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MONSIEUR COMPANY
Organic Chemicals Division
St. Louis Research Department

Research Report No. P-1342

TEMPERATURE PROCESS
FOR
WESTINGHOUSE WESTINGHOUSE 54201-KA

Job No. 2-02-760.01-4010

11, 1964

Reported by: J. D. Sullivan

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INTRODUCTION

Westinghouse has placed an order for an 8,000-gallon tank car of this new Inerteen blend. Westinghouse has assigned a new part number, 54201-KA, to this Inerteen formulation which will be sold in bulk only to Westinghouse at Sharon. It will contain Inerteen PPO as now purchased by Westinghouse at the new Inerteen plant. The new Inerteen will contain 69.9% Aroclor 1254, trichlorobenzene and 0.2% phenoxy propene oxide. Active continues in the Inerteen Transformers operating for 1242, and our ultimate goal is the use of 100% of these transformers.

MANUFACTURING PROCESS

This new Inerteen 54201-KA is prepared by thoroughly mixing a small amount of phenoxy propene oxide (PPO) into a mixture of Aroclor 1254 and trichlorobenzene (TCB).
Standard Manufacturing Process for Pyranols and
- Department A-240, Issued 8-4-64.

RAW MATERIALS

The weights for 100 pounds of Inerteen 54201-KA are

Aroclor 1254	69.9 pounds
Trichlorobenzene	29.9 pounds
Phenoxy propene Oxide	0.2 pounds

MANUFACTURING DETAIL

In a dry vessel, equipped with an agitator, charge 29.9 pounds of trichlorobenzene (TCB) and 69.9 pounds of Aroclor 1254 and heat to 50-60°C. Add 0.035 pounds of earth and stir at 60-65°C for 3 hours. The mixture is then circulated through Sparkler filter press for 16 oz. control sample is taken from the discharge of the filter press and analyzed for inorganic chlorides, specific gravity, and refractive index. If the sample shows the batch to be out of specifications, portions of TCB or Aroclor 1254 are added to the batch. Subsequent control sample indicates that the batch is in specifications. Frequently it is necessary to reduce the portions of TCB or Aroclor 1254. This is accomplished by heating the mix to 70-80°C and blowing with dry air. After approval, 0.2 pounds of phenoxy propene oxide is added to the batch. The batch is agitated for 4 hours, then circulated through the filter press for 1/2 hour, and then through the filter press. Three 5-pint samples are taken for analysis.

tank is blanketed with nitrogen gas at low pressure. Blanketing aids in keeping the moisture content at a low level and prevents corrosion of the tank and contamination of the product.

Each batch meets all specifications, the batch is filtered into a tank car or 55-gallon drums (lacquer lined). Each tank car is loaded, three additional 5-pint samples are collected.

SPECIFICATION

Materials used in the formulation are commercially available. The Aroclor 1254, Material Code No. 81103, Monsanto's finished goods specification. The Phenylacetylene (Material Code No. 60200) and the phenoxy propylene oxide (Material Code No. 36100) must meet normal industry requirements. Phenoxy propylene oxide is also known as glycidyl ether.

All specifications have been established for Inerteen 100, but the formulation has been designed to give a viscosity of -30°C or lower with a viscosity target of 100 at 100°F. Tentative specifications are as follows:

Property	Specification	WGK Method
Acidity (APHA)	50 Max.	10,084
Color	Clear	10,084
Specific Gravity 15/15.5°C	1.510-1.520	10,114
Water (mg. KOH/g)	0.014 Max.	10,087
Chloride	0.35 ppm Max.	10,118
Acidity at 100°F (SUS)	58-62	10,086
Acidity at 100°C	500 x 10 ³ Min.	11,607
Dielectric Strength 5°C	35 KV, Min.	11,605
Refractive Index 5°C	1.6170 ± .0005	10,125
Distillation:		
First Drop (°C)	200, Min.	
Weight 270°C (%)	35, Max.	
Residue (°C)	379-394	10,117
Pour Point (°C)	30 or below	10,115
	0 Max.	10,620
	None to boiling point	10,123
Phenoxy Propylene Oxide	0.18-0.22	11,865
Water Test		
Loss in weight of aluminum in contact with Pyranol fluxed 6 hours	None	10,126

<u>Property</u>	<u>Specification</u>	<u>WGK Method</u>
Chloride	2.0 ppm Max.	10,118
Color test		
Color after test	Clear	10,084
Number after	0.014 Max.	10,087
(mg. KOH/g)		
Number after test (APHA)	200 Max.	10,084

PHYSICAL AND HAZARDS

1254 is a mild irritant but repeated or continuous skin contact should be avoided and inhalation of vapors at elevated temperatures should be prevented. Trichlorobenzene is quite toxic and the solid is poison if ingested. The LD₅₀ is 50 ppm. This material will affect the liver, mucous membranes. Trichlorobenzene will burn at 100°C above, but is lit only as a moderate fire. Phenyl propene oxide is a strong skin irritant. This material causes severe dermatitis and systemic poisoning. Fumes. Because this additive is a skin, mucous membrane and eye hazard, extreme care must be exercised in handling of this material. Since the components of this material are flammable, contact of the skin with 54201-KA and/or its fumes should be avoided as much as possible.

POLLUTION

When the streams are discharged from this process and the waste cake is discarded in the dump.

J. D. Sullivan

File Copy Approved By
Manager of Research
W. A. Richard

Date of Final Approval: _____

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