

ISOPAN S.P.A GENERAL SALES TERMS FOR RIBBED SHEETS, INSULATED METAL PANELS AND ACCESSORIES

THE DOCUMENT HAS BEEN EDITED ACCORDING TO "AIPPEG GENERAL SALES TERMS"

1. SUBJECT AND PARTIES TO THE CONTRACT

1.1 These General Conditions of Sale shall apply to all sales of products manufactured and/or sold by ISOPAN S.p.A. (hereinafter the "Products") entered into by the same ISOPAN S.p.A. (hereinafter "ISOPAN" or the "Seller") with any customer purchasing such Products (hereinafter the "Customer").

1.2 These General Conditions of Sale shall automatically supplement the provisions of any order of Products confirmed by the Seller and/or contract entered into between ISOPAN and the Customer, and they shall supersede any conflicting clause or provision (even if not expressly challenged by the Seller) contained in any order, form, offer or other document whatsoever coming from the Customer.

1.3 Seller shall be entitled to introduce – at any time, even after order confirmation, and without the need of any prior notice or publicity – any modifications or technical improvements to the Products as it may deem necessary or appropriate, without the Customer being entitled to raise any claim or complaint in relation thereto. Being however understood that in no event shall ISOPAN be bound to offer to the Customer any improved or modified version of the Products ordered to it by the Customer, if such improvement or modification to the Products was introduced after the date of issue of the relevant order by the Customer.

2. ORDER – ACCEPTANCE

2.1 Customer's orders shall be transmitted in writing using the ordering forms provided by the Seller, shall be considered as offers and shall remain firm and irrevocable for a period of 30 (thirty) days after their receipt by the Seller.

2.2 Orders shall be deemed accepted and binding upon ISOPAN only upon receipt by the Customer of the relevant written order confirmation sent to it by the Seller, which shall determine acceptance of the order and whose contents shall bind the parties and discipline – together with the provisions of these General Conditions of Sale – the contractual relationship entered into among them.

2.3 Should the order confirmation contain any modifications compared to the order, such modifications shall be deemed forthwith accepted by the Customer once elapsed 10 (ten) days after receipt by the latter of such order confirmation, unless written notice of disagreement is given by the Customer to ISOPAN within the same term.

2.4 Without prejudice to what set forth in article 8.5, should the order confirmation provide for the supply of different types of Products and/or staggered deliveries, each such supply of different types of Products and/or batch of deliveries shall be considered as contractually autonomous in respect to the others.

3. DELIVERY, SHIPPING AND TRANSPORT

3.1 Terms of delivery indicated in the order confirmation shall be calculated in working days, shall not be of the essence, and may be subject to changes by the Seller, by giving notice thereof to the Customer as soon as possible. In all cases, a 15 (fifteen) working days grace period and partial deliveries shall always be allowed.

3.2 Terms of delivery shall be deemed automatically extended in case of (even partial) failure by the Customer to pay any amount owed to ISOPAN, under any title whatsoever.

3.3 Should an advance payment on the order, the opening of a letter of credit or the issuance of a bank guarantee be agreed by the parties, delivery terms will start running as from receipt by ISOPAN of such advance payment or of the documents attesting the opening of the letter of credit or the issuance of the bank guarantee.

3.4 Seller shall not be held liable towards the Customer on account of any delay, loss, damage, cost or expense which may be caused – by way of example and without limitation – by strikes, union agitations, lock-outs, interruption or suspension of transport, accidents, fire, import bans, delay and/or failure by suppliers in delivering raw materials and/or utilities, scarcity or absence of raw material, compliance with any law, regulation or other governmental order, whether or not valid, insurrection, war-like acts, war, the elements, embargoes, acts of God or any other cause beyond its reasonable control.

Seller shall not be deemed responsible for any such event, even in case at the time the impediment occurs it is already late in complying with the agreed terms.

Should the impediment last for more than 30 (thirty) days, the Seller shall be entitled to withdraw from the order, or from such portion of the order not yet fulfilled, by giving written notice thereof to the Customer, who shall not be entitled to raise any complaint or claim whatsoever towards the Seller for any damages which may have been suffered by the Customer, whether directly or indirectly, in consequence of such delay and/or of the Seller's withdrawal.

3.5 As soon as the Products ordered by the Customer are ready for delivery, and within 15 (fifteen) calendar days of receipt by the Customer of the notice of goods ready for delivery sent to it by ISOPAN, the Customer shall collect the Products.

In case of failure by the Customer to collect the Products within the afore mentioned term, the Seller shall be entitled to stock the Products outdoor, and will be relieved

from any responsibility or liability in case of possible defects or non-conformities in the Products which may occur in consequence of their exposure to the weather and the elements. In all such cases the Customer shall further forfeit any and all warranty rights, and it shall be charged with handling and stocking costs of the Products, in an amount equal to 1% of the Products' value per each week.

3.6 In cases provided for under article 3.5 above, the Seller shall be further entitled, at its sole discretion, (i) to designate a forwarding agent/carrier of its choice with the shipment of the Products, giving prompt notice to the Customer of the terms and conditions of shipment (all the relevant costs being for the Customers' sole account), or (ii) to stock them at third party's premises at the expense of the Customer, or (iii) to sell the non-collected Products to third parties (without prejudice to the Seller's right to proceed against the Customer in order to obtain payment by the latter of an amount equal to the difference between the contractual price of the Products originally agreed upon with the Customer and the sum actually recovered by ISOPAN from the sale of the Products to third parties, as well as of any further damages suffered by the Seller in consequence thereof).

3.7 In any case, after 8 (eight) days from the date of issue by the Seller of the notice of goods ready for delivery referred to in article 3.5 above, Seller shall be entitled to issue and deliver to the Customer the relevant invoice, and all payment terms of the Products shall start running.

3.8 Any possible apparent defects and non-conformities in the Products and/or missing Products which can be detected by the Customer upon delivery using the ordinary diligence, shall be promptly notified by the Customer to ISOPAN in writing, by reporting them on the relevant bill of lading, under penalty of forfeiture from any warranty.

4. PACKAGING AND PROTECTION

4.1 Products are supplied unpackaged. Any possible packaging desired by the Customer shall be requested by the latter when issuing the relevant order, and shall be charged by ISOPAN in the relevant invoice.

4.2 The choice of the type of packaging shall be made by the Customer, on a case by case basis, in view of the different needs and conditions of shipment, stocking and destination of the Products, and all responsibility and liability for any consequences deriving from such choice shall be entirely and solely borne by the Customer, with express exclusion of any liability or responsibility of the Seller in relation thereto.

Customer is hereby expressly warned and advised that the use of a wrong or inadequate type of packaging, as well as the adoption of erroneous or improper methods of shipping, transport, stocking, handling or assembly (which must be carried out in strict compliance with the Movement, handling and storage instructions and the Assembly instructions respectively attached as annexes A and C to these General Conditions of Sale) may determine condensation and oxidation phenomena and may significantly compromise and jeopardize – in some cases permanently – the Products' qualities and functionality.

4.3 In order to ensure the aesthetic integrity of panels and pre-painted ribbed sheets during the manufacturing, handling, and transport phases, the relevant surfaces are protected with a polyethylene adhesive film. Such film must be necessarily removed by the Customer during assembling the Products and, in any case, within, and not later than 8 (eight) days after delivery of the Products. Failure by the Customer to remove the film within the term set forth above may cause phenomena, such as an extreme stickiness of the film, difficulty of removal of the same, and, sometimes, even unexpected interactions between the film and the underlying organic layer, which may jeopardize and compromise both the Product's quality and its aesthetic aspect.

