

Case Report

Volume 13 Issue 4 - February 2020
DOI: 10.19080/JFSCI.2020.13.555868

J Forensic Sci & Criminal Inves

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Can the Volume of the Collapsed Warehouse Accommodate the Grains Said to be Stored & Burnt in the Fire?



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Submission: February 2, 2020, **Published:** February 14, 2020

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Abstract

A six stored building constructed in an area of about two acres in which ground, first & second floors were used for stocking paddy, pigeon pea/toor dal, gram grains/dal, rice & wheat. On a fateful day at midnight 02:45am, the night watchman noticed smoke billowing from the top floor. Immediately fire brigade was informed. It took 12hours for the fire brigade consisting of 10 fire tenders with 30 men to bring the fire under control. Due to the intensity of fire the iron rods in the RCC slab melted and caved in. The building housing the warehouse collapsed after a few days. The author was assigned the task of finding the quantum of loss. The quantum of loss of various commodities said to have been stored in the warehouse was evaluated and compared with the volume of warehouse as per records and found that the insured claimed almost double the quantity of commodities stored by him.

Keywords: Fire investigation; Burnt debris; Volume of grains

Introduction

The insured purchased a six floored cold storage building, removed all the cold storage equipment & devices and was using it as a dry warehouse. As the structure was basically a cold storage, it had RCC roofing on the top sixth floor and the flooring of the remaining floors were made with wooden planks in between the wooden structure. The warehouse was rectangular in shape with length 140' & width 120', the area of each floor being 16,800sqft. The height of the ground floor was 10' and heights of remaining five floors were 8'. The ground, first and the second floors were

stocked by insured with bags of paddy, pigeon pea/toor dal, gram grains/dal, rice & wheat. The remaining floors were given for rent to another party [1].

Description of the Premises

Most of the debris from the collapsed building was removed from the premises by the time the author visited for fire investigation. About one-foot thickness of burnt debris was found to be strewn throughout the premises [2] (Figure 1-4).



Figure 1: View of the collapsed warehouse.



Figure 2: Another view of the collapsed warehouse.



Figure 3: Photograph taken during the incident of fire.



Figure 4: Another photograph taken during the incident of fire.

Evaluating the Volume per Bag of Different Commodities

The author proceeded to another warehouse of the insured where similar commodities were stored and took the dimensions

of paddy bags (85 kg), pigeon pea/toor bags (50 kg), gram grains al bags (50 kg), wheat bags (50 kg & 30 kg) and rice bags (50 kg, 30 kg & 25 kg) and evaluated the volume occupied by the each bag as follows (Table 1).

Table1: Evaluating the volume per bag of different commodities.

I. Pigeon Pea/Toor grains - 50 kg	
Density of Pigeon pea/ toor dal ¹	866.48 kg/m ³
Density	mass/volume
Therefore, Volume	mass / density
Hence, Volume of 1 bag of Toor 50 / 866.48	0.0577m ³ = 0.0577cmt
II. Paddy - 85 kg	

Density of Paddy ²	600kg/m ³
Volume	mass / density
Hence, volume of 1 bag of Paddy	85 / 600 = 0.1416cmt. = 5cft.
III. Gram dal/Chana grains - 50 kg	
Density of Chana Dal ³	862.26 kg/m ³
Volume	mass / density
Hence, volume of 1 bag of Chana Dal	50 / 862.26 = 0.0600cmt. = 2.118cft.
IV. Rice - 25 kg	
Density of Rice ⁴	824.22 kg/m ³
Volume	mass / density
Hence, volume of 1 bag of Rice	25 / 824.22 = 0.0303cmt. = 1.07cft.
V. Wheat - 30 kg	
Density of Wheat ⁵	790 kg/m ³
Volume	mass / density
Hence, volume of 1 bag of Wheat	30 / 790 = 0.0379cmt. = 1.338cft.

Number of Bags Said to Be Stored in the Warehouse as Per the Insured

The insured submitted in a tabular form containing the number of bags of each commodity said to be lost in the fire and

claimed a total of INR269,581,640/- (approx. US \$3,850,000/-) which is reproduced below (Figure 5 & Table 2): Basing on the above data given by the insured, the total volume occupied by the different commodities had been calculated and is given below [3-5].

TOTAL CLAIM					
Commodity		Bags	MT	Rate/MT	Amount
Paddy	80Kg	22900	1,832.21	28,359.66	51,960,850.00
Toor	50Kg	81175	4,058.77	40,945.00	166,186,337.65
Gram Dal	50Kg	4680	234.30	66,539.60	15,590,228.28
Rice	50, 30 & 25Kg	10000	303.12	51,000.00	15,459,120.00
Wheat	30Kg	400	12.00	18,000.00	216,000.00
Total		119155	6,440.40		249,412,535.93
Claim for Building					20,000,000.00
Claim for Fire Brigade Charges					169,100.00
				Total Claim Rs.	269,581,635.93
				or Say	269,581,640.00

Figure 5 [Table 2]: Number of bags said to be stored in the warehouse as per the insured.

Table 3: Total volume occupied by all the commodities as per the claim of the insured = 3, 01,049cft.

Sl. No.	Commodity	No. of Bags as Per Insured	Volume Per Bag (cft)	Total Volume (cft)
1	Paddy	22,900	5	1,14,500
2	Pigeon pea	81,175	2.0376	1,65,402
3	Gram Grains	4,680	2.118	9,912
4	Rice	10,000	1.07	10,700
5	Wheat	400	1.338	535

Conclusion

The author had critically studied the layout and other relevant records submitted by insured and after calculation found that the total volume available for the storage of material in the warehouse was 1,78,500cft as against 3,01,049cft claimed by the insured highly exaggerating the loss. Thus, the fraud of the insured deliberately trying to secure unfair or unlawful gain was exposed

References

1. www.aqua-calc.com density of pigeon pea grain.
2. <http://www.knowledgebank.irri.org/postproductioncourse/index.php/storage/storage-systems/82-modules/module-4/164-storage-capacity>
3. www.aqua-calc.com density of gram dal/chana dal.
4. www.aqua-calc.com density of rice.
5. www.aqua-calc.com density of wheat.



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DOI: [10.19080/JFSCI.2020.13.555868](https://doi.org/10.19080/JFSCI.2020.13.555868)

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