

CERTIFICATE OF ANALYSIS

Product Name : Amine 33 Catalyst
 Batch No. : _
 Formula : Unspecified
 Cas No : Not data available
 Date Of Analysis : September 17,2015

JEFFCAT® catalysts

Huntsman's large and growing family of unique industry-leading JEFFCAT® catalysts brings strength, power and speed to a wide range of urethane applications. The widespread use of these catalysts in making polyether and polyester foams, coatings, elastomers, and high-modulus urethane plastics, attests to the value of our advanced technologies and our 40-plus years of experience with urethane chemicals.

JEFFCAT® catalyst	Description	Typical Properties					Typical Applications							
		OH Number, mg(OH/g)	Viscosity, cSt at 25°C	Boiling Point, °C	Freezing Point, °C	Flash Point, °C	Specific Gravity 20/20°C	Flexible Foam		HR Molded	Microcellulars	Elastomers, RIM, RIMM	Rigid Foam, Packaging Foam	Coatings, Adhesives
Ester	Ether													
GENERAL-PURPOSE CATALYSTS														
ZF-20	<chem>CN(C)CCOCCN(C)C</chem> Bis-(2-dimethylaminoethyl)ether – A very strong, highly efficient blowing catalyst.		1	189	<-70	64 DIN 51755	0.85							
ZF-22	70% ZF-20 in dipropylene glycol	251	4	188*	<-60	73 TCC	0.90							
ZF-24	23% ZF-20 in dipropylene glycol	644	36	204*	-40	93 TCC	0.98							
ZF-26	11% ZF-20 in dipropylene glycol	744	56	210*	-30	99 TCC	1.00							
DMEA	<chem>CN(C)CCO</chem> N,N-dimethylethanotamine	629	4	135	-59	41 TCC	0.89							
TD-33A	33% TEDA in dipropylene glycol	558	104	180*	<-25	91 PMCC	1.03							
BDMA	<chem>CN(C)CC1=CC=CC=C1</chem> Benzyl-dimethylamine		1	181	-75	54 TCC	0.90							
DMCHA	<chem>CN(C)C1CCCCC1</chem> N,N-dimethylcyclohexylamine – Widely used catalyst for all types of rigid foams.		1	160	<-78	40 PMCC	0.85							
PMDETA	<chem>CN(C)CCN(C)CCN(C)CCN(C)C</chem> Pentamethyldiethylenetriamine – Especially useful as catalyst for HCFC/water-blown rigid foams.		2	201	-52	77 DIN 51758	0.83							
ZR-40	<chem>CN(C)CCN(C)CCN(C)CCN(C)C</chem> N,N,N',N',N''-pentamethyl-dipropyltriethylenetriamine – Very useful in cold-molded HR foams. Low odor catalyst with a good balance between gel and blow.		3	227	-78	92 PMCC	0.83							
FLEXIBLE POLYESTER FOAM CATALYSTS														
NEM	<chem>CN1CCOCC1</chem> N-ethylmorpholine – Promotes surface cure for flexible polyester foams and excellent processing in polyester-based flexible foams.		1	138	<-60	32 DIN 51758	0.91							
NMM	<chem>CN1CCOCC1</chem> N-methylmorpholine – Good solubilizer in making polyester foams. Also useful in high rise rigid molded applications.		1	116	-66	13 DIN 51758	0.92							
DMP	<chem>CN1CCN(C)CC1</chem> Dimethylpiperazine – Good catalyst in making polyester foams. Also promotes surface cure in different applications.		n.d.	132	-1	22 TCC	0.84							
MM-70	Reduced odor amine catalyst blend for flexible polyester foams.		2	157*	-80	41 TCC	0.94							
DM-70	Improves green strength and can be used for charcoal polyester-based flexible foams.		7	151*	-32	39 TCC	0.99							

* Initial boiling point ° with decomposition † theoretical OH Number including polyol, amine, acid and water functionalities n.d. not determined

Remark:
 This certificate refers to COA Maker

PT..Pancasakti Putra Kencana



SUDIRO S.Si.
 Quality Control