VULCOFAC TAIC-70

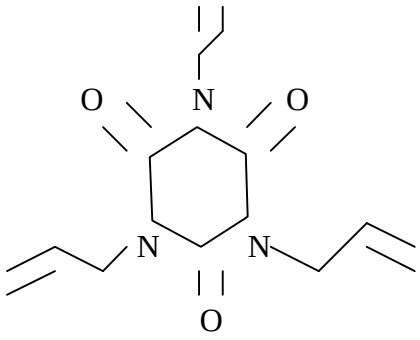
04.2007

- Composition :

. Active ingredient :

. Triallyl isocyanurate

. Formula : (C_{12} H_{15} N_3 O_3)



. N° CAS : 1025 – 15 – 6

. N° EINECS : 213 – 834 – 7

- Supplier :

. Origin : Safic-Alcan UK

. Availability : regularly available

- Function :

. Main function :

. Crosslinking agent for peroxide cure elastomers

. Compatibility :

. good compatibility with :

- EPDM
- FKM
- CPE
- Q
- EVA
- Vamac
- HNBR

. Final uses :

. fire resistant cable sheating

. cable insulations

. gaskets

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- **Synonyms :**

. 1,3,5 – triallyl isocyanurate
. 1,3,5 – triallyl isocyanuric acid
. Triallyl – s – triazine –2,4,6 – trione
. Isocyanuric acid triallyl ester
. 1,3,5 – tri – 2 propenyl –1,3,5 triazine – 2,4,6 - trione

- **Caracteristics :**

. Reactive polyfunctional triazine

. Tri functional allylic monomer
⇨ the effectivness of allylic crosslinking coagent is much more superior to vinyl compound (because radicals created in allylic compounds are stabilized by the allylic resonance)

. It has a thermally stable triazine ring

. It is used as crosslinking agent (co activator) for peroxide or radiation crosslinking elastomers

. TAIC cured vulcanisaes show improved :
- crosslinking density (higher modulus , higher hardness)
- compression set (very low compression set)
- lower compound viscosity
- better oil , fuel and chemical resistance
- heat resistance (because of the triazine ring)

. TAIC has minimal effect on scorch compared to coagents like TMPTMA , ZDMA , HVA 2

. TAIC enhances the electrical properties of elastomer

. TAIC improved also resistance to hydrolysis and weathering

. Liquid above 27 °C

. At low temperatures (below 10 °C) , the dry liquid tends to crystallise and depending on the storage conditions , the state of aggregation may change which leads to caking of the powder ; the product will easily revert to a free-flowing powder by mechanical influence
⇨ To maintain the physical form of the product , it is recommended to store the dry liquid at temperature between 10 and 20 °C

. Level range : from 0.5 to 4 phr of active TAIC

⇨ as dosage of peroxide and co activator , we recommend approximately 2:1

. In FKM , the standard level of TAIC is 3 phr

⇨ a lower level of TAIC will result in lower modulus and hardness and higher elongation with a minimal impact on compression set

⇨ higher levels of TAIC , up to 5 phr will increase modulus and hardness , modestly improve compression set and increase the flow

. In polyolefins , TAIC offers a superior insolubility to solvents and the tensile strength at high temperature could be improved

. In CPE , TAIC is effective modifier to heat resistance with increasing of crosslinking density (TAIC acts as an acceptor of HCI which is involved from CPE)

. In EVA , TAIC is the most effective coagent for crosslinking EVA

⇨ the effectivness of crosslinking coagent which acts in peroxide crosslinking of EVA is as follow :

TAIC = TAC > TMPTMA > EGDMA

. In EPDM , TAIC preferably contributes to promote crosslinking rate and also to improve its heat resistance , compression set and abrasion resistance

. In HNBR / HXNBR , TAIC at a level of 1.5 phr can be used

. TAIC is effective to improve of crosslink density in the vulcanisation of millable polyurethane

. It is less reactive than other vinyl type monomers

. Other functions :

- crosslinking agent for plastic
- intermediate for flame retardant

. Raw materials :

- cyanuric chloride

- Typical formulations :

1 /	- FKM (Viton GFLT)	100	phr
	- ZnO	3	
	- MT Black N 990	30	
	- TAIC	3	
	- Luperox 101 XL	3	

2 /	- CPE	100	phr
	- Barium sulfate	30	
	- Titanium dioxide	25	
	- Calcium silicate	25	
	- TAIC	3	
	- Paraffin wax	3	
	- Chlorinated paraffin	10	
	- 2,5-dimethyl hexane peroxide	3	
3 /	- EVA	100	phr
	- Stearic acid	1	
	- Carbon black	50	
	- ZnO	5	
	- TAIC	3	
	- Dicumyl peroxide		1
4 /	- CM	100	phr
	- Lead dispersion	10	
	- Carbon black N550	40	
	- TOTM	15	
	- TAIC	2	
	- Perkdox 17/40	7	

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- **Technical Specifications :**

. Appearence :	White / Off white powder	
. Ash residue :	27 - 33	%
. Molecular mass (active ingredient) :	249.27	g / mol
. Density 15 °C (active ingredient) :	1.17	
. Active substance (active ingredient):	98 - 100	%
. Viscosity 25 °C (active ingredient) :	230	mPas
. Bromine value (active ingredient) :	183 - 188	
. Melting point (active ingredient) :	23 - 25	°C
. Boiling point (active ingredient) :	149-152	°C
. Purity (active ingredient) :	90 min	%
. Acid value (active ingredient) :	< 1	
. Solubility :		
. Packaging :	20 kg carboard box	
. Shelf life :	3 months	

- **Dangers :**

. Handling risk :		
	. R 22	Harmful if swallowed
. Transport Risk :	no danger	