Therefore, should Customer not timely adopt the above suggested measures, it shall forthwith and automatically forfeit all warranty rights towards the Seller with regard to any possible non-conformities in the Products consisting in the excessive stickiness of the adhesive protective film and/or any other consequences possibly caused by, or deriving from (whether directly or indirectly) the afore mentioned adhesive film, or its late removal by the Customer.

4.4 Should the Customer require or accept the supply of painted panels and/or ribbed sheets without any adhesive protective film, it shall assume full responsibility for such choice, it shall be deemed to have waived the right to raise any claim towards ISOPAN in connection with any possible defects or non-conformities in the Products deriving from, or ascribable to the absence of such protective film, and it shall keep ISOPAN harmless from any claim or liability possibly deriving to the latter (whether directly or indirectly) in consequence of the absence of such protective film.

5. TOLERANCES

The Customer accepts the tolerances set forth in Seller's catalogues and/or technical sheets (as from time to time updated by the Seller).

6. WARRANTY

6.1 Seller hereby warrants to Customer that the Products are free from any defect in material and workmanship, within the usual tolerances and within the limits indicated in the technical specifications set forth in the Seller's catalogues and/or technical sheets (without prejudice to what set forth in article 6.11).

6.2 The warranty set forth above shall remain valid for a period of 12 (twelve) months from delivery of the Products to the Customer (the "Warranty Period") and may not be extended or interrupted.

6.3 Without prejudice to what set forth in article 3.8, any possible claims concerning alleged shortages, non-conformities or apparent defects in the Products supplied by ISOPAN to the Customer, shall be notified in writing by the Customer to the Seller (by means of telegram or registered letter with return receipt, anticipated by fax), within 3 (three) days of delivery of the Products, under penalty of forfeiture. In turn, any possible hidden defects shall be notified in writing by the Customer to the Seller prior to expiry of the Warranty Period referred to in article 6.2 and within 8 (eight) days of the relevant discovery (of from the moment when they should have been discovered using ordinary diligence), under penalty of forfeiture.

All claims concerning alleged defects in the Products shall be as much as possible detailed, so as to allow the Seller to carry out a prompt and accurate check. All Products concerned by any such claim shall be held by Customer at the Seller's disposal, in the same conditions as they have been delivered, and shall be kept and stored in strict compliance with the Movement, handling and storage instructions attached as annexe A to these General Conditions of Sale, as well as with any possible additional instructions provided by the Seller.

6.4 Subject to full compliance by the Customer with the provisions set forth above, should the Seller acknowledge the existence of any defects timely notified by the Customer, the Seller - within the time reasonably required - will, at its sole discretion, either (i) repair and/or replace the defective Products free of charge Ex Works (EXW) (Incoterms 2010), or (ii) refund to the Customer an amount equal to the difference between the purchase price of the defective Products paid by the Customer and the actual value of the same Products depreciated in consequence of their defects (being it however understood that in no case the amount owed by the Seller to the Customer pursuant to paragraph (ii) hereof may exceed the original purchase price of the defective Products paid by the Customer).

The warranty on any Products repaired or replaced by the Seller pursuant to this clause shall expire upon expiry of the original Warranty Period relevant to the defective Products originally purchased by the Customer.

Should any claim raised by the Customer concerning alleged defects in the Products prove to be ungrounded, the Seller will charge to the Customer all costs borne by the former to carry out (whether directly or through third parties) reviews, inspections, and any possible surveys.

6.5 Without prejudice to non-derogable rights set forth in favor of consumers by the applicable law, the warranty provided for above is the sole warranty offered by the Seller to the Customer in relation to the sale of the Products.

No other warranty, intervention, remedy and/or reimbursement (whether conventional or by operation of law) may be required or claimed by the Customer towards the Seller, being in particular hereby expressly excluded and waived by the Customer - to the maximum extent permitted by law - any responsibility of the Seller for direct, indirect, incidental or consequential damages which may derive to the Customer in consequence of any possible defects and/or non-conformities in the Products (as well as from any delay in the relevant delivery).

In addition to the above, the Customer hereby expressly waives the right to terminate the contract in consequence of any possible defects in the Products.

6.6 In case of supplies by staggered deliveries, any possible claim for defects raised by the Customer with respect to a part of the supplied Products will not relieve the Customer from its obligation to accept the delivery of all the remaining quantities of Products ordered by the latter.

6.7 It is hereby understood that the following circumstances may not be considered as defects in the Products (and, therefore, no claim or request of warranty intervention may be grounded on the same):

- (i) the presence - in any panels manufactured using a continuous production line - of possible cutting imperfections with less than 1,5 mm. protrusion compared to the relevant metal support plane; and/or
- (ii) the presence - in case of manufacture with "overlapping", to allow the element lengthwise overlapping - of any foam residual on the metal surface after the automatic removal of the insulation (removal up to bare metal shall, in any case, be completed during the assembly phase at site, and shall be the Customer's responsibility).

6.8 Moreover, in express derogation to what set forth above, no warranty whatsoever is offered by the Seller in relation to any metal layer Products without organic coating; the Seller is therefore exempt from any responsibility or liability whatsoever in relation to the possible (and likely) occurrence of oxidation phenomena onto such Products.

6.9 Likewise, no warranty whatsoever is offered in relation to any used or

second hand Products, or to any Products which are purchased on an "as is" basis, i.e. material (whether first choice, second choice or scrap) which is available at the Seller's premises and is sold at discounted prices.

6.10 The warranty provided for in this Article 6 shall automatically lapse and expire (and no warranty whatsoever shall be offered in relation to the Products) in case of:

- (i) use and/or installation by the Customer or a third party of any allegedly defective Products after the date when the relevant alleged defect appears or is notified to the Seller, whichever occurs first;
- (ii) improper use of the Products or use of the same not in compliance with the relevant purpose and/or the relevant technical instructions provided by the Seller;
- (iii) use, storage, maintenance, handling or assembly of the Products not carried out in strict compliance with the "Movement, handling and storage instructions and the Assembly instructions respectively attached as annexes A and C to these General Conditions of Sale and any possible further instructions provided by the Seller.
- (iv) Assembly of the Products by using systems or accessories not in accordance with what prescribed in the Products' technical data sheets (as from time to time updated by the Seller), or using accessories (such as, for instance, fixing systems, corrugation sealing plugs, heading closing profiles, ridges, flashings, etc.) not supplied and/or expressly approved by the Seller;
- (v) Prodotti which, after their delivery, have undergone interventions or modifications of any kind and nature by third parties other than the Seller.

6.11 Calculations, reference values, lists of materials, graphics and any other document provided by the Seller to the Customer shall be considered as simple orientation elements, and shall not imply or determine any joint responsibility or liability of the Seller in the design and engineering of any structure and/or building on which such Products are to be installed by the Customer or by third parties. The design, engineering, works management, supervision, testing and commissioning, as well as any other activity prodromic to, or connected with the design, engineering and construction of such buildings and/or structures (including verification of the fact that the Products are fit for being used in the construction of such buildings) shall remain the sole and exclusive responsibility and duty of the Customer. Unless otherwise expressly declared in writing by the Seller, Products supplied by the Seller to the Customer, do not contribute in any way to the building structure global and/or partial stability; therefore, they are not suitable to sustain any permanent vertical, horizontal or static load (except for their own weight and for the weight of the photovoltaic system possibly installed on them, in case of roof panels) since their only purpose is that of serving as wall and/r roof cladding of an existing supporting structure, whose design, engineering and construction shall be provided and arranged by the Customer, under its own and exclusive responsibility.

