



NORTH CAROLINA DEPARTMENT OF LABOR

No. 30-2

OSH DIVISION

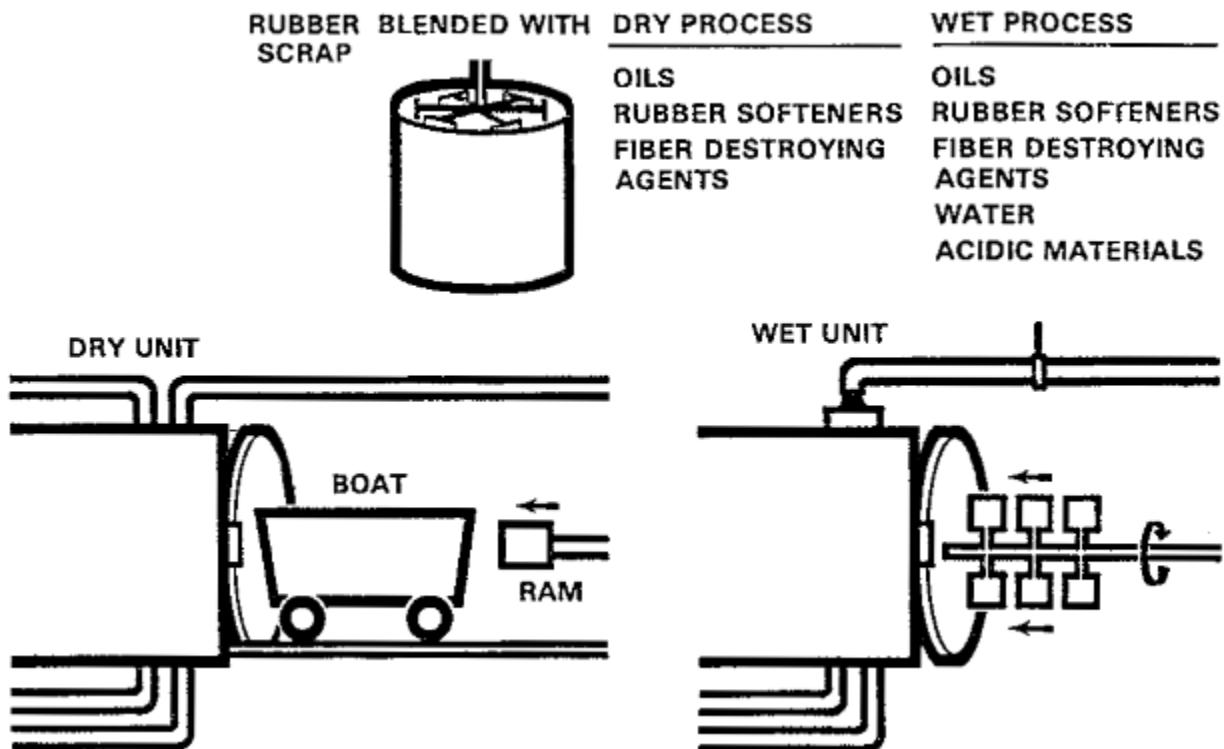
Date: 10/2009

OSHNC INDUSTRIAL DATA REPORT

Pages: 3

Industry: Rubber ProductsSub-Group: Reclaimed RubberSIC: formerly 3031NAICS: 316211, 325212, 326192, 326220, 326291, 326299 and 339943

PROCESS DESCRIPTION: Reclaimed rubber is replasticized into useful rubber by devulcanizing, digesting or heating. The two types of devulcanization are dry and wet. The dry unit is a steel pressure vessel 7 feet in diameter by 40 feet long, sometimes with shelves. The materials are stacked or pushed in by boat with a mechanical ram. Rubber scrap is mixed with oils, rubber softeners and fiber-destroying agents. After loading into the unit, steam is admitted for a predetermined time period (hours). Pressure is vented and the material is removed. The wet unit is a vertical or horizontal steel plate vessel with a power-driven agitator. The rubber plus water, oils, rubber softeners, fiber-destroying agents and acidic materials are placed in the unit, steam is added and the agitator is started. Again, pressure is vented after a predetermined time period and the material is removed.

PROCESS FLOW:

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Hazards Analysis

Major Hazards			Other Hazards		
Location	Item	Hazard	Location	Item	Hazard
Throughout	Mechanical power transmission apparatus	Amputations and crushed limbs	Throughout	Housekeeping	Slips, trips and falls
Blending area	Materials and chemicals	Skin, eye, respiratory irritation, burns, inhalation, overexposure	Blending and vulcanizing area	Organic vapors	Inhalation, overexposure, skin and respiratory irritation
Devulcanizing area	Devulcanizers	Unguarded parts, inadvertent start up, skin or eye irritations, fire involving oils or flammable liquids			
Throughout	Heavy materials	Strains, crushed limbs			

Key OSHNC Standards

Reference	29 CFR 1910 — General Industry Standards
Subpart D	Walking and working surfaces
Subpart I	Personal protective equipment
Subpart O	Machinery and machine guarding
Subpart S	Electrical
1910.94	Ventilation
1910.106	Flammable and combustible liquids handling and storage
1910.146	Permit required confined space entry
1910.147	Control of hazardous energy (lockout/tagout)
1910.178	Powered industrial trucks
1910.1000	Air contaminants
1910.1200	Hazard Communication

Inspection Analysis

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The inspection should start in the receiving warehouse. Aisles must be clear and raw materials stacked properly. In the blending area, employees must be checked for use of personal protective equipment. Power transmission apparatus must be guarded and fire protection must be checked throughout. Upon entering the devulcanizing area, ventilation must be checked. Moving parts of devulcanizers must be guarded, interlocks must be provided on the doors and a written lockout program must be in operation. Design, construction and installation must be in accordance with boiler and presser vessel code. Any employee who works inside a vessel must be trained and competent, use a respirator and wear a rescue harness. All process piping connections must be disconnected or locked out.

Other Pertinent Comments: IDR 30-3, Fabricated Rubber, is closely related.