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MONSANTO COMPANY
Organic Chemicals Division
St. Louis Research Department

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TENTATIVE PROCESS FOR WESTINGHOUSE INERTEEN 54201-KA

Job No. 2-02-760.01-4010

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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 replace Inerteen PPO as now purchased by Westinghouse at Sharon. The new Inerteen will contain 69.9% Aroclor 1254, 29.9% trichlorobenzene and 0.2% phenoxy propene oxide. Active [illegible] continues in the Inerteen Transformers operating with Aroclor 1242, and our ultimate goal is the use of 100% [illegible] in these transformers.

SYNOPSIS OF PROCESS

Westinghouse Inerteen 54201-KA is prepared by thoroughly mixing a small amount of phenoxy propene oxide (PPO) into a specified mixture of Aroclor 1254 and trichlorobenzene (TCB). Refer to Standard Manufacturing Process for Pyranols and Inerteen - Department A-246 issued 8-4-64.

BILL OF MATERIALS

The process weights for 100 pounds of Inerteen 54201-KA are as follows:

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

PROCESS IN DETAIL

To a clean, 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 Attapulgus earth and stir at 50-60°C for 3 hours. The mixture is then circulated through Sparkler filter press for 1 hour. A 16 oz. control sample is taken from the discharge side of the filter press and analyzed for inorganic chlorides, moisture, specific gravity, and refractive index. If the control sample shows the batch to be out of specifications, small additions of TCB or Aroclor 1254 are added to the batch until a subsequent control sample indicates that the batch is within specifications. Frequently it is necessary to reduce the moisture content of the blend. This is accomplished by heating the mix to 70-80°C and blowing with dry air. After laboratory approval, 0.2 pounds of phenoxy propene oxide is added to the batch. The batch is agitated 4 hours, circulated through the filter press for 1/2 hour, and [illegible] the filter press. Three 5-pint samples are taken for [illegible] analysis.

The blend tank is blanketed with nitrogen gas at low pressure. Nitrogen blanketing aids in keeping the moisture content at a low level and prevents corrosion of the tank and contamination of the batch.

[illegible]he [illegible]tch meets all specifications, the batch is filtered [illegible]t [illegible] a tank car or 55-gallon drums (lacquer lined). [illegible] tank car is loaded, three additional 5-pint samples [illegible] t[illegible] tank car are collected.

[illegible]RI[illegible] SPECIFICATION

[illegible] materials used in the formulation are commercially available p[illegible]ucts. The Aroclor 1254, Material Code No. 81103, [illegible] Monsanto's finished goods specification. The trichlo[illegible]benzene (Material Code No. 60200) and the phenoxy propene [illegible]xide (Material Code No. 36100) must meet normal purchasing requirements. Phenoxy propene oxide is also known [illegible] glycidyl ether.

[illegible] formal specifications have been established for Inerteen [illegible] 1-K[illegible], but the formulation has been designed to give a [illegible] point of -30°C or lower with a viscosity target of 2 [illegible]S at 100°F. Tentative specifications are as follows:

MOISTURE Property	.0030 Specification	WGK Method
[illegible] (APHA)	50 Max.	10,084
[illegible]ion	Clear	10,084
[illegible] Gravity at 15.5/15.5°C	1.510-1.520 1.515-1.525 Tank [illegible] 1-6-65	10,114
[illegible] number (mg. KOH/g)	0.01+ Max.	10,087
[illegible]nic Chloride	0.05 ppm Max.	10,118
Viscosity at 100°F (SUS)	58-62	10,086
Resistivity at 100°C [illegible]	500 x 10^9 Min.	11,607
[illegible]tric Strength at 5°C	35 KV, Min.	11,605
[illegible]tive Index at 5°C	1.6170 ±.0005 1.6165 - 1.6175	10,125
[illegible]lation:		
[illegible]t Drop [illegible]	200, Min.	
[illegible]w 270°C [illegible]	35, Max.	
[illegible] (°C)	379-394	10,117
[illegible]int (°C)	-30 or below	10,115
[illegible]	0 Max.	10,620
[illegible] (°C)	one to boiling point	10,123
[illegible] propene Oxide [illegible]	.18-0.22	11,865
[illegible] in weight of [illegible] aluminum in [illegible]act with Pyranol [illegible] fluxed 6 hours	None	10,126

MONS 036902

Property	Specification	WOK Method
Inorganic chloride after test	2.0 ppm Max.	10,118
Condition after test	Clear	10,084
Acid Number after test (mg. KOH/g)	0.014 Max.	10,087
Color after test (APHA)	200 Max.	10,084

TOXICITY AND HAZARDS

Aroclor 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 vapors are quite toxic and the solid is poison if ingested. The M. A. C. is 50 ppm. This material will affect the liver, eyes and mucous membrances. Trichlorobenzene will burn at 420°C and above, but is listed only as a moderate fire hazard. Phenoxy propene oxide is a strong skin irritant. This material causes severe dermatitis and systemic poisoning from the fumes. Because this additive is a skin, mucous membrane and eye hazard, extreme care must be exercised in the handling of this material. Since the components of this formulation are toxic, direct contact of the skin with Inerteen 54201-KA and/or exposure to its fumes should be avoided as much as possible.

STREAM POLLUTION

No waste streams are discharged from this process and the filter-cake is discarded in the dump.

J. D. Sullivan

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Manager of Research
W. R. Richard

Date of Final Approval: _____