6.12 The Products are manufactured in compliance with Italian laws and with the applicable EU legislation, and they are provided with the certifications expressly listed in the relevant technical data sheet. No warranty whatsoever is offered by the Seller as to the compliance of Products with any requirements provided for by any legislation other than the Italian and EU legislation, nor does the Seller offer any warranty that the Products comply with any standards, technical specifications or regulations other than those expressly listed in the relevant technical data sheet. Therefore, it shall be the Customer's exclusive duty and responsibility to verify that the Products comply with any legislation and technical requirements in force in the Countries where the Customer intends to use such Products

7. PRICES AND PRICE REVISION

7.1 Prices of the Products (for Products delivered Ex Works of the Seller - Incoterms 2010) shall be those indicated in the Seller's order confirmation, and do not include packaging, shipping and transport costs of the Products, which shall remain for the Customer's sole cost and account.

7.2 In no case prices of Products offered and confirmed by the Seller with respect to an order may be considered binding also with respect to other subsequent orders.

7.3 The Seller reserves the right to adjust prices of the Products, even after the relevant order confirmation, in case of variations in the costs of labor and/or raw materials exceeding 2%; in such cases, in adjusting the Products' price according to the variations occurred in the costs of labor and/or raw materials, the Seller shall take into account that each of the factors listed here below proportionally influences the Product's price composition as follows:

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Product type	Incidence of labor's cost	Incidence of metal's cost	Incidence of insulating components' cost	Incidence of external parameters' cost
Ribbed metal sheets	10%	90%	-	-
Sandwich-panels	10%	-	30%	60%

7.4 In determining the variation in the costs of labor and raw materials, reference will be made to the following:

- for labor costs: the A.N.I.M.A. charts;
- for metals: the pricelist published by the Chamber of Commerce of Milan;
- for insulating components and other raw materials: what declared by the Seller's supplier.

As for accessories, the relevant price revision shall be made conventionally by applying to the same the possible variation in the official ISTAT life cost index.

In case of supplies by staggered deliveries, revision of prices shall apply only to Products delivered after the price change.

7.5 Any adjustment of Products' prices decided by the Seller pursuant to article 7.3 shall be notified in writing by the Seller to the Customer, who will be entitled to withdraw from the portion of the relevant order still not executed, by giving written notice thereof to the Seller (by means of registered letter with return receipt, anticipated by fax) within the subsequent 2 (two) days.

8. PAYMENTS

8.1 Terms and conditions of payment relevant to each order of Products shall be those indicated by the Seller in the relevant order confirmation. Notwithstanding anything to the contrary, payments shall be deemed made at the Seller's facilities.

8.2 The possible acceptance and collection by the Seller of any advance payment made by the Customer upon placement of the order, shall not be deemed as order confirmation. Therefore, even after receipt of such payment, the Seller shall be entitled to refuse, at its discretion, the relevant order, and in such a case it shall return to the Customer any amount possibly anticipated by the latter, without interest.

8.3 Without prejudice to article 9, should payment of the Products be agreed by means of bills of exchange, promissory notes, checks or other instruments, the same shall be delivered in original to the Seller prior to (or upon) collection of the Products. In any case, the presentation by the Customer (and acceptance by Seller) of a bill of exchange, promissory note, check or other instrument shall not constitute payment, until Seller has collected the full amount in cash, and shall not determine any modification in the place of execution or novation of the pre-existing obligation. All the relevant costs and banking charges shall be entirely borne by the Customer.

8.4 The Customer shall not be entitled, in any case whatsoever, to suspend or delay payments, not even in the event of defects in the Products, dispute, claim or delay in delivery of the Products by the Seller, or for any other reason whatsoever, nor shall the Customer be entitled to set off any amounts owed to it by the Seller with the price to be paid to the latter by the Customer for the purchase of the Products

8.5 Without prejudice to any other right provided for in favor of the Seller by the applicable law or by these General Conditions of Sale, in case of non-payment or delayed payment of the Products by the Customer, whether in whole or in part, the Seller shall be entitled, without any prior notice, to forthwith suspend the supply and delivery of any orders of Products pending or in progress (even if other than those in relation to which the Customer's breach has occurred) and to retain, as penalty, any down-payment or other amounts so far paid by the Customer (without prejudice to the Seller's right to further proceed for the recovery of any additional damages), as well as to invoke the operation of the acceleration clause with respect to all pending supplies of Products, and thus request Customer to pay immediately the entire relevant price.

8.6 The statement of account sent by the Seller to the Customer shall be deemed accepted by the latter, should it fail to raise any written objection thereto within 15 (fifteen) days of the relevant receipt.

9. RETENTION OF TITLE

9.1 The Products shall remain the property of the Seller until full payment of the relevant price by the Customer. As from delivery of the Products to the Customer and until they remain the property of the Seller, Customer shall be fully liable towards the Seller for (and shall keep the Seller harmless from) any damages, losses, risks, costs, expenses or liabilities which may derive to the Seller, whether directly or indirectly, from, or arising out of, or in connection with the Products, their loss or damage (for any reason whatsoever) and/or their use or disposal by the Customer or third parties.

The Customer shall bear any possible costs and expenses for the registration of the retention of title clause, as required under the laws of the Country in which the Products are located.

9.2 Without prejudice to the Customers' obligation to pay the Products' price to the Seller, the Customer shall be free to transfer the property of the Products to third parties even before full payment of the relevant price by the latter. In this case, however, the Customer shall arrange and meet the expenses necessary for implementing all deeds and formalities required under local statutory regulations to render the retention of title clause in favor of the Seller effective in respect of such third parties.

9.3 The Customer shall inform the Seller in writing, within 24 hours of any enforcement or precautionary measures carried out by third parties with respect to the Products subject to retention of title. The Customer shall be liable towards the Seller and shall keep harmless the latter, at all events, from any cost or damage suffered by the Seller as a result of such third party measures carried out with respect to the Products.

10. WITHDRAWAL

Without prejudice to any other withdrawal right provided for by these General Conditions of Sale, the Seller shall be entitled – by giving written notice to the Customer – shall be entitled to withdraw from any order or contract for the sale of Products entered into with the Customer (with limited extent to the part of such order or contract not yet executed at the date of withdrawal) in the following cases: (i) in case of occurrence of any facts and circumstances which are capable of jeopardizing the market stability, the currency's value, the industry of raw materials manufacturers and/or the suppliers' market; and/or (ii) in case the Seller becomes aware of the existence of any protests, or court orders, or judicial or extra-judicial claims, or bankruptcy proceedings towards the Customer.

11. APPLICABLE LAW AND JURISDICTION

11.1 These General Conditions of Sale and all orders and contracts for the sale of the Products disciplined by the same, shall be governed by, and construed in accordance with the laws of Italy with express exclusion of the 1980 Vienna Convention on the international sale of goods.

11.2 As for what not expressly provided for by these General Conditions of Sale and by the order confirmed by the Seller, reference shall be made to the rules on sales contained in articles 1470 and following of the Italian Civil Code, even in case of supply with installation of the Products.

11.3 Any possible controversy between the Seller and the Customer arising out of, or relevant to, or connected with the interpretation, application, execution or termination of these General Conditions of Sale and/or of any orders of sales contracts of the Products disciplined by the same, shall pertain to the exclusive jurisdiction and sole venue of the competent Courts of Verona (Italy), even in case of connected proceedings.



ANNEXE A

Rules on movement, handling and storage of ribbed sheets, insulated metal panels and accessories

1. WRAPPING AND PACKAGING

Paragraph 9.9.1 of Standard UNI 10372:2004 is quoted in its entirety .
To maintain their durability in use, metal components for roofs must not be damaged during storage, transport, movement and laying operations. It is therefore advisable to provide temporary protection systems for the products relating to the performance required, especially of an aesthetic nature.

