

UNICELL-G Series

Description

UNICELL-G series, the trade name of dinitrosopentamethylenetetramine, is widely recognized as one of the longest-established and most cost-effective foaming agents for plastics and rubbers, offering non-staining and non-discoloring properties.

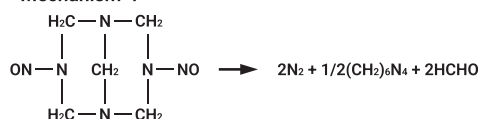
UNICELL-G series is usually mixed with oils and inorganic fillers to increase improve thermal stability and minimize handling sensitivity.

Properties of UNICELL-G series

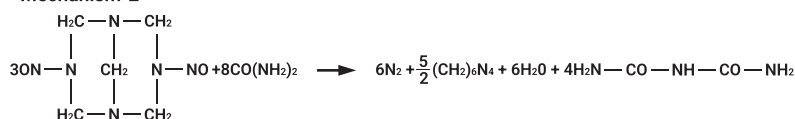
Item	Specification		
Grade Name	G	GP9	GP5
Chemical Name	N,N'- dinitrosopentamethylenetetramine		
Appearance	Fine Lemon Yellow Powder		
Decomposition Temperature (°C)	197~203	197~203	202~208
Gas Volume (ml/g, at 25°C)	200~210	200~210	165~175
Moisture Content (%)	0.5 max.		
Specific Gravity (at 25°C)	1.45		
Decomposition Heat (kcal/mol)	100		
Molecular Weight	186.17		
Solubility (g sample/ 100ml solvent, at 20°C)	Soluble in Water: 0.48 MEK: 1.6 Alcohol: 0.3 Insoluble in almost organic solvents Can be exploded by strong acid, strong base and other oxidizing agent		
CAS No.	101 - 25 - 7		

Decomposition of UNICELL-G series

<Mechanism-1>



<Mechanism-2>



When **UNICELL-G** decomposes alone by heat (Mechanism-1), 2 moles of nitrogen gas, 2 moles of formaldehyde, and 0.5 mole of hexamethylene tetramine are produced per mole of **UNICELL-G**. Formaldehyde and hexamethylene tetramine can cause unpleasant odors in foams. The odor can be partially reduced by adding urea, melamine, or certain amino compounds. Therefore, when **UNICELL-G** decomposes with the UNIPASTE series (Mechanism-2), the unpleasant odor is reduced. If **UNICELL-G** comes into contact with strong acids, it decomposes immediately and may cause fire.

The decomposition rate of **UNICELL-G** series can be increased by adding chemicals such as salicylic acid, phthalic anhydride, and urea-based compounds (UNIPASTE). Among these activators, urea-based compounds are considered the most suitable because they enhance storage stability and are well suited for rubber vulcanization systems.

Applications

UNICELL-G series is one of the most widely used foaming agents in the rubber industry, but it has limitations in plastics due to the highly exothermic decomposition reaction and the unpleasant odor of the residues.

*N,N'- dinitrosopentamethylenetetramine

*The most cost-effective foaming agents for rubber foams