



**RWANDA  
STANDARD**

**DRS  
480-1**

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**Wood adhesives — Specification —**

**Part 1:**

**Casein-based glue**

ICS 83.180

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Reference number

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In order to match with technological development and to keep continuous progress in industries, standards are subject to periodic review. Users shall ascertain that they are in possession of the latest edition

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## Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 480-1 was prepared by Technical Committee RSB/TC 056, *Paints, Varnishes, Adhesives and Related Products*.

In the preparation of this standard, reference was made to the following standard:

ASTM D4689 - 12: Standard Specification for Adhesive, Casein-Type

The assistance derived from the above source is hereby acknowledged with thanks.

DRS 480 consists of the following parts, under the general title *Wood adhesives— Specification*

— *Part 1: Casein-based glue*

— *Part 2: Urea-Formaldehyde Resin-based glue*

— *Part 3: Polyvinyl acetate (PVA)-based glue*

## Committee membership

The following organizations were represented on the Technical Committee on *Paints, Varnishes, Adhesives and Related Products* (RSB/TC 056) in the preparation of this standard.

Star Construction and Consultancy Ltd

Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA)

Standards for Sustainability

Yong Rui Mei Investments Ltd

AMACO Paints Ltd

AMEKI Colour Ltd

Rwanda Investigation Bureau (RIB)

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## Introduction

The use of adhesives offers certain advantages over other binding techniques such as sewing, mechanical fastenings, or welding. These include the ability to bind different materials together, the more efficient distribution of stress across a joint, the cost-effectiveness of an easily mechanized process, and greater flexibility in design.

Adhesives are typically organized by the method of adhesion followed by reactive or non-reactive, a term which refers to whether the adhesive chemically reacts in order to harden. Alternatively, they can be organized either by their starting physical phase or whether their raw stock is of natural or synthetic origin.

Wood glue is an adhesive used to tightly bond pieces of wood together. Many substances have been used as glues. Casein glue was used to make strong and robust joints in early aviation, but fell out of favour due to its susceptibility to attack by bacteria.

# Wood adhesives— Specification— Part 1: Casein-based glue

## 1 Scope

This Draft Rwanda Standard specifies requirements, sampling and test methods for casein-based glue used for adhering wood to wood.

It does not cover the cooked casein adhesives.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASTM D907, *Terminology for Adhesives*

ASTM D1583, *Test methods for hydrogen ion concentration of dry adhesive films*

ASTM D905, *Test method for strength properties of adhesive bonds in shear by compression loading*

ASTM D906, *Test method for strength properties of adhesives in plywood type construction in shear by tension loading*

ASTM D905, *Test method for strength properties of adhesive bonds in shear by compression loading*

ASTM D906, *Test method for strength properties of adhesives in plywood type construction in shear by tension loading*

ISO 3251, *Paints varnishes and plastics — Determination of non-volatile matter content*

ISO 15605, *Adhesives — Sampling*

ISO 10364, *Structural adhesives — Determination of the pot life (working life) of multi-component adhesives*

ASTM D1084, *Test methods for viscosity of adhesives*

RS OIML R 87, *Quantity of product in pre-packages*

## 3 Terms and definitions

For the purposes of this standard, the terms and definitions given in ASTM D907 and the following apply.

### 3.1

#### casein-based glue

a water-resistant adhesive made from casein and usually hydrated lime and mixed with cold water for use especially in making plywood and furniture.

## 4 Requirements

### 4.1 General requirements

**4.1.1** The casein-based glue shall be a dry powder or granular product comprising a mixture of casein, or casein and other protein source, with the necessary dry chemicals to effect solution when the mixture is added to water.

**4.1.2** The casein-based glue shall be classified as follow:

**Class B, Water resistant** — capable of producing sufficient adhesive-joint strength and durability and has sufficient water resistance to make the bonded products serviceable under conditions in which there will be occasional intermittent exposure to wet conditions or high humidity.

**Class C, Dry use** — has sufficient adhesive-joint strength and durability under normal interior service conditions where the relative humidity is not high and does not fluctuate between wide limits.

**4.1.3 Consistency** — The casein-based glue freshly prepared film shall be homogenous liquid dispersion, free from any coagulated particles of foreign matter.

**4.1.4 Odour** — The casein-based glue freshly prepared film shall not emit any trace of putrefactive odour.

**4.1.5 Colour** — The casein-based glue shall not stain or discolour or in any other way damage the material on which it is applied.

**4.1.6 Build-Up Properties** — The casein-based glue coat shall dry quickly and tacky enough so that the assembly formed shall have sufficient green strength to permit immediate handling.

### 4.2 Specific requirements

The casein-based glue shall comply with the requirements given in table 1 when tested in accordance with the methods prescribed therein.

**Table 1 – Specific requirements for casein-based glue**

S/N	Parameters		Requirements	Test methods
1	pH		9 – 10	ASTM D1583
2	Total solids, % by mass, min.		40	ISO 3251
3	Working life, hours, min.		5	ISO 10364
4	Viscosity at 25 ± 0.25 °C, cp.		3 000 – 15 000	ASTM D1084
5	Block shear (compression), dry at 1 and 4 h, N/mm <sup>2</sup> ,		20	ASTM D905
6	Plywood	Dry at 1 and 4 h <sup>A</sup>	2.5	ASTM D906

	(tension), N/mm <sup>2</sup>	Soak, 48-h at 1 and 4 h <sup>A</sup>	1.0	
7	Storage life		B	-
<p>A – One and four hours refers to age of adhesive after mix.</p> <p>B – A lot of the designated adhesive shall be tested for all the required tests after aging for the desired storage life time. The longest shelf life tested which passes all the minimum requirements shall be the storage life certified by the manufacturer.</p>				

## 5 Packaging and labelling

### 5.1 Packaging

**5.1.1** The casein-based glue shall be packaged in a suitable container that prevents it from deterioration during storage, transportation and normal handling.

**5.1.2** The quantity of product packaged in a container shall be in accordance with the requirements of RS OIML R 87.

### 5.2 Labelling

**5.2.1** Each container shall be labelled legibly and indelibly with the following information in any of the three languages officially accepted in the Republic of Rwanda namely: Kinyarwanda, French and English:

- a) name of the product;
- b) name and address of the manufacturer and/or registered trader mark;
- c) net content;
- d) batch number
- e) manufacture and expiry dates;
- f) instructions for use and disposal;
- g) special precautions related to toxicity or flammability;
- h) storage condition

## 6 Sampling

Sampling shall be done in accordance with ISO 15605.

## Bibliography

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