During fabrication processes the above materials are generally protected with polythene film (adhesive or simply in contact), or with other solutions.

During subsequent stages precautions must be taken to ensure that the following aspects are guaranteed:

- protection of the surface from abrasion, especially during movement;
- protection of corners and edges against knocks and crushing;
- protection against water or condensed moisture collecting;
- protection of the components which bear the weight of the entire pack, or of superimposed packs, against permanent deformation.

The profiled sheets and panels are generally packaged in packs. The number of sheets in the pack is such as to contain the overall weight of the pack itself within the limits imposed by the available means of lifting and transport.

Generally the materials used for packaging are: timber, expanded plastic materials, cardboard, polythene film (heat-shrink or stretchable) or others; binding is done with bands (never with iron wire) and suitable protection is used (edge protectors etc.). The bands must not be used as slings for lifting.

It is also advisable to provide attachment points for subsequent movement and lifting operations, indicating them appropriately.

The packs of products must therefore always be provided with a support system which is such as to distribute the weight homogeneously and to make it possible to pick up the pack for movement.

By way of example and without limiting effect, the support system may be constituted by joists made of expanded plastic material or dry timber, or alternatively by sheets of composite materials, located at suitable spacing for the characteristics of the product.

The packaging must be appropriately specified at the ordering stage, depending on the modalities of transport (for example cage or crate for transportation which involves transshipment, or transport by train or by sea). A suitable type of packaging will need to be provided depending on the performance which is required of the product.

The making-up of the packages will be performed according to parameters preset by the manufacturer. Any different division of components and/or particular packaging, in relation to specific requirements of the Purchaser, must be agreed at the time of placing the order.

2. TRANSPORT

Paragraph 9.9.2 of Standard UNI 10372:2004 is quoted in its entirety .

The packs must be transported with suitable means in such a way that:

- the packs are supported on spacers made of timber or expanded plastic material, located at spacing appropriate to the characteristics of the product;

- the supporting surface is compatible with the shape of the pack (flat if the pack is flat, or if the pack is curved, a support must be created which maintains the same curvature);

- when stacking packs, suitable spacers made of timber or expanded plastic material are always interposed, if not present in the packaging;

- the packs do not overhang by more than 1 metre;

- the points are clearly marked on the packs where slings may be placed for lifting, if these are not otherwise identifiable;

- any other instructions from the manufacturer are observed.

In particular, the packs must be positioned on the flat, and underneath the packs themselves, spacers of timber or expanded plastic material must be placed, of suitable dimensions and in adequate numbers, positioned in perfect vertical alignment.

The packs must be secured by the carrier to the transport vehicle by transverse ties, with straps placed at a maximum spacing of 3 m,

and each pack must in any event be provided with no fewer than two transverse ties.

When travelling, the load must always be covered, and above all the side facing in the direction of travel must be made impermeable. Purchasers arranging collection must instruct the drivers on the subject.

The load must be carried on a vehicle bed which is clean and free of obstructions. Vehicles already partly occupied by other materials or with an unsuitable bed are not acceptable for the load.

The goods must be positioned on the vehicles in accordance with the instructions of the carrier, who alone is responsible for the integrity of the load. The carrier must take particular care that the weight bearing on the lowest pack, and also the pressure exercised by the tie-points, do not cause damage, and that the straps do not in any way cause deformation of the product. Special loading conditions can be accepted only on the written proposal of the Purchaser, who assumes complete responsibility for them.

3. STORAGE

Paragraph 9.9.3 of Standard UNI 10372:2004 is quoted in its entirety .

The shape of the components has been designed to allow them to be stored by stacking them so as to reduce to a minimum the space occupied in storage and transport; care must however be taken when stacking them so that no damage occurs to the surfaces.

The packs must always be kept raised off the ground, both in the warehouse and, even more so, on site. They must have supports preferably of timber or expanded plastic material with flat surfaces, with a length greater than the width of the sheets and at suitable spacing for the characteristics of the product.

The supporting surface must be compatible with the shape of the packs (flat if the pack is flat, or if the pack is curved, a support must be created which maintains the same curvature).

The packs must be stored in places which are not damp, otherwise condensation will collect on the less well-ventilated internal components. This condensation is particularly aggressive towards metals, and cause the formation of oxidation products (for example white rust on zinc).

The packs must be stored in such a way as to encourage water to drain, especially if it is necessary to store them temporarily in the open air (see illustration).



If storage is not followed shortly by picking the sheets up for laying, it is as well to cover the packs with protective tarpaulins. Attention must be paid to any electrochemical corrosion caused by contact between different metals, including during the period of storage. Generally it is preferable not to stack the packs; if it is considered possible to stack them because of their light weight, spacers of timber or expanded plastic material, with as large a supporting surface as possible, must always be interposed, in suitable numbers and always located in line with the supports of the packs below (see illustration).



The best storage conditions are in closed areas, with light ventilation, free from damp and dust.

In any event, and in particular for storage on site, a suitable, stable support surface must be provided, which will not allow water to collect. The packs must not be positioned in areas close to manufacturing processes, for example metal cutting, sanding, painting, welding etc., nor in areas where the crossing or parking of operating vehicles could cause damage (collisions, splashing, exhaust gases etc.).

A maximum of three packs may be stacked, with an overall height of approximately 2.6 metres, and in this case the supports must be suitably thickened.

In the event that the materials are covered with protective film, this film must be completely removed at the fitting stage, and at all events not later than sixty days from the date of readiness of the materials. Any further specific instructions from the supplier must be followed.

On the basis of knowledge acquired, in order to maintain the product's original performance, it is advisable, subject to compliance with these rules, not to exceed six months of continuous storage in a closed and ventilated environment, while the period of storage in the open air must never exceed sixty days. The materials must anyway always be protected from direct solar radiation, because this can produce alterations.

In the case of protection by tarpaulins, it is necessary to ensure that they are waterproof, and that there is adequate ventilation to avoid condensation collecting and pockets of water forming..

4. LIFTING AND HANDLING

Si riporta integralmente (testo in corsivo) il punto 9.9.4 della 4. LIFTING AND HANDLING Paragraph 9.9.4 of Standard UNI 10372:2004 is quoted in its entirety.

The packs must always be lifted by slings positioned at a minimum of two points, separated by a distance not less than half the length of the packs themselves.

Lifting must preferably be carried out using slings woven from synthetic fibre (nylon), of a width not less than 10 cm so that the load on the sling is distributed and does not cause deformation (see illustration)..



Suitable spacers must be used consisting of robust lengths of fl at timber or plastic located above and below the pack, in order to prevent direct contact between the slings and the pack.

These spacers must have a length at least 4 cm greater than the width of the pack, and a width not less than that of the sling. In any event, the lower spacers must have a width sufficient to prevent the weight of the pack from causing permanent deformation to the lower sheets.

Care must be taken to ensure that the slings and the supports cannot move during lifting, and that the manoeuvres are performed gradually and with caution.

When the packs are offloaded onto the roof structure, they must be placed only on surfaces which are suitable for supporting them, both in

terms of strength and of support conditions, and also in relation to other work which is in progress. It is advisable always to ask the works manager for authorisation for offloading the packs.

Suitable protective equipment must be used (gloves, safety shoes, overalls etc.) when handling the sheets, in compliance with the applicable regulations.

When an individual sheet needs to be moved, this must always be done without dragging it over the one below. It should be rotated to a vertical position beside the pack and then carried by two or more people depending on its length, keeping it vertical (see illustration).



