplier	GLUE	Diluent	3101-60-8		0.145	mg	50000	110
				supplier	GLUE	Allyl Compound	Proprietary		0.145	mg	50000	110
				supplier	GLUE	Hardener	Proprietary		0.131	mg	45000	99
BONDING WIRE (Heesung - Au HTS)	M-011 Other inorganic materials	2.529	mg	supplier	BONDING WIRE	Gold (Au)	7440-57-5		2.504	mg	990050	1904
				supplier	BONDING WIRE	Palladium (Pd)	7440-05-3		0.025	mg	9900	19
				supplier	BONDING WIRE	Calcium (Ca)	7440-70-2		0.000	mg	50	0
ENCAPSULATION (Sumitomo - G631H)	M-011 Other inorganic materials	1045.853	mg	supplier	MOLDING COMPOUND	Epoxy Resin A	Proprietary		20.737	mg	20000	15769
				supplier	MOLDING COMPOUND	Epoxy Resin B	85954-11-6		41.474	mg	40000	31539
				supplier	MOLDING COMPOUND	Silica Amorphous A	60676-86-0		822.933	mg	785000	618052
				supplier	MOLDING COMPOUND	Silica Amorphous B	7631-86-9		88.131	mg	85000	67020
				supplier	MOLDING COMPOUND	Carbon Black	1333-86-4		5.184	mg	5000	3942
				supplier	MOLDING COMPOUND	Phenol Resin	Proprietary		67.395	mg	65000	51251