Gloves and lifting equipment must be clean and of a kind that will not cause damage to the sheets.

The use of fork-lift trucks for moving the sheets is not recommended, as this is likely to cause damage.

Packs offloaded at roof height must be suitably secured to the structure.

ANNEX B

Standards qualitativi delle lamiere grecate e dei pannelli metallici coibentati

Ribbed sheets and insulated metal panels are used for walls, roofs and floors in civil and industrial buildings. The quality standards quoted in the present Annex must be the subject of prior agreement between Purchaser and Vendor at the time of confirming the order. The aesthetic factor lies outside the intrinsic characteristics of the products and does not constitute a normal supply requirement. The harmonised European product standards, valid for obtaining CE Marking, are UNI EN 14782:2006 and UNI EN 14783:2006 for ribbed sheets, UNI EN 14509:2007 for double-skinned insulated metal panels (with two metal sheets), and ETAG 016 for single-skin insulated metal panels.

Materials	Standard	Reference	Value - notes
1. RIBBED SHEETS			
1.1 Characteristics			
1.1.1 Carbon steel	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-1:2002 UNI EN 10326:2004 UNI EN 10327:2004 UNI 10372:2004	3.2 e 4.2 5.1 e 7. 5.1 e 7. 8.1.4	S250GD DM (min. yield stress = 250 N/mm ²) Non-structural steels
1.1.2 Aluminium	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-2:2002 UNI 10372:2004 UNI EN 573-3:1996 UNI EN 1396:1998	3.2 e 4.2 8.1.2 3. 5.	Alloys: Vendor's declaration (min. breaking load = 150 MPa)
1.1.3 Stainless steel	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-3:2002 UNI 10372:2004 UNI EN 10088-1:2005 UNI EN 10088-2:2005 UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 506:2002	3.2 e 4.2 8.1.3 4. 6.	Type 1.3401 (AISI 304)
1.1.4 Copper	UNI EN 10372:2004 UNI EN 1172:1998 UNI EN 1173:1998 UNI EN 1412:1998 UNI EN 508-1:2002 UNI EN 10326:2004 UNI EN 10327:2004 UNI 10372:2004	8.1.1 4 - 5 - 9 3. 4. 3.2 e 3.4 7. 7. 8.1.4	Type: Vendor's declaration (except by specific request of the Purchaser, accepted by the Vendor)
1.1.5 Metal facings	UNI EN 10169-1:2007 UNI ENV 10169-2:2003 UNI EN 10169-3:2006 UNI EN 508-1-2-3:2002 UNI 10372:2004 UNI EN 1396:1998	Annex B 8.1.4.3 6.	Including different facings
1.1.6 Organic facings (pre-painted and plasticised)	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-1:2002 UNI 10372:2004	Annex A Annex A 3.2.6 8.1.4.4	
1.1.7 Multi-layer bituminous facings			
1.2 DIMENSION TOLERANCE			
1.2.1 Carbon steel	UNI EN 10143:2006 UNI EN 508-1:2002 UNI EN 485-4:1996 UNI EN 508-2:2002	Appendix D 3.1 Appendix B	Normal tolerances unless requested otherwise
1.2.2 Aluminium	UNI EN 10088-2:2005 UNI EN 508-3:2002	6.9 Appendix B	Annex B
1.2.3 Stainless steel	UNI EN 1172:1998 UNI EN 506:2002 UNI EN 1172:1998	6.4 Appendix A	
1.2.4 Copper			
1.3 REQUIREMENTS			
1.3.1 Performance	UNI EN 14782:2006 UNI EN 14783:2006 D.M. 09.01.1996 D.M. 14.09.2005 Direttiva 89/106/CEE	Parte II 11.2.4.8.1.1 Annex 1	Values declared by the Vendor for the purposes of CE Marking

Materials	Standard	Reference	Value - notes
1.3.2 Test methods (metallic coated tapes)	UNI EN 13523-0+24		Values declared by the Vendor
1.3.3 Durability	UNI EN 10169-1:2007 ENV 10169-2:2003 UNI EN 10169-3:2006 UNI EN 1396:1998		
1.3.4 FIRE PERFORMANCES	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 14782:2006	Annex C Annex B Annex B	
1.3.5 Calculation procedures (concentrated loads)			
1.3.6 Inspection and maintenance	UNI 10372:2004 AIPPEG general conditions of sale	Cap. 11 Annex D	
2. INSULATED METAL PANELS (DOUBLE SKINNED)			
2.1 Characteristics			
2.1.1 Rigid metal facings	Valgono gli stessi riferimenti di cui al precedente punto 1.1 (sono escluse le prescrizioni specifiche della UNI EN 14782:2006 e della UNI EN 14783:2006)		
2.1.2 Insulants			
2.1.2.1 Rigid cellular plastics	UNI EN 13165:2006 UNI EN 13164:2006 UNI EN 13172:2003		PUR e PIR Polistirene Valutazione e conformità
2.1.2.2 Mineral fibre	UNI EN 13162:2003		
2.2 DIMENSIONAL TOLERANCES			
2.2.1 Rigid metal facings	The same regulations, references, values and notes apply as in para. 1.2 above		
2.2.2 Pannello	UNI EN 14509:2007	Annex D	
2.2.3 Blisters	Blisters are defined as convex areas with a lack of adhesion between insulation and facing. In the absence of regulations, it is considered on the basis of experience that any blisters up to 5% of the area of the individual panel and with maximum dimensions per blister of 0.2 m2 are to be presumed not to prejudice the functionality of the panel. The above is to be considered valid even for panels where the insulation has the function of transmitting loads.		
2.3 REQUIREMENTS			
2.3.1 Performance	UNI EN 14509:2007 UNI 10372:2004 Direttiva 89/106/CEE	Punti 5 e 6 Punto 8.1.6 Annex 1	Values declared by the Vendor for the purposes of CE Marking
2.3.2 Test methods	UNI EN 14509:2007	Annex A	
2.3.3 Durability	UNI EN 14509:2007	Annex B	
2.3.4 FIRE PERFORMANCES	UNI EN 14509:2007	Annex C	
2.3.5 Calculation procedures	UNI EN 14509:2007	Annex E	
2.3.6 Inspection and maintenance	UNI 10372:2004 AIPPEG general conditions of sale	Cap.11 Annex D	
3. INSULATED METAL PANELS (SINGLE SKINNED)			
3.1 Characteristics			
3.1.1 Rigid metal facings	The same references apply as in para. 1.1 above (excluding the specific prescriptions of UNI EN 14782:2006 and UNI EN 14783:2006)		
3.1.2 Insulants			
3.1.2.1 Rigid cellular plastic	UNI EN 13165:2006 UNI EN 13164:2006 UNI EN 13172:2003		PUR e PIR Polistirene Valutazione e conformità
3.2 DIMENSION TOLERANCE			
3.2.1 Rigid metal facings	Valgono le stesse normative, riferimenti, valori e note di cui al precedente punto 1.2		
3.2.2 Panel	ETAG 016	Parte 1 e 2	Valori dichiarati dalla Venditrice
3.2.3 Blisters	Riferimento Punto 2.2.3		
3.3 REQUIREMENTS			
3.3.1 Performance	UNI 10372:2004 Direttiva 89/106/CEE	Punto 8.1.6 Annex 1	Values declared by the Vendor for the purposes of CE Marking
3.3.2 Other requirements	ETAG 016	Parte 1 e 2	Values declared by the Vendor
3.3.3 Inspection and maintenance	UNI 10372:2004 AIPPEG general conditions of sale	Cap. 11 Annex D	

National and European regulations, as well as the needs of the market, are in a state of continuous evolution. The members of AIPPEG are available to examine requests for products with qualitative standards different from the performance characteristics quoted in the present Annex.

ANNEXE C

Recommendations for fitting ribbed sheets and insulated metal panels

1. INTRODUCTION

These recommendations are intended to provide a reference informational support for fitting ribbed sheets and insulated metal panels.

They are however supplementary to Standard UNI 10372:2004 "Discontinuous roofing. Code of practice for design and execution with metal sheets".

Each job must take account of the needs of the specific site, which must be provided with suitable equipment for movement and laying, in accordance with the applicable legislation on safety and accident prevention.

The firm charged with the job of fitting the ribbed sheets/panels, besides knowing the characteristics of the materials used, must employ sufficient skilled manpower for the work on site, ensuring that the work is correctly performed in compliance with the plan specifications.

Failure to observe these recommendations and incorrect execution of the operations on site exonerate the Vendor from all responsibility.

Efficient organisation and a coordinated method of working provide the best conditions for overall working productivity.

Irrespective of the delivery location of the goods, the operations referred to in Annex A, as well as those of unloading and installation, are carried out under the care and responsibility of the Purchaser, unless otherwise agreed. The instructions on the subject provided by the Vendor must be strictly followed.

2. CONSTRUCTION COMPONENTS

Ribbed sheets/panels are used in civil and industrial buildings for the construction of roofs, walls and floors; they are fitted to every kind of supporting structure: metal frameworks, normal reinforced and prestressed concrete, and timber.

The supporting structures and the relative fixing devices as well as the ribbed sheets/panels themselves, must be suitably dimensioned and must satisfy the intended design conditions in respect of safety, stability and functionality. Ribbed sheets and insulated metal panels are quick and easy to install, with the possibility of covering in one stretch the entire length of the slope of a roof, or the entire height of a wall or several spans of the floor. The length of the metal components is conditioned predominantly by transport and handling needs, as well as by the nature of the material used and the production technology.

The supporting surfaces should be compatible with the use and the fixing modalities of the ribbed sheets and insulated metal panels.

The most common types are:

1. ROOFS

- 1.1 ribbed sheets
 - 1.1.1 plain ribbed sheets
 - 1.1.2 sandwich construction executed on site
 - 1.1.3 deck executed on site
- 1.2 monolithic insulated panels
 - 1.2.1 prefabricated monolithic sandwich
 - 1.2.2 pre-insulated deck

2. WALLS

- 2.1 ribbed sheets
 - 2.1.1 plain ribbed sheets
 - 2.1.2 sandwich construction executed on site
- 2.2 monolithic insulated panels
 - 2.2.1 prefabricated monolithic sandwich

3. FLOORS

- 3.1 plain sheets
- 3.2 sheets with collaborating concrete
- 3.3 ribbed sheets with disposable formwork

The fitting sequence for roofs, walls and floors is different depending on the type involved.

3. PRELIMINARY OPERATIONS

Before undertaking the work of fitting on site, the installer must:

1. view the printouts of the plans and study the relative instructions
2. check the alignment of the supporting structures for the ribbed sheets/panels
3. check that the surfaces of the supporting structures which will be in contact with the ribbed sheets/panels, are compatible with each other or otherwise protected from possible corrosion by electrochemical action
4. make sure that there is no interference with aerial electrical lines in the manoeuvring area for the ribbed sheets/panels
5. make certain that the work at ground level and at a height is compatible with the other work on site
6. check the suitability of the area of the site chosen for the offloading and handling of materials, so that they do not suffer damage.

The installer must carry out all fitting operations in accordance and compliance with all applicable safety regulations. In addition, for lifting, handling and offloading the ribbed sheets/panels at height, see Paragraph 4 of Annex A.

Personnel engaged in fitting must be equipped with footwear with soles that will not damage the external facing. For cutting operations on site, suitable equipment must be used (jigsaw, shears, nibbler etc.). The use of equipment with abrasive discs is not recommended.

For fixing operations it is advisable to use a power screwdriver with torque limiter.

For roofing work in particular, the alignment and overlap of adjoining panels must be perfectly carried out to avoid the formation of condensation

4. COPERTURE

SLOPES

The slope of the roof depends on the environmental conditions, the design solution chosen and the type of roof itself.

For roofs with pitch without intermediate end-to-end joints (i.e. with sheets of a length equal to the length of the roof), the slope to be adopted is usually not less than 7%. For lower slopes the supplier's instructions must be followed.

In cases where there is an end-to-end overlap, the slope must take account of the type of joint and the material used, besides the specific environmental conditions.

For deck roofs, the slope may be reduced to the minimum which will allow the water to drain off properly.

FITTING SEQUENCES

These are the essential points for a correct fitting sequence.

A) Plain ribbed sheets and prefabricated monolithic sandwich (types 1.1.1 and 1.2.1)

1. Fit the gutters and any under-ridge pieces and connecting flashings.
2. Remove any protective film from the roofing panels/sheets and from the accessories.
3. Lay the roofing panels/sheets starting from the eaves and from one end of the building, taking care to align and overlap the panels/ sheets correctly and to check that they are perfectly square with respect to the underlying structure.
4. Secure the panels/sheets systematically, after checking that they are perfectly lined up. All left-over materials must be promptly removed, with particular attention to metal offcuts.
5. Lay subsequent courses of panels/sheets overlapping the eaves course (in the case of a pitch requiring two or more courses). In the case of panels, the insulation must first be removed in the overlap area.
6. Fix the panels/sheets at every rib along the lines of the ridge, eaves, valleys and end-to-end overlaps.
7. Fit the finishing parts (ridges, cappings and flashings in general) and

any corresponding insulation.

8. Remove all left-over materials and make a general inspection of the roof, with particular attention to the fixings and the areas connecting with other elements making up the roof.

B) Sandwich construction executed on site (type 1.1.2)

B.1) Sandwich construction with parallel ribbed sheets

1. Fit the gutters and any connecting flashings: depending on the plan specifications, this may be done before laying the inner sheet or before laying the outer sheet.

2. Remove any protective film from the roofing sheets and from the accessories.

3. Lay the inner sheet starting from the eaves and from one end of the building, taking care to align and overlap the sheets correctly and to check that they are perfectly square with respect to the underlying structure.

4. Secure the sheets systematically, after checking that they are perfectly lined up. All left-over materials must be promptly removed, with particular attention to metal offcuts.

5. Lay subsequent courses of sheets overlapping the eaves course (in the case of a pitch requiring two or more courses).

6. Fix the sheets at every rib along the lines of the ridge, eaves, valleys and end-to-end overlaps.

7. Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. If the secondary support structure provides a direct housing for the inner sheet, the rigid spacing pieces mentioned above are superfluous.

8. Lay the insulation (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc.), and any head-end "buffers".

9. Lay the outer sheet, following steps 2–6 of sequence B1.

10. Remove all left-over materials and make a general inspection of the roof, with particular attention to the fixings and the areas connecting with other elements making up the roof.

B.2) Sandwich construction with crossed ribbed sheets

1. Remove any protective film from the roofing sheets and from the accessories.

2. Lay the inner sheets starting from the eaves and from one end of the building, taking care to align and overlap the sheets correctly and to check that they are perfectly square with respect to the underlying structure.

3. Secure the sheets systematically, after checking that they are perfectly lined up. All left-over materials must be promptly removed, with particular attention to metal offcuts.

4. Fit the flashing pieces which connect to the first sheet (under-ridge pieces, connectors, special components).

5. Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. In the event that the inner sheet consists of continuous metal strips, the spacers are not necessary, but it is always advisable to provide a thermal break.

6. Lay the insulation (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc.), and any head-end "buffers".

7. Lay the outer sheet, following steps 1–8 of sequence A (Plain ribbed sheet).

C) Deck executed on site (type 1.1.3) and pre-insulated deck (type 1.2.2)

Follow the fitting instructions for the inner sheets in sequence B.1. Carry out the seam fixing along the longitudinal overlaps.

In the case of decks executed on site, the insulation is provided by the insulant applied subsequently.

In the case of pre-insulated decks, temporary local removal of the insulation needs to be carried out before fixing.

The seal is provided by the layers applied subsequently (bituminous sheathing or synthetic membrane etc.).

5. WALLS

FITTING SEQUENCES

The following are the essential points for a correct fitting sequence.

A) Plain ribbed sheets and prefabricated monolithic sandwich (types 2.1.1 and 2.2.1)

1. Fit the base flashing (when specified) at the foot of the wall, aligned with the level of the supporting structure, as well as the flashing which necessarily has to be fitted before the wall (drip above the window-frames, connectors for openings, internal corner connectors etc.), after removing any protective polythene film.

2. Remove any protective film from the wall panels/sheets.

3. Fit the panels/sheets starting from the foot of the wall, taking care that joints are correctly aligned and executed, and checking that the panels are upright.

4. Secure the panels/sheets systematically, after checking that they are perfectly lined up.

5. In the event that the height of the wall or the nature of the material necessitates fitting successive courses of sheets/panels in vertical sequence, the joints must be made in line with a frame element of the structure. The procedure is as follows:

- flat panel: butt joint, with a suitably-profiled connecting flashing between the panels

- ribbed panel and ribbed sheet: like fit at panel but sealed by means of an overlap.

6. Fit the finishing components (corner strips, perimeter edging, wall-to-roof connectors etc.).

7. Carry out a general inspection and cleaning of the wall, paying particular attention to the fixings and the joints with the door and window frames, and with other components of the wall itself. In the case of walls with horizontally positioned ribbed sheets/panels, refer to the plan specifications.

B) Sandwich construction executed on site (type 2.1.2)

B.1) Sandwich construction with parallel ribbed sheets

1. Fit the base flashing (when specified) and any connecting flashings: depending on the plan specifications, this may be done before fitting the inner sheet or before fitting the outer sheet, after removing any protective polythene film.

2. Remove any protective film from the wall sheets.

3. Fit the sheets starting from the foot of the wall, taking care that joints are correctly aligned and executed, and checking that the panels are upright.

4. Secure the sheets systematically, after checking that they are perfectly lined up.

5. In the event that the height of the wall or the nature of the material necessitates fitting successive courses of sheets in vertical sequence, the joints must be made by overlapping the sheets in line with a frame member of the structure.

6. Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. If the secondary support structure provides a direct housing for the inner sheet, the rigid spacing pieces mentioned above are superfluous.

7. Lay the insulation (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc., according to the particular requirements dictated by the use of the building). This operation must be carried out simultaneously with fitting the inner sheet.

8. Fit the outer sheet, following steps 2–5 of sequence B.1.
9. Fit the finishing components (corner strips, perimeter edging, connectors to the roof and to the walls etc.).
10. Carry out a general inspection and cleaning of the wall, paying particular attention to the fixings and the joints with the door and window frames, and with other components of the wall itself.

B.2) Sandwich construction with crossed ribbed sheets

1. Remove any protective film from the wall sheets and from the accessories.
2. Fit the sheets starting from the foot of the wall, taking care that joints are correctly aligned and executed.
3. Secure the sheets systematically, after checking that they are perfectly lined up.
4. Fit the flashing pieces which connect to the first sheet (connectors, special components etc.).
5. Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. In the event that the inner sheet consists of continuous metal strips, the spacers are not necessary, but it is always advisable to provide a thermal break.
6. Fit the base flashing (when specified) at the foot of the wall.
7. Fit the insulant (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc., according to the particular requirements dictated by the use of the building). This operation must be carried out simultaneously with fitting the outer sheet.
8. Fit the outer sheet, following steps 2–5 of sequence B.1.
9. Fit the finishing components (corner strips, perimeter edging, connectors to the roof and to the walls etc.).
10. Carry out a general inspection and cleaning of the wall, paying particular attention to the fixings and the joints with the door and window frames, and with other components of the wall itself.

6. FLOORS

FITTING SEQUENCES

The following are the essential points for a correct fitting sequence.

A) Plain sheets (type 3.1)

1. Fit any perimeter flashings.
2. Remove any protective film from the floor sheets.
3. Lay the sheets, taking care to butt or overlap them correctly. Check that they are perfectly aligned and square with the underlying structure.
4. Secure the sheets systematically according to the plan specifications, after checking that they are perfectly lined up. Carry out the seam fixing along the longitudinal overlaps. All left-over materials must be removed, with particular attention to metal offcuts.
5. Finish the floor according to the plan specifications, avoiding stressing the floor panels with concentrated loads.

B) Sheets with collaborating concrete (type 3.2)

1. Erect the formwork for containing the poured concrete.
2. Lay the sheets taking care to butt or overlap them correctly. Check that they are perfectly aligned and square with the underlying structure.
3. Secure the sheets systematically according to the plan specifications, after checking that they are perfectly lined up. Carry out the seam fixing along the longitudinal overlaps. Check that the ribbed sheets are free of oxides and oil stains and any other substances which would prevent adhesion to the concrete. All left-over materials must be removed, with particular attention to metal offcuts.
4. To avoid leakage of concrete at end-to-end joints between the ribbed sheets, apply a strip of adhesive sealing tape.
5. Position the welded mesh and/or any reinforcing steel in line with the supports or located by supplementary supports, depending on the plan

specifications.

6. Pour the concrete, avoiding accumulations especially in the central area of the span.

7. If the plan specifications require the use of props to break up the spans, these must obviously be positioned before pouring the concrete, providing the ribbed sheets with any necessary braces against deformation.

C) Ribbed sheets with disposable formwork (type 3.3)

1. Erect the formwork for containing the poured concrete. The fitting instructions for sequence B apply, except for point 5, in which the reinforcing steel is obviously obligatory.

7. FIXING DEVICES

The fixing devices are an essential part of the roofing, wall and floor system. For this reason it is essential to use the fixing devices specified by the manufacturer of the ribbed sheets/panels.

Correct fitting requires the following:

For roofs:

- external facing (types 1.1.1 – 1.1.2 – 1.2.1): a complete set usually made up of screws, caps and the relative sealing gaskets, to be located at the crest of the ridge:

- external facing (types 1.1.2 – 1.1.3 – 1.2.2): screws with any gasket required

For walls:

- external facing (types 2.1.1 -2.1.2 -2.2.1): screws with gasket

- internal facing (type 2.1.2): screws with any gasket required

- prefabricated monolithic panels with “concealed” fixings: specific fixing kit

For floors: screws, nails, washers to be welded on site.

The density and positioning of the fixings depends on the characteristics of the building component, on the type and size of supports, and on the local climatic situation (winds in particular). Refer in any event to the plan specifications.

In the most frequently-occurring situations, the ribbed sheets/panels are fixed by means of screws which are different depending on the type of supporting structure.

1. Fixing to a metal framework:

- self-tapping screws and thread-forming/self-piloting screws (depending on the thickness of the support)

- self-drilling screws

- nails shot from a nail gun (for floors and inner sheets in on-site sandwich construction)

- threaded hooks with nut (in general for anchorage to tubular components)

2. Fixing to a timber framework:

- woodscrews

- threaded hooks

3. Fixing to reinforced and pre-stressed concrete:

Fixing is to steel or timber support components by the methods listed in paragraphs 1 and 2.

Direct fixing to reinforced and pre-stressed concrete is not recommended. For deck roofs and for floors, seam fixing must be used, generally by means of rivets, along the longitudinal overlap, at not more than 1000 mm seam fixing centres.

For other roofing and wall components, seam fixing is recommended, depending on the shape of the overlap.

8. FINISHING COMPONENTS

The finishing components are an integral part of the job and make

a decisive contribution to determining the project's performance characteristics. The manufacturer of ribbed sheets/panels is generally able to supply the finishing components, which must be used in accordance with the

plan and/or supply specifications.

The Purchaser must specify the type and range of finishing components which are of interest, depending on the requirements of the job. The manufacturer of ribbed sheets/panels is responsible for the conformity of materials to the confirmed order, solely and exclusively for those parts directly supplied and correctly used.

The finishing components include variously profiled gaskets, metalwork (ridges, under-ridge pieces, guttering, valleys and downpipes, flashings, drips, corner strips etc., translucent sheets, domes, ventilators, door and window frames and accessory components.

ANNEXE D

Instructions for the inspection and maintenance of roofs and walls in insulated metalpanels and ribbed sheets

All buildings require a periodic systematic inspection and programmed maintenance, in order to ensure that the building will continue to function over time and maintain the required performance.

The checks to be performed at the time of the inspection are intended to be addressed both to the roof and wall components, and to the complementary works (joints, fixing devices, ridges, flashings, snow barriers, gutters, hips etc.), and to any technological equipment present (chimneys, smoke extractors, lightning protection etc.).

1. INSPECTION

1.1 During and immediately after the completion of fitting the insulated metal panels or ribbed sheets, it is the responsibility of the installing firm to arrange the removal of all the materials no longer necessary, including any traces of the temporary protection film. In particular, the firm must take the greatest care in removing metal swarf and abrasive items which have been deposited on the roof.

The work can only be signed off after the building envelope (i.e. the roof and walls, including the finishing components and in particular the gutters) has been adequately cleaned and is free from all extraneous material.

1.2 Inspections must be carried out at regular intervals. The first one must coincide with the signing-off of the works executed or with the corresponding test inspection.

The test must be addressed both to the functionality of the specific operations performed (roof and/or walls) and to the building in its entirety according to the plan specifications or as regards compliance with the contractual relationship between the Purchaser and the supplier, general contractor or fitting firms. Inspections must take place at six-monthly intervals (preferably in the spring and autumn of each year).

At the first inspection, to be carried out by the installing firm or by the purchaser/owner according to what is specified in the contract or agreed between the parties, a check must be made to ensure that no extraneous materials or swarf from the work have been abandoned which could give rise to corrosion or damage with respect to the building envelope, or which could impede the correct drainage of rainwater.

It is in any event necessary to check that an accumulation of undesirable substances cannot be produced, such as dust, sand, leaves etc. It is also desirable for the purchaser/owner to be notified of potential weak points (such as lack of surface protection) over the entire building envelope, which could be sources of corrosion (for example by electrochemical action), with consequent premature deterioration also as regards the appearance of the building (rust stains, for example).

A comment should also be made on the location of the building: the purchaser/owner should be told about the type of atmosphere on the site, in relation to possible sources of accelerated corrosion (such as smoke) caused by adjacent buildings. The existing type of atmosphere should be known before purchasing the materials.

Subsequent inspections consist of a check on the general condition of the building envelope: state of conservation (i.e. durability) and functionality both of the ribbed sheets and/or insulated metal panels and of all the finishing and complementary components, including ridges, flashings, gutters, tightness of the fixings and any sealing which could have an effect on the building envelope. The progress of ageing should be monitored, both physiological and pathological, so that any necessary ordinary and extraordinary maintenance can be scheduled.

At the same time, the efficiency of the system for draining rainwater, and of the other technological equipment should be checked.

2. MAINTENANCE

2.1 The building envelope, like any other product, must be periodically checked so as to detect in good time any problems which are about to occur and be able to deal with them promptly, thus reducing maintenance work to a minimum.

Maintenance operations must also be addressed to the principal finishing components (for example, anchoring devices and the interface with the supporting framework, and the secondary ones (for example rainwater

downpipe inlets) which could compromise the overall functionality of the building envelope.

2.2 Programmed ordinary maintenance must be established and carried out by the owner, on items and at intervals which depend on the results of the inspections as well as on the general condition of the building and the existing environmental situation, as well as the conditions of use. It is in any event aimed at maintaining and adjusting to the functional needs of the fabric.

It may be sufficient to carry out regular cleaning of the surface of the roof and walls. Localised repairs may be necessary due to breakages, scratches and damage.

Any dirt stains indicate the evaporation of liquids which have run down the surfaces. During maintenance, therefore, besides removing the stains, it is necessary to eliminate the cause of water collecting (such as movement of the gutters in which it runs, settlement of the framework or distortion of the ridges, flashing etc.).

2.3 If the results of the inspections establish that there are conservation problems at work, an extraordinary maintenance operation must be performed by the owner and at his/her expense, with the aim of restoring the initial conditions.

These operations are intended to address the premature occurrence of problems of corrosion of the metal components, not envisaged at the design stage. These problems can arise from a general situation of the fabric being compromised by finishing works not meeting expectations in terms of durability, or from factors not pertaining to the works, such as flooding, ageing, condensation, electrochemical incompatibility, new sources of pollution, change of use etc.

The present Instructions govern the contractual relations between the Vendor party and the Purchasing party (addressee of the invoice).

Failure to carry out or incorrect execution of inspection and maintenance operations exonerates the Vendor from all responsibility in the period between the despatch of the materials and the time limit for their presumed involvement under the terms of the applicable legislation (Article 1495 of the Civil Code, and Legislative Decree no. 24 of 2 February 2002).

The Purchasing party undertakes on its own account to adopt and to see that third parties concerned adopt the present Instructions, to the extent that they are limited to the obligations on the part of the Vendor provided by the applicable legislation (regarding instructions, limitations and expiry).

'Third parties concerned and involved by the Purchaser' is to be understood as meaning: trading companies, construction firms, fitting operators, contracting and commissioning organisations, and owners of the premises and subsequent owners who may take part in the transfer of ownership.

The commitment to inspection and maintenance is undertaken by the Purchasing party in relation to the Vendor party. The Purchasing party is to transmit the present commitment in its turn when it in its turn becomes a vendor, and so forth in succession as far as the owner of the premises. For validation of the inspection and maintenance operations, the owner must in any event sign the acceptance of the commitment, on its own responsibility and at its own expense, to carry out inspection and maintenance operations. These operations are to be recorded in chronological order in a suitable register with all the technical checks noted, and with the description of the ordinary maintenance jobs and any extraordinary maintenance jobs performed.

This register is to be set up on the initiative of the owner, and maintained and updated by the owner or by the building administrator under delegation from the owner. The register must be available and consultable as a document recording the proper management of the premises, always within the context of the Vendor's relevant legal conditions.

The register must contain a record of the supply of the insulated metal panels and ribbed sheets, stating the name of the supplier, the details of the order confirmation, the type and characteristics of the materials (including catalogue references), the date of delivery to the site and the relative transport documents, and the subsequent chronology of

the installation.

The names and addresses must also be entered in the register of: the designer, the works manager, the site safety manager, the tester, the main contractor and the fitting contractor (or the individual operators).

The identifi ability and traceability of the supplies must thus be ensured for the entire duration of the validity of the present Instructions, which will terminate with the cessation of the relationship with the company producing the insulated metal panels or the ribbed sheets, with respect to its possible involvement under the terms